



**ANAVS-ACOUSTIC NOISE & VIBRATION SOLUTIONS P/L**

Office 9, 438 Forest Rd, Hurstville, NSW 2220. ABN: 42 663 590 430

Phone: 9793 1393 Fax: 9708 3113 Email: [info@acousticsolutions.com.au](mailto:info@acousticsolutions.com.au)

*Acoustic Report*

*- Noise Impact Assessment -*

**For the proposed Co-Living Development**

**at**

**No. 32-34 Kent St, Belmore**

**Prepared By: Domeniki Tsagaris (M.I.E.Aust), B.E.(UNSW)**

Australian Acoustical Society (Sub).

**Approved By: Moussa Zaioor (M.I.E. Aust), CPENG,**

Australian Acoustical Society (Member).

**Date: July 15, 2026**

**Reference No.: 2025-194 Sec. 4.55 Rev. 1**



**DOCUMENT CONTROL**

| <i><b>Date</b></i> | <i><b>Revision History</b></i> | <i><b>Prepared By:</b></i> | <i><b>Reviewed and<br/>Authorised by:</b></i> |
|--------------------|--------------------------------|----------------------------|-----------------------------------------------|
| 08/07/2025         | Initial Report                 | Domeniki Tsagaris          | Moussa Zaioor                                 |
| 23/07/2025         | For Submission<br>Report       | Domeniki Tsagaris          | Moussa Zaioor                                 |
| 15/07/2026         | Sec 4.55 Rev. 1                | Moussa Zaioor              | Moussa Zaioor                                 |



## **TABLE OF CONTENTS**

| <b>Contents</b>                                                                               | <b>Page</b> |
|-----------------------------------------------------------------------------------------------|-------------|
| 1.0 SCOPE OF WORK.....                                                                        | 4           |
| 2.0 NOISE SURVEY, INSTRUMENTATION & RESULTS .....                                             | 5           |
| PART 1 –TRAFFIC IMPACT ASSESSMENT .....                                                       | 7           |
| 3.0 AUSTRALIAN STANDARD 2107:2106 .....                                                       | 7           |
| 3.1 FAÇADE WEIGHTED SOUND REDUCTION INDEX ( $R_w$ ) CALCULATIONS ...                          | 7           |
| PART 2 – INTERTENANCY NOISE ASSESSMENT .....                                                  | 8           |
| 4.0 ACOUSTICAL PRIVACY BETWEEN UNITS (Walls & Floor), PART F7 OF<br>BCA/NCC 2022.....         | 8           |
| 4.1 WALLS & FLOORS BETWEEN ADJACENT OCCUPANCY UNITS .....                                     | 9           |
| 4.2 SOUND INSULATION FOR PIPING & SERVICES.....                                               | 10          |
| 4.3 DOORS OF SOLE OCCUPANCY UNITS .....                                                       | 10          |
| PART 3 – ENVIRONMENTAL IMPACT ASSESSMENT .....                                                | 10          |
| 5.0 EXISTING ACOUSTIC ENVIRONMENT & POTENTIAL NOISE IMPACT<br>(NOISE BREAK-OUT).....          | 10          |
| 6.0 ACCEPTABLE NOISE LEVEL FROM PROPOSED DEVELOPMENT– NOISE<br>BREAK OUT - .....              | 11          |
| 6.1 NSW NOISE POLICY FOR INDUSTRY (2017).....                                                 | 11          |
| 6.1.1 AMENITY NOISE CRITERIA .....                                                            | 11          |
| 6.2 INTRUSIVENESS NOISE CRITERIA .....                                                        | 13          |
| 6.3 PROJECT NOISE TRIGGER LEVEL .....                                                         | 14          |
| 6.3.1 SLEEP DISTURBANCE.....                                                                  | 15          |
| 6.4 NSW ROAD NOISE POLICY - TRAFFIC NOISE CRITERIA .....                                      | 15          |
| 7.0 PREDICTED NOISE FROM THE CO-LIVING DEVELOPMENT .....                                      | 16          |
| 7.1 NOISE FROM ADDITIONAL TRAFFIC GENERATION .....                                            | 16          |
| 7.2 NOISE FROM CARS ENTERING/EXITING THE BASEMENT CARPARK<br>AND IN THE COLLECTION AREA ..... | 17          |
| 7.3 NOISE FROM COMMUNAL AREAS.....                                                            | 19          |
| 7.4 NOISE FROM MECHANICAL PLANT & AIR CONDITIONING UNITS.....                                 | 21          |
| 8.0 RECOMMENDATIONS .....                                                                     | 21          |
| 8.1 BUILDING FACADE & ROOF SPECIFICATIONS.....                                                | 21          |
| 8.2 AIR CONDITIONING UNITS, MECHANICAL VENTILATION .....                                      | 22          |
| 8.3 COMMUNAL AREA & SOUND BARRIER FENCE .....                                                 | 23          |
| 8.4 DELIVERIES AND WASTE REMOVALS .....                                                       | 23          |
| 8.5 PLAN OF MANAGEMENT .....                                                                  | 23          |
| 8.6 SIGNS .....                                                                               | 23          |
| 8.7 NOISE MANAGEMENT PLAN .....                                                               | 24          |
| 9.0 CONCLUSION.....                                                                           | 25          |
| 10.0 APPENDIX.....                                                                            | 26          |



## **1.0 SCOPE OF WORK**

The aim of this report is to determine the building materials to be used and the construction methods to be adopted such that the proposed Co-living development at No. 32-34 Kent St, Belmore is built to achieve acceptable internal noise levels as per Canterbury Bankstown Council requirements.

Noise intrusion levels (Noise Break-in) from the surrounding environment are to be within the limits adopted by AS 2107 'Acoustics – Recommended Design Sound Levels and Reverberation Times', Clause 2.120 of the State Environmental Planning Policy – (Transport and Infrastructure) 2021 and Canterbury Bankstown Council requirements such that all habitable rooms in the proposed development shall be designed to limit internal noise levels.

Noise Break-out from the use of the proposed building, including all proposed mechanical plants and equipment, is to comply with the NSW Noise Policy for Industry (2017), NSW Road Noise Policy and Canterbury Bankstown Council requirements.

The architectural plans by Ross Howieson Architects dated 9 July, 2026 are for the proposed construction of a six (6) storey Co-living housing development that includes thirty-nine (39) co-living rooms and one (1) level of basement car park.

The site is located on Kent St in the suburb of Belmore (Figure 1 – Site Location). The surrounding environment consists of mixed commercial and residential use, with commercial properties located north of the site (Figure 2 – Surrounding Environment).

The nearest residential receivers that have the potential to be affected by the proposed Co-living development share boundaries with the proposed site and are detailed in Table 1.1 below (Figure 3 – Nearest Residential Receivers).

**Table 1.1 – Nearest Residential Receivers**

| <b>Receiver</b> | <b>Location</b>                                     | <b>Description</b>                                  |
|-----------------|-----------------------------------------------------|-----------------------------------------------------|
| R1              | Units at No. 26-30 Kent St, Belmore (north of site) | 3-Storey & 4-Storey Residential Complex             |
| R2              | No. 7 Chalmers St, Belmore (south of site)          | Single-Storey Residential Dwelling with Rear Garage |
| R3              | No. 5 Chalmers St, Belmore (south of site)          | Single-Storey Residential Dwelling with Rear Garage |
| R4              | No. 3 Chalmers St, Belmore (south of site)          | Single-Storey Residential Dwelling                  |



|    |                                            |                                    |
|----|--------------------------------------------|------------------------------------|
| R5 | No. 1 Chalmers St, Belmore (south of site) | Single-Storey Residential Dwelling |
|----|--------------------------------------------|------------------------------------|

## **2.0 NOISE SURVEY, INSTRUMENTATION & RESULTS**

On July 4<sup>th</sup>, 2025 attended and unattended noise monitoring was carried out at the above site boundaries. Attended noise readings were carried out at the front boundary - Point A - in direct line sight of Kent St. The attended noise readings were carried out using our factory calibrated SVAN 957 (Serial No. 21437) noise logger during the peak traffic flow period (between 5:10 pm and 5:40 pm). This noise reading took place to determine the maximum anticipated traffic noise levels at the western façade of the site.

Unattended noise monitoring was also carried out at the rear boundary - Point B (away from the main road) to determine existing background noise levels (Figure 4 – Noise Reading Locations – Points A & Point B).

The unattended environment noise monitoring (at Point B) was conducted for seven (7) days between July 4<sup>th</sup>, 2025 and July 10<sup>th</sup>, 2025. The noise survey was conducted to determine a conservative reading of the existing L(A90, 15 minutes) and L(Aeq, 15 minutes) during the Day [7:00 – 18:00], Evening [18:00 – 22:00], and Night [22:00 – 7:00].

The unattended 7 days sound level measurements and analysis performed throughout this project were carried out with an NSRTW\_MK1 wireless sound level data logger (Serial No. CPp0Dd04c19iLtiSwBRPD- Office Tag- machine 1). The sound logger specifications are as follows:

- Type 1 digital MEMS microphone
- Non-volatile 128 Mb recording memory
- Records L-max, L-min and Leq levels
- Log interval adjustable from 125 ms (8 points per second) up to hours
- A, C and Z weighting curves
- Oscilloscope and spectrum analyser features
- Observes and records 100% of the acoustic signal
- Software calculates global Leq according to ISO and OSHA methods
- WIFI connectivity to report measured levels remotely
- Weatherproof casing designed for indoor/outdoor applications
- Activity detection and logging.
- Long-term measurement and recording of acoustic levels for environmental impact studies.

The logger is factory calibrated and calibration certificates dated 14/08/2023 is presented in Figure 5 – Calibration Certificate.



The microphones in both readings were positioned at 1.5m from ground level. Both loggers were calibrated prior and after reading using our Svantek SV 33A S/N: 90200 Class 1 Calibrator with no significant drift recorded. Any readings affected by strong wind or rain have been disregarded <sup>(1)</sup>. A summary of both the attended and unattended noise reading results are presented in the tables below:

**Table 2.1- Octave Band Centre Frequencies Summary of Attended Noise Readings  
on July 4<sup>th</sup>, 2025 between 5:10pm – 5:40pm**

| <i>Noise Reading<br/>Location &amp; Time</i>                 | <i>dB(A)</i> | <i>Leq, 15 mins – (Arithmetic Average)<br/>- Octave Band Centre Frequencies (Hz)</i> |            |            |            |           |           |           |           |            |
|--------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------|------------|------------|------------|-----------|-----------|-----------|-----------|------------|
|                                                              |              | <i>63</i>                                                                            | <i>125</i> | <i>250</i> | <i>500</i> | <i>1k</i> | <i>2k</i> | <i>4k</i> | <i>8k</i> | <i>16k</i> |
| Point A - Proposed<br>Building Façade<br><br>5:10pm – 5:40pm | <b>55*</b>   | 34                                                                                   | 39         | 43         | 46         | 49        | 52        | 43        | 40        | 36         |

\*Traffic Noise during peak traffic hours.

**Table 2.2 - Summary of Background Noise Readings at Point B July 4<sup>th</sup>, 2025 – July 10<sup>th</sup>, 2025**

| <i>Location</i>                            | <i>Time of Day</i>  | <i>Leq 15 Minute<br/>dB(A)</i> | <i>L90 15 Minute<br/>dB(A)</i> | <i>RBL*</i> |
|--------------------------------------------|---------------------|--------------------------------|--------------------------------|-------------|
| <b>Point B – Rear<br/>Boundary of Site</b> | Day 7:00-18:00      | 52                             | 45                             | 41          |
|                                            | Evening 18:00-22:00 | 51                             | 45                             | 42          |
|                                            | Night 22:00-7:00    | 48                             | 44                             | 39          |

\*RBL is calculated as per Fact Sheet B of the NPfI (2017)

The Full Average Statistical Noise Parameters L(Aeq, 15 minutes), L(A90, 15 minutes), L(A10, 15 minutes), L(A1, 15 minutes) at Point B is presented in Figure 6 – Noise Survey – Point B.

Note <sup>1</sup>: Noise data is validated using the weatherzone websites addresses:  
<https://www.weatherzone.com.au/station/SITE/66194/observations/2025-07-04> to  
<https://www.weatherzone.com.au/station/SITE/66194/observations/2025-07-10>



## **PART 1 –TRAFFIC IMPACT ASSESSMENT**

### **3.0 AUSTRALIAN STANDARD 2107:2106**

It is usual practice, when we find it necessary to recommend internal sound levels in buildings to refer to Australian/New Zealand Standard AS/NZS 2107:2016 “Acoustics – Recommended Design Sound Levels and Reverberations times for Building Interiors”.

AS/NZS 2107:2016 sets out design internal noise levels and reverberation times for different buildings depending on the use of these structures. The noise levels recommended in AS/NZS 2107:2016 take into account the function of the area and apply that to the sound level measured within the space unoccupied although ready for occupancy.

In Table 1, Page 13, the standard recommends the following noise levels for residential buildings.

| Type of occupancy/activity                                                                | Design sound level<br>( $L_{Aeq,t}$ ) range | Design reverberation<br>time ( $T$ ) range, s |
|-------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------|
| <b>RESIDENTIAL BUILDINGS</b> (see Note 5 and Clause 5.2)                                  |                                             |                                               |
| Houses and apartments in inner city areas or entertainment districts or near major roads— |                                             |                                               |
| Apartment common areas (e.g. foyer, lift lobby)                                           | 45 to 50                                    | —                                             |
| Living areas                                                                              | 35 to 45                                    | —                                             |
| Sleeping areas (night time)                                                               | 35 to 40                                    | —                                             |
| Work areas                                                                                | 35 to 45                                    | —                                             |
| Houses and apartments in suburban areas or near minor roads—                              |                                             |                                               |
| Apartment common areas (e.g. foyer, lift lobby)                                           | 45 to 50                                    | —                                             |
| Living areas                                                                              | 30 to 40                                    | —                                             |
| Sleeping areas (night time)                                                               | 30 to 35                                    | —                                             |
| Work areas                                                                                | 35 to 40                                    | —                                             |

### **3.1 FAÇADE WEIGHTED SOUND REDUCTION INDEX ( $R_w$ ) CALCULATIONS**

The building façade weighted sound reduction index  $R_w$  is determined using the following formula:

$$R_w = L_{(ext)} - L_{(int)} + 10 \log (S/A) + ADJ \text{ where}$$

$R_w$ = Transmission loss of façade

$L_{(ext)}$ = External Noise level  $L_{eq \times hrs.}$ = dB(A) at the façade.

$L_{(int)}$ = Internal Noise level  $L_{eq \times hrs.}$ = dB(A) as determined by the noise criteria.

$S$  = Total exterior surface area of the room.

$A$  = Total sabins of absorption of the room.



ADJ = 3 + F+ G where F = 2 for Rail noise, F= 4 for Traffic noise with negligible trucks [percentage < 10%], and F= 6 for Traffic Noise with more than 10% trucks.

G allows for Primary angles of sound per the table below;

| Angle of Incidence, deg. | Adjustment (G), dB |
|--------------------------|--------------------|
| 0-30                     | -3                 |
| 30-60                    | -1                 |
| Random                   | 0                  |
| 60-80                    | +2                 |

As the façade is made up of individual elements with different transmission coefficients. The total transmission loss of the façade is calculated using the following equation where n represents each material components of the façade:

$$R_{Total} = -10 \log_{10} \left( \frac{1}{\sum_{n=1}^N S_n} \sum_{n=1}^N S_n \tau_n \right)$$

External façade building recommendations calculated using the above formulas are provided in Section 8 to ensure compliance with the noise criteria stated in Section 3 of this report.

## **PART 2 – INTERTENANCY NOISE ASSESSMENT**

### **4.0 ACOUSTICAL PRIVACY BETWEEN UNITS (Walls & Floor), PART F7 OF BCA/NCC 2022**

Sound isolation between units is mainly determined in accordance with Part F7 - Sound transmission and insulation- of the BCA (Building Code of Australia)/NCC 2022. Part F7 of the BCA nominates laboratory and onsite acoustic performances of various types of walls and floor construction elements adopted by the building industry.

A Building Solution is proposed to comply with the Deemed to Satisfy Provisions if Performance Requirements F7P1 to F7P4 are satisfied by complying with section F7D1 to F7D8 of the BCA/NCC.

An alternative solution to the Deemed To Satisfy Provisions of F7V1 to F7D8 must be determined in accordance with section A0.10 of the BCA (Relative Performance Requirements).



Part F7 - Sound transmission and insulation- of the BCA acts as a protection from any noise annoyance being transmitted between adjoining sole-occupancy units or from some common spaces to sole occupancy units or any other part of a different classifications to sole-occupancy units.

#### 4.1 WALLS & FLOORS BETWEEN ADJACENT OCCUPANCY UNITS

Airborne sound insulation rating of walls is determined using the weighted sound reduction index  $R_w$  or weighted sound reduction index with spectrum adaptation terms ( $R_w + C_{tr}$ ) as determined in accordance with AS/NZS 1276.1 or ISO 171.

Proposed Walls separating one sole occupancy unit from another or one sole occupancy unit from a public corridor, staircase, or a plant room will comply with the Deemed to Satisfy Provision in the Part F7 of the BCA provided the following table is satisfied.

**Table 7.1 - Building Component between Units –Walls**

| <b>Building Component between Units- Walls</b>             | <b>Attenuation Required.</b>                             |
|------------------------------------------------------------|----------------------------------------------------------|
| Living/Bedroom to Living/Bedroom<br>Wet Areas to Wet areas | $R_w + C_{tr} \geq 50$ dB                                |
| Kitchen/laundry/Toilet to Living/Bedroom                   | $R_w + C_{tr} \geq 50$ dB and Discontinuous Construction |
| Living/Bedroom/Wet Area to Corridor/Stairway/Common Area   | $R_w \geq 50$ dB*                                        |
| Plant Room/ Lift Shaft- Living/Bedroom                     | $R_w \geq 50$ dB – Discontinuous Construction            |

Floors separating sole occupancy units (SOU) is to satisfy **all** the following:

- $R_{w+ctr}$  not less than 50
- $L_{n,w}$  not more than 62

All the above is to be satisfied for floors between SOU regardless of whether the floor space is used as a Living/Bedroom or Wet Area.



## **4.2 SOUND INSULATION FOR PIPING & SERVICES**

If a duct, soil, waste or water supply pipe that is embedded or passes through one or more than one sole occupancy unit then it must be separated from the other rooms by construction of  $R_w + C_{tr}$  ( airborne ) not less than:

- 25 if the adjacent room is a kitchen or non-habitable.
- 40 if adjacent room is habitable.

## **4.3 DOORS OF SOLE OCCUPANCY UNITS**

Section F&D6 (2) of the NCC states that any door “that separates a sole-occupancy unit from a stairway, public corridor, public lobby or the like” must have a  $R_w$  of not less than 30.

Recommendations will be provided in Section 8 of this report to ensure compliance with the above criteria.

## **PART 3 – ENVIRONMENTAL IMPACT ASSESSMENT**

### **5.0 EXISTING ACOUSTIC ENVIRONMENT & POTENTIAL NOISE IMPACT (NOISE BREAK-OUT)**

The proposed Co-living development at No. 32-34 Kent St, Belmore will include the following:

- Thirty-nine (39) Double Bedrooms.
- One (1) Outdoor Common Open Space
- One (1) Indoor Common Room
- One (1) level of basement carpark with eight (8) car spaces
- On-ground Collection Area

Noise producing activities from the proposed Co-living development are categorized into major and minor as follows:



**Table 5.1 – Noise Producing Activities from Proposed Co-living Housing**

| <i>Aspects</i>        | <i>Noise sources</i>                                                                                                                                                                                                                                                                                                                          |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Entertainment         | <ul style="list-style-type: none"> <li>• Entertainment in Communal Areas (major)</li> </ul>                                                                                                                                                                                                                                                   |
| Car Park              | <ul style="list-style-type: none"> <li>• Noise from Vehicles (major)</li> <li>• Deliveries and Waste Collection (major)</li> </ul>                                                                                                                                                                                                            |
| Equipment and systems | <ul style="list-style-type: none"> <li>• Mechanical Plant and Air conditioning Units (major)</li> <li>• Washing and machine operation in laundries (minor)</li> <li>• Dishwashing, cleaning and cooking in kitchens (minor)</li> <li>• Lawnmowers and saws in gardening (minor)</li> <li>• Vacuum cleaners in housekeeping (minor)</li> </ul> |
| Bedrooms              | <ul style="list-style-type: none"> <li>• Music and TV (major)</li> <li>• Conversation (minor)</li> <li>• Door closing (minor)</li> </ul>                                                                                                                                                                                                      |

## **6.0 ACCEPTABLE NOISE LEVEL FROM PROPOSED DEVELOPMENT– NOISE BREAK OUT -**

### **6.1 NSW NOISE POLICY FOR INDUSTRY (2017)**

The above policy seeks to promote environmental well-being through preventing and minimizing noise by providing a framework and process for deriving noise limits conditions for consent and licenses.

The Noise Policy for Industry 2017 recommends two separate noise criteria to be considered, the Intrusive Noise Criteria and the Amenity Noise Criteria. A project noise trigger level being the lowest of the amenity and the intrusiveness noise level is then determined.

If the predicted noise level  $L_{Aeq}$  from the proposed project exceeds the noise trigger level, then noise mitigation is required. The extent of any ‘reasonable and feasible’ noise mitigation required whether at the source or along the noise path is to ensure that the predicted noise level  $L_{Aeq}$  from the project at the boundary of most affected residential receiver is not greater than the noise trigger level.

#### **6.1.1 AMENITY NOISE CRITERIA**

The amenity noise levels presented for different residential categories are presented in Table 2.2 of the Noise Policy for Industry 2017. These levels are introduced as guidance for appropriate noise levels in residential areas surrounding industrial areas.



The recommended amenity noise levels for the proposed development No. 32-34 Kent St, Belmore are presented in Table 6.1.1.1 below.

**Table 6.1.1.1- Recommended Amenity Noise levels**

| <i>Type of Receiver</i> | <i>Area</i> | <i>Time Period</i> | <i>Recommended Leq Noise Level, dB(A)</i> |
|-------------------------|-------------|--------------------|-------------------------------------------|
| Residence               | Urban       | Day                | 60                                        |
|                         |             | Evening            | 50                                        |
|                         |             | Night              | 45                                        |

Where a noise source contains certain characteristics such as tonality, impulsiveness, intermittency, irregularity or dominant low-frequency content, a correction is to be applied which is to be added to the measured or predicted noise levels at the receiver before comparison with the criteria. Shown below are the correction factors that are to be applied:

**Table 6.1.1.2 – Modifying Factor Corrections as per Fact Sheet C (Noise Policy for Industry 2017)**

| <i>Factor</i>       | <i>Correction</i>                                                           |
|---------------------|-----------------------------------------------------------------------------|
| Tonal Noise         | + 5 dB <sup>1,2</sup>                                                       |
| Low-Frequency Noise | + 2 or 5 dB <sup>1</sup>                                                    |
| Intermittent Noise  | + 5 dB                                                                      |
| Duration            | + 0 to 2 dB(A)                                                              |
| Maximum Adjustment  | Maximum correction of 10 dB(A) <sup>1</sup> (excluding duration correction) |

1. Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.
2. Where narrow-band analysis using the reference method is required, as outlined in column 5, the correction will be determined by the ISO1996-2:2007 standard.

Correction for duration is to be applied where a single-event noise is continuous for a period of less than two and a half hours in any assessment period. The allowable exceedance of the  $L_{Aeq,15min}$  equivalent noise criterion is depicted in Table 6.1.1.3 for the duration of the event. This adjustment accounts for unusual and one-off events and does not apply to regular and/or routine high-noise level events.



**Table 6.1.1.3 – Adjustment for Duration as per Fact Sheet C (Noise Policy for Industry 2017)**

| <b>Allowable duration of noise<br/>(one event in any 24-hour period)</b> | <b>Allowable exceedance of <math>L_{Aeq,15min}</math> equivalent project noise trigger level at receptor for the period of the noise event, dB(A)</b> |                                    |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
|                                                                          | <b>Daytime &amp; evening<br/>(7 am–10 pm)</b>                                                                                                         | <b>Night-time<br/>(10 pm–7 am)</b> |
| 1 to 2.5 hours                                                           | 2                                                                                                                                                     | Nil                                |
| 15 minutes to 1 hour                                                     | 5                                                                                                                                                     | Nil                                |
| 6 minutes to 15 minutes                                                  | 7                                                                                                                                                     | 2                                  |
| 1.5 minutes to 6 minutes                                                 | 15                                                                                                                                                    | 5                                  |
| less than 1.5 minutes                                                    | 20                                                                                                                                                    | 10                                 |

According to Section 2.4 of the above policy, the project amenity noise level is determined as follows:

**Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB(A)**

To convert from a period level to a 15-minute level, a plus 3 is added as per section 2.2 of the policy.

Therefore, the project amenity noise level for the proposed development No. 32-34 Kent St, Belmore is as follows:

- **Day period:**  $60 - 5 + 3 = 58 \text{ dB(A)}$
- **Evening period:**  $50 - 5 + 3 = 48 \text{ dB(A)}$
- **Night period:**  $45 - 5 + 3 = 43 \text{ dB(A)}$

### **6.1.2 INTRUSIVENESS NOISE CRITERIA**

Section 2.3 of the NSW Noise Policy for Industry summarizes the intrusive criteria as below:

$$L_{Aeq, 15 \text{ minute}} \leq \text{rating background level plus 5}$$

While the background noise level known as  $L_{A90,15 \text{ minutes}}$  is the Noise exceeded 90% percent of a time period over which annoyance reactions may occur (taken to be 15 minutes). The RBL is defined as the overall single-figure  $L_{A90,15 \text{ minutes}}$  background level representing each assessment period (day/evening/night) over the whole monitoring period.



For the short-term method, the rating background noise level is simply the lowest measured LAF90,15min level.

For the long-term method, the rating background noise level is defined as the median value of the daily/evening/night lowest tenth percentile of L<sub>90</sub> background noise levels and calculated in accordance with Fact Sheet B of the NPfI 2017.

Therefore, the acceptable L<sub>eq</sub> noise intrusiveness criterion for broadband noise during the day, evening and night are as follows:

- **Day period:**                **41 + 5 = 46 dB(A)**
- **Evening period:**        **42 + 5 = 47 dB(A)**
- **Night period:**           **39 + 5 = 44 dB(A)**

### **6.1.3 PROJECT NOISE TRIGGER LEVEL**

A summary of intrusiveness and amenity noise levels as determined in Sections 6.1.1 & 6.1.2 are shown in Table 6.1.3.1 below:

**Table 6.1.3.1 - Summary of Intrusiveness and project amenity noise levels**

| <b><i>Period</i></b>                     | <b><i>Intrusiveness Noise Level dB(A)</i></b> | <b><i>Project Amenity Noise level dB(A)</i></b> |
|------------------------------------------|-----------------------------------------------|-------------------------------------------------|
| Day Time (7:00am-6:00pm)                 | 46                                            | 58                                              |
| Evening Time (6:00pm-10:00pm)            | 47                                            | 48                                              |
| Night & Early Morning (10:00pm – 7:00am) | 44                                            | 43                                              |

The project noise trigger level is the lower (that is, the most stringent) value of the amenity and intrusive noise levels for the day, evening and night-time. Therefore, the project noise trigger levels for the proposed development are as shown below:

- Day period L<sub>Aeq,15 min</sub>:        **46 dB(A)**
- Evening period L<sub>Aeq,15 min</sub>:   **47 dB(A)**
- Night period L<sub>Aeq,15 min</sub>:     **43 dB(A)**



The proposed developments and its activities including all mechanical plant and carpark activities will not exceed the project noise trigger level at the most sensitive location, provided all noise control recommendations in Section 8 are adhered to.

## **6.2 SLEEP DISTURBANCE**

In order to minimize the potential of sleep disturbance, the Noise Policy for Industry 2017 states the following:

**Where the subject development/premises night-time noise levels at a residential location exceed:**

- **$L_{Aeq,15min}$  40 dB(A) or the prevailing RBL plus 5 dB [40 OR  $39 + 5 = 44$  dB(A)] , whichever is the greater, and/or**
- **$L_{AFmax}$  52 dB(A) or the prevailing RBL plus 15 dB [52 OR  $39 + 15 = 54$  dB(A)] , whichever is the greater, a detailed maximum noise level event assessment should be undertaken.**

Further studies by the enHealth Council (2004) and the guidelines published by the World Health Organisation (1999) were reviewed and analysed in terms of the guidance on noise exposure and sleep disturbance. The enHealth report states that:

*‘as a rule for planning for short-term or transient noise events, for good sleep over 8 hours the indoor sound pressure level measured as a maximum instantaneous value should not exceed approximately 45 dB(A)  $L_{A, (Max)}$  more than 10 or 15 times per night’.*

## **6.3 NSW ROAD NOISE POLICY - TRAFFIC NOISE CRITERIA**

For the potential impact of additional traffic that may be generated by the development on nearby residential developments, the operation of the proposed childcare centre also needs to comply with the NSW Road Noise Policy criteria.

Table 3 in Section 2.3.1 of the NSW Road Noise Policy sets out traffic noise assessment criteria as follows:



**Table 6.3.1 – NSW Road Noise Policy Traffic Noise Criteria**

| Road Category | Type of Project/Land Use                                                                                      | Assessment Criteria – dB(A)                |                                            |
|---------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------|
|               |                                                                                                               | Day<br>(7am – 10pm)                        | Night<br>(10pm – 7am)                      |
| Local Roads   | Existing Residences Affected by Additional Traffic on Existing Local Roads Generated by Land Use Developments | L <sub>Aeq</sub> (1 hour) 55<br>(external) | L <sub>Aeq</sub> (1 hour) 50<br>(external) |

## **7.0 PREDICTED NOISE FROM THE CO-LIVING DEVELOPMENT**

As stated in Section 5 of this report, noise levels from the Co-living development are classified into major and minor offensive noise sources. The main major noise sources are:

- Noise from increased traffic generation and vehicles on the road
- Noise from vehicles entering & exiting the basement carpark and in the collection area
- Noise from lodgers gathering in the communal areas
- Noise from air-conditioning units, pumps, compressors and mechanical plant.

### **7.1 NOISE FROM ADDITIONAL TRAFFIC GENERATION**

The Traffic and Parking Assessment prepared by Motion Traffic Engineers predicted an additional 5 *net* vehicle movements (7 total minus 2 existing) in the AM peak hour as well as an additional 5 *net* vehicle movements (7 total minus 2 existing) in the PM peak hour.

The nearest residential receivers that will be affected by additional traffic noise generation from the proposed Co-living housing development will be No. 26-30 Kent St, Belmore. The predicted noise levels due to additional traffic generation are presented in Table 7.1.1 below:



**Table 7.1.1 – Predicted Noise from Additional Traffic Generation on Kent St at 1.0m from Façade of Nearest Receivers**

| Activity                                          | Period       | Expected $L_{eq\ 1hr}$ dB(A)<br>from Additional Traffic at<br>1.0m from Façade of<br>Nearest Receivers | Complies with Traffic<br>Noise Criteria- as per<br>Section 6.4 |
|---------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Noise from<br>Additional<br>Traffic<br>Generation | AM Peak Hour | 41 dB(A)                                                                                               | Yes <55 dB(A) (Day & Evening)                                  |
|                                                   | PM Peak Hour | 41 dB(A)                                                                                               | Yes < 50 dB(A) (Night)                                         |

## **7.2 NOISE FROM CARS ENTERING/EXITING THE BASEMENT CARPARK AND IN THE COLLECTION AREA**

Car parking noises may typically comprise of adults talking, children's voices, car radios, cars starting up and car doors closing. Measurements and observations conducted at various other Co-Living houses were saved in our database in order to obtain generic car park noise data. The following table provides specific sound power levels for various activities associated with the car park activities.

**Table 5.2.1 – Car Park Noise Source Levels**

| Car Park Noise Source | Sound Power Level, dB(A) |
|-----------------------|--------------------------|
| Car Door Closing      | 95 – $L_{Amax}^*$        |
| Car Starting          | 91- $L_{Amax}^*$         |
| Car Accelerating      | 91- $L_{Aeq}$            |
| Car Moving            | 81- $L_{Aeq}$            |

**\*Taking place inside enclosed carpark.**

For vehicles entering the basement carpark, the only noise generated will be from cars moving in and out of the driveway. The remainder of car activities listed in the table above will occur inside the basement and therefore noise produced by those activities will be attenuated by the basement enclosure.

The proposed Co-living development also features a collection area with one (1) parking space at the south-western boundary of the site. All deliveries and waste collection are restricted to daytime and evening hours only (7:00 am – 10:00 pm).

Entry to & exit from the development will be via a driveway located at the eastern boundary of the property on Kent St. The receivers most impacted by vehicles entering & exiting the basement car park as well as in the collection area are those located at R1, R2 & R3 and are presented in Table 7.2.2 below. Noise attenuation loss from the basement enclosure,



the distance to the nearest receiver as well as any sound barriers (fences) have been considered.

**Table 7.2.2 – Predicted Noise from Vehicles Entering and Exiting the Carpark and in the Collection Area at Boundary of R1 & R2– Most Critical**

| Activity                                               | Period                      | Expected Leq dB(A) at R1 | Expected LAeq dB(A) at R2 & R3 | Compliance with Project Noise Trigger Level as per Section 6.1.3 |
|--------------------------------------------------------|-----------------------------|--------------------------|--------------------------------|------------------------------------------------------------------|
| <b>Vehicles Entering/Exiting the Basement Car Park</b> | 7.00am - 6.00pm (Day)       | 38 dB(A)                 | 37 dB(A)                       | <b>Yes ✓</b><br>≤ 46 dB(A)                                       |
|                                                        | 6:00pm – 10:00pm (Evening)* | 38 dB(A)                 | 37 dB(A)                       | <b>Yes ✓</b><br>≤ 47 dB(A)                                       |
|                                                        | 10:00pm – 7:00am (Night)*   | 11 dB(A)                 | 35 dB(A)                       | <b>Yes ✓</b><br>≤ 43 dB(A)                                       |

\*Vehicles in the collection area are restricted to daytime and evening hours only

Similarly, the  $L_{Amax}$  noise level from cars entering and exiting the basement as presented in Table 7.2.3 below in the late-night hours and early mornings complies with the Sleep disturbance criteria presented in Section 5.3.1 of this report.

**Table 7.2.3 – Predicted  $L_{Amax}$  Noise from Vehicles Entering and Exiting the Carpark at Façade of R1 – Most Critical - LA 1 min.**

| Activity                                               | Period                   | Expected LA 1 min. dB(A) at External Window | Complies with Sleep Disturbance Criteria - as per Section 6.3.1                                                                                                                                              |
|--------------------------------------------------------|--------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Vehicles Entering/Exiting the Basement Car Park</b> | 10:00pm – 7:00am (Night) | 43 dB(A)                                    | $L_{Aeq} < [Greater\ of\ 40,\ or\ RBL + 5]$<br>Yes, $L_{Aeq} = 38$ ( As per Table 7.2.2) < 44 (RBL + 5)<br><br>$L_{AFmax} < [Greater\ of\ 52,\ or\ RBL + 15]$<br><br>Yes - $L_{AFmax} < 54$ dB(A) (RBL + 15) |

\*Vehicles in the collection area are restricted to daytime and evening hours only



### 7.3 NOISE FROM COMMUNAL AREAS

The proposed Co-living development will include thirty-five (35) co-living rooms. The ground floor of the development will also include one (1) outdoor Common Open Space located on the eastern boundary of the site as well as one (1) indoor Common Room.

Residents of the proposed development may congregate in the communal areas during casual social gatherings, which has the potential to impact surrounding residential receivers. The outdoor communal area will be restricted to Day and Evening Use only (7:00am – 10:00pm).

As per Harris /Pearson, Bennet, & Fidell (1977) report, the sound power level of (1) person talking is as per the table below.

| Vocal Effort   | No. of Talkers | Sound Power Levels [dB] at Octave Band Centre Frequencies [Hz] *, **, *** |      |      |      |      |      |      |       |
|----------------|----------------|---------------------------------------------------------------------------|------|------|------|------|------|------|-------|
|                |                | 125                                                                       | 250  | 500  | 1000 | 2000 | 4000 | 8000 | dB(A) |
| <b>Females</b> |                |                                                                           |      |      |      |      |      |      |       |
| Casual         | 1              | 48.0                                                                      | 61.0 | 61.0 | 54.0 | 51.0 | 47.0 | 48.0 | 61.0  |
| Normal         | 1              | 49.0                                                                      | 63.0 | 66.0 | 61.0 | 56.0 | 44.0 | 50.0 | 66.0  |
| Raised         | 1              | 47.0                                                                      | 67.0 | 72.0 | 70.0 | 66.0 | 61.0 | 54.0 | 74.0  |
| Loud           | 1              | 47.0                                                                      | 62.0 | 77.0 | 79.0 | 76.0 | 70.0 | 62.0 | 82.0  |
| Shouted        | 1              | 48.0                                                                      | 68.0 | 82.0 | 89.0 | 88.0 | 81.0 | 71.0 | 93.0  |
| <b>Males</b>   |                |                                                                           |      |      |      |      |      |      |       |
| Casual         | 1              | 58.0                                                                      | 62.0 | 63.0 | 55.0 | 53.0 | 51.0 | 48.0 | 63.0  |
| Normal         | 1              | 60.0                                                                      | 66.0 | 69.0 | 62.0 | 58.0 | 54.0 | 48.0 | 69.0  |
| Raised         | 1              | 65.0                                                                      | 71.0 | 76.0 | 70.0 | 66.0 | 61.0 | 55.0 | 76.0  |
| Loud           | 1              | 69.0                                                                      | 78.0 | 85.0 | 84.0 | 79.0 | 73.0 | 63.0 | 87.0  |
| Shouted        | 1              | 58.0                                                                      | 83.0 | 93.0 | 97.0 | 93.0 | 85.0 | 76.0 | 100.0 |

For a number of lodgers (n) in any vocal category the increase in noise level at any octave band centre frequency is  $\Delta L = 10 \log_{10}(n)$ .

The total noise level from all groups is determined using the equation

$$L = 10 \log_{10} \left( \sum_{i=1}^n 10^{(L_i / 10)} \right)$$

Where  $L_i$  is the noise level from each group.

The sound loss through the façade of the communal room in particular and the co-living rooms in general is given at any center frequency using Lord/Templeton as follows:

$$L_2 = L_1 - R + 10 \log S - 17 - 20 \log(r) + DI$$

Where;

$L_2$  is the noise level at location 2 outside the room;

$L_1$  is the internal noise level at the source;

$r$  is the distance in meters to location 2 from the source;

$R$  is the weighted sound reduction index of the façade;

$S$  is the area of the façade; and

$DI$  is the directivity associated with the source.



Tables 7.3.1 below lists the predicted noise levels when the indoor Communal Area is operating at full capacity at the most critical residential receivers.

**Table 7.3.1 – Predicted Noise from Internal Communal Areas at Boundary of Nearest Residential Receivers\***

| Activity                                       | Period                    | Expected Leq dB(A) at R1 | Expected Leq dB(A) at R2 & R3 | Expected Leq dB(A) at R4 & R5 | Complies with RBL + 5**                                   |
|------------------------------------------------|---------------------------|--------------------------|-------------------------------|-------------------------------|-----------------------------------------------------------|
| <b>Lodgers in Communal Areas (50% Talking)</b> | Day & Evening, & Night ** | 30 dB(A)                 | 20 dB(A)                      | 30 dB(A)                      | <b>Yes ✓</b><br><46 – Day<br><47 – Evening<br><44 – Night |

\*Assuming all recommendations in Section 8 are adhered to.

\*\* NSW Noise Policy for Industry does not apply to Lodger/Patron noise (Section 1.5 exclusions). Background noise level L90+ 5 applies.

The noise levels from people congregating in the outdoor communal area is calculated in accordance with ISO 9613.2 – *Acoustics – Attenuation of sound during propagation outdoors — Part 2: General method of calculation*. The predicted noise levels at the most affected residential receivers are presented in Table 7.3.2 below:

**Table 7.3.2 - Predicted Noise from Outdoor Communal Open Space at Boundary of Nearest Residential Receivers\*-**

| Activity                                                       | Residential receiver | Period                                            | Expected. Leq dB(A) at Façade of Receiver* | Complies with RBL level + 5 **  |
|----------------------------------------------------------------|----------------------|---------------------------------------------------|--------------------------------------------|---------------------------------|
| <b>** Lodgers in outdoor communal open space (50% talking)</b> | R1                   | 7.00am - 6.00pm (Day)<br>6.00pm-10:00pm (Evening) | 44 dB(A)                                   | Yes ✓<br>(< 46, 47, - dB(A))*** |
| <b>** Lodgers in outdoor communal open space (50% talking)</b> | R2                   | 7.00am - 6.00pm (Day)<br>6.00pm-10:00pm (Evening) | 44 dB(A)                                   | Yes ✓<br>(< 46, 47, - dB(A))*** |

\*Assuming all recommendation in Section 6 are adhered to. \*\* NSW Noise Policy for Industry does not apply to Lodger/Patron noise (Section 1.5 exclusions). Background noise level + 5 applies

\*\*\* Outdoor communal area is closed between 10:00 pm and 7:00 am



## **7.4 NOISE FROM MECHANICAL PLANT & AIR CONDITIONING UNITS**

A range of mechanical plant, equipment and ventilation might be included in the proposed Co-living Housing at No. 32-34 Kent St, Belmore. Noise emitted using the proposed mechanical plant is assessed by the NSW Noise Policy for Industry 2017 and Canterbury Bankstown Council requirements.

Air-conditioning units might also be installed in the proposed development. Typical noise levels for car park exhaust fans, condensing units and car-park roller doors are presented in Table 7.4.1

**Table 7.4.1 – Typical Mechanical Plant Leq Sound Power Levels (dB(A))**

| <b><i>Frequency [Hz]</i></b>  | <b><i>63</i></b> | <b><i>125</i></b> | <b><i>250</i></b> | <b><i>500</i></b> | <b><i>1k</i></b> | <b><i>2k</i></b> | <b><i>4k</i></b> | <b><i>8k</i></b> | <b><i>dB(A)</i></b> |
|-------------------------------|------------------|-------------------|-------------------|-------------------|------------------|------------------|------------------|------------------|---------------------|
| Typical Car Park Exhaust Fan  | 89               | 84                | 91                | 88                | 87               | 84               | 81               | 75               | <b>91</b>           |
| Typical Condensing Unit       | 71               | 69                | 67                | 61                | 58               | 54               | 47               | 44               | <b>64</b>           |
| Car-Park Security Roller Door | 73               | 75                | 77                | 79                | 82               | 77               | 76               | 74               | <b>85</b>           |

***As the proposed development is still in the initial application stage, we recommend that further acoustic assessment is carried out when the development has been approved and Mechanical Services plans have been prepared for our review.***

## **8.0 RECOMMENDATIONS**

### **8.1 BUILDING FACADE & ROOF SPECIFICATIONS**

To ensure all noise intrusion as well as noise emission from the proposed Co-living development is within the noise limits specified in this acoustic report, we recommend the following materials to be used in the construction:



**Table 8.1.1- Building Façade and Roof Building Components**

| <b><i>Building Component</i></b>                                                                                                                                                                                                                                                                                                                                                                                | <b><i>Rw Rating<br/>to be<br/>Achieved</i></b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| <b>Windows and Sliding Doors in</b><br><br><ul style="list-style-type: none"> <li><b>Windows, Sliding Doors in All Habitable Areas</b> are to be <b>6.38 Laminated</b> with full perimeter Mohair Fin acoustic seals <sup>(1)(2)(3)</sup></li> <li><b>Windows and Sliding Doors in Communal Area</b> to be <b>10.38 Laminated</b> with full perimeter Mohair Fin acoustic seals <sup>(1)(2)(3)</sup></li> </ul> | <br><br>32<br><br>35                           |
| <b>Windows in all other Areas (Bathrooms/Ensuites/Laundries etc)</b> are to be 6mm and to be in accordance with AS 2047 (Windows in Buildings) <sup>(1)(2)(3)</sup> .                                                                                                                                                                                                                                           | 25                                             |
| <b>Entry Doors</b> are to be Solid Core with acoustic seals fitted around the door. A drop seal is required at the base of the external door <sup>(2)</sup> .                                                                                                                                                                                                                                                   | 30-33                                          |
| <b>External Walls</b> are to be double brick, Dincel/ Hebel system or brick veneer construction or any other method of wall construction with an Rw of > 50 <sup>(2)(3)</sup> .                                                                                                                                                                                                                                 | 50                                             |
| <b>Roof</b> is to be Concrete Roof with $Rw + Ctr \geq 50$ & $Lntw \leq 62$ for trafficable roof area.                                                                                                                                                                                                                                                                                                          | 50                                             |

NB: This report is to be read in conjunction with the **BASIX/NatHERS** certificate and any other related building specification.

<sup>(1)</sup> No See-through weep holes in windows/sliders. <sup>(2)</sup> All gaps between window & door frames and the masonry walls are to be sealed using acoustic foam Hilti CP620 or similar (Bostic/Parfix/Sika). Glass wool batts should be applied prior to the application of the foam to seal larger gaps. <sup>(3)</sup> All gaps are to be acoustically sealed.

## **8.2 AIR CONDITIONING UNITS, MECHANICAL VENTILATION**

As previously mentioned, we recommend acoustic assessment of all proposed mechanical plant and equipment once the development has been approved and mechanical services plans have been prepared.

The assessment of the mechanical plans once available will recommend proper silencer/(s) and duct lagging such that noise levels emitted from the mechanical plant servicing the proposed Co-living development at No. 32-34 Kent St, Belmore meet the requirements of Section 6 of this report.



### **8.3 OUTDOOR COMMUNAL AREA & SOUND BARRIER FENCE**

The outdoor communal open space is to be closed from 10:00pm to 7:00am. We recommend that a 2.0 metre gap free acoustic fence is to be installed along the northern, eastern and southern boundaries of the development on the Ground Floor. The fence is to be tapered down to 1.0m towards the front boundary as per Figure 7 – Sound Barrier Location (Ground Floor). Noise barrier material is to be lapped and capped gap free timber fence or brick/concrete wall, or any other gap free material with a minimum of 15 kg/m<sup>2</sup> surface density. Outdoor Communal area to operate between the hours of 7:00 a.m. and 10:00 p.m.

### **8.4 DELIVERIES, WASTER REMOVALS & COLLECTION AREAS**

All deliveries and waste removals to take place between the operating hours of 7:00 a.m. and 6:00 p.m. Vehicles in the collection area are restricted to daytime and evening hours only.

### **8.5 PLAN OF MANAGEMENT**

The use of the Co-living housing development is usually regulated through a Plan of Management (PoM). Plan of Management to specify the Deliveries, Waste removal , Vehicle in collection area and outdoor communal area operating hours stated above.

All residents and visitors are not to make unreasonable noise while on the premises.

When tv/music is played at a high volume inside co-living rooms or indoor common room, windows are to be closed, and volume levels are to be adjusted such that noise is not transmitted to nearby residential receivers.

It is the responsibility of the managing authority of the co-living room to ensure that the above rules are adhered to by both residents and their visitors.

### **8.6 SIGNS**

The following signs are to be placed in and around the Co-living housing development.

- Signs reminding residents to minimise noise at all times shall be installed at the entry and hallways of the Co-living development and the common room, to ensure that all sounds are to be restricted to within the property and not transmitted into adjoining residences.



## **8.7 NOISE MANAGEMENT PLAN**

A Noise Management Plan should be implemented and should include the following:

- Install a contact number at the front of the Co-living development so that complaints regarding the station operation can be made.
- Implement a complaint handling procedure. If a noise complaint is received the complaint should be recorded on a Complaint Form, containing the following:
  - Name and address of the complainant
  - Time and date the complaint was received
  - The nature of the complaint and the time/date the noise was heard
  - The name of the employee that received the complaint
  - Actions taken to investigate the complaint and the summary of the results of the investigation
  - Indication of what was occurring at the time the noise was happening (if applicable)
  - Required remedial action (if applicable)
  - Validation of the remedial action
  - Summary of feedback to the complaint
  -

All complaints received shall be reported to management with initial action/investigation commencing within 7 days. The complaint should also be notified of the results and actions arising from the investigation.



## **9.0 CONCLUSION**

The construction of the proposed Co-living Housing Development at No. 32-34 Kent St, Belmore, if carried out as recommended in the plans and specifications and including the acoustic recommendations in this report, will meet the required internal noise levels as required in Clause 2.120 of the State Environmental Planning Policy – (Transport & Infrastructure) 2021, AS/NZS 2107 “*Acoustics – Recommended Design Sound Levels and Reverberation Times*” and Canterbury Bankstown Council requirements.

Noise break-out from the proposed development, including operation of all proposed mechanical plant & equipment; will comply with the requirements of the NSW Noise Policy for Industry (2017) and Canterbury Bankstown Council requirements, provided recommendations in Section 8 of this report are adhered to.

Should you require further explanations, please do not hesitate to contact us.

Yours Sincerely,

M. Zaioor  
M.S. Eng’g Sci. (UNSW).  
M.I.E.(Aust), CPEng  
Australian Acoustical Society (Member)



**10.0****APPENDIX**

Figure 1 - Site Location ..... 27

Figure 2 – Surrounding Environment ..... 28

Figure 3 - Nearest Residential Receivers..... 29

Figure 4 - Noise Reading Locations - Points A & B ..... 30

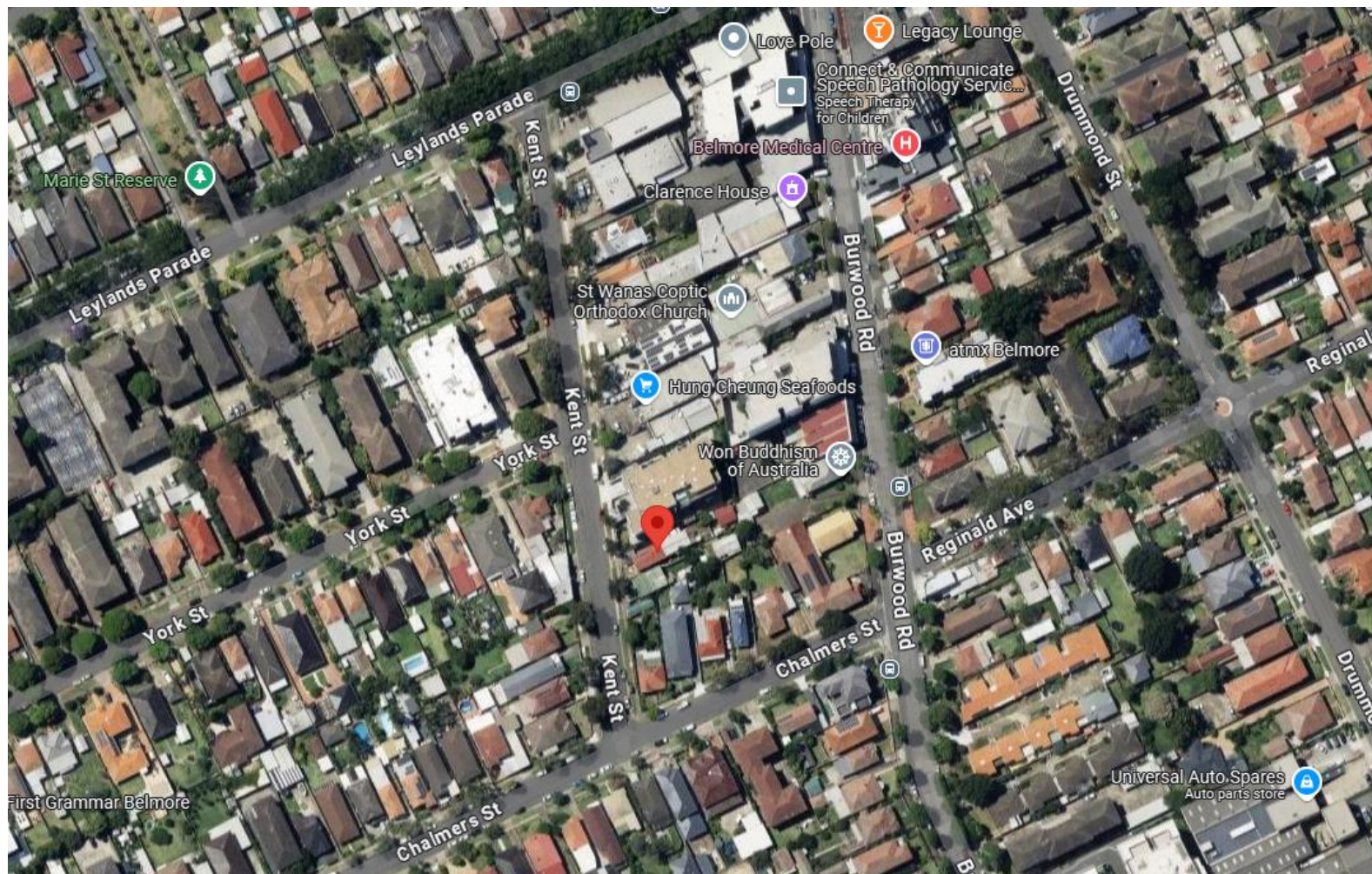
Figure 5 - Calibration Certificate ..... 31

Figure 6 - Noise Survey - Point A ..... 32

7 - Sound Barrier Location (Ground Floor)..... 33



**Figure 1 - Site Location**



**Figure 2 – Surrounding Environment**



Figure 3 - Nearest Residential Receivers



**Figure 4 - Noise Reading Locations - Points A & B**





**instrument choice.com.au**

22A Caven Road | Dry Creek | South Australia 5094  
Phone: 1300 737 871 | Fax: 1300 882 503  
customer-service@instrumentchoice.com.au  
www.instrumentchoice.com.au  
Instrument Choice is a trading name of Syntronics Pty Ltd  
(ABN: 52836521718)

### Category-2S - Traceable Certificate

**Calibration Certificate Details**

|                    |                |
|--------------------|----------------|
| Calibration Date   | 14/08/2023     |
| Certificate Number | 2S-14082023018 |

**Calibration Schedule**

|                      |  |
|----------------------|--|
| Calibration Interval |  |
| Next Due Date        |  |

**Company Details**

|              |                                                                                                                 |
|--------------|-----------------------------------------------------------------------------------------------------------------|
| Company Name | ANAVS - Acoustic Noise & Vibration Solutions P/L<br>Office 9, 438 Forest Rd<br>Hurstville NSW 2220<br>Australia |
|--------------|-----------------------------------------------------------------------------------------------------------------|

**Equipment Details**

|                    |             |               |                                |
|--------------------|-------------|---------------|--------------------------------|
| Instrument Type    | Sound Meter | Serial Number | CPp0Dd04c1c9ilt5wBRPD<br>96043 |
| Manufacturer       | Convergence | Model         | NSRTW_mk3                      |
| Physical Condition | Good        |               |                                |

**Accuracy Calibration-2S performed (final after adjustments)**  
(Adjustments noted in "Any problems identified" below)

| Ambient Temperature & RH whilst performing test |                       | 20.3°C and 52% RH                         |                                          |            |           |
|-------------------------------------------------|-----------------------|-------------------------------------------|------------------------------------------|------------|-----------|
| Reference Meter Reading                         | Acceptable Difference | Supplied Meter Reading Before Calibration | Supplied Meter Reading After Calibration | Difference | Pass/Fail |
| 94.0dB                                          | ±1dB                  | 93.9dB                                    | 94.0dB                                   | 0.0dB      | Pass      |
| 114.0dB                                         | ±1dB                  | 113.8dB                                   | 113.9dB                                  | 0.1dB      | Pass      |

**Traceability Details**

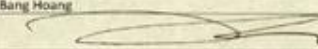
|                   |         |                |                    |
|-------------------|---------|----------------|--------------------|
| Make              | S/N     | Cal Report No: | Tested at NATA Lab |
| Casella CEL-120/1 | 5230660 | C35894A        | 9262               |

**Any Problems Identified**

The meter is performing as expected

**Category-2S Pass:** ☒ Yes / ☐ No

**Battery Replacement:** ☒ Yes / ☐ No

|        |                                                                                      |
|--------|--------------------------------------------------------------------------------------|
| Name   | Bang Hoang                                                                           |
| Signed |  |
| Date   | 14/08/2023                                                                           |

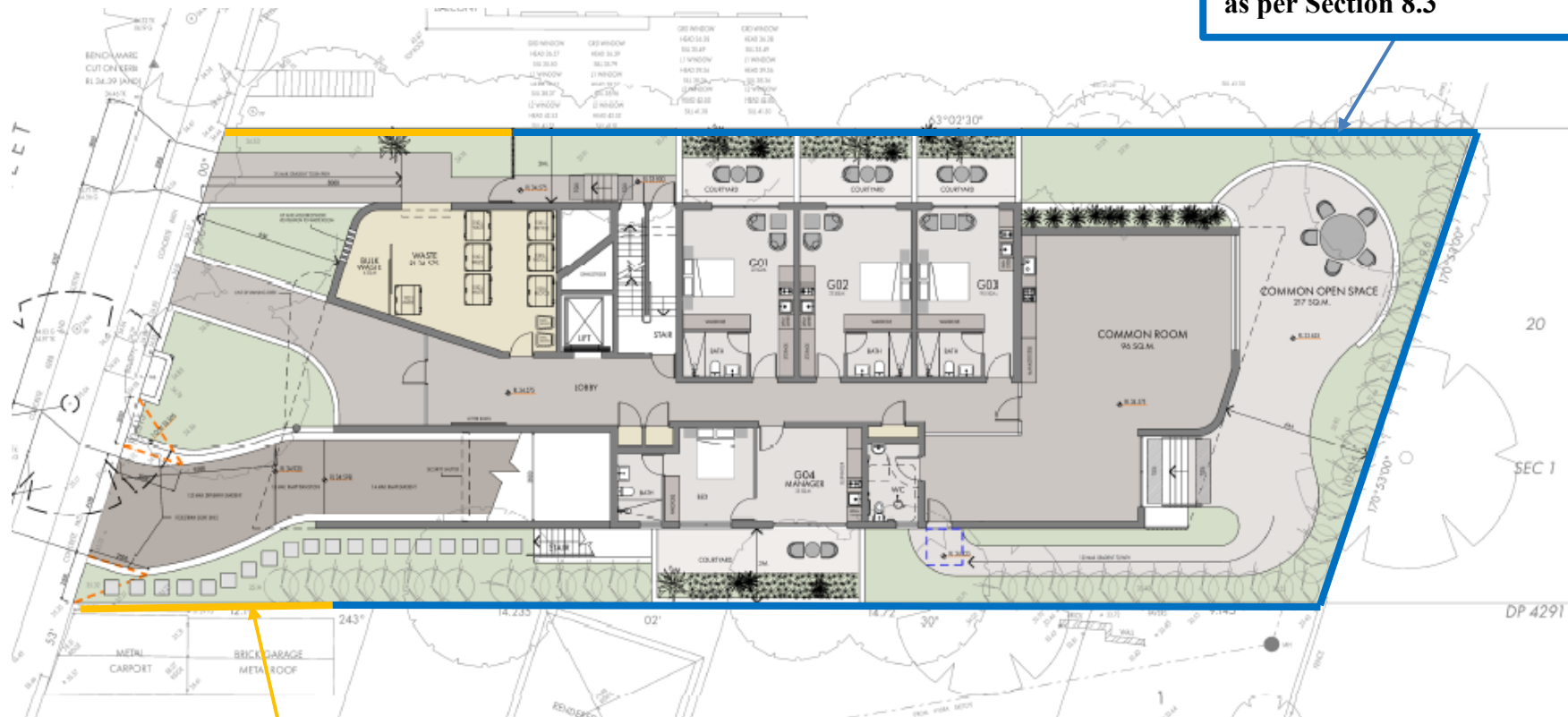
The support of a scientist with every product. Call 1300 737 871 for expert advice.

Figure 5 - Calibration Certificate

32 | Page



**2.0m High Gap-Free  
Fence with specifications  
as per Section 8.3**



**7 - Sound Barrier Location (Ground Floor)**

**2.0m High Gap-Free Fence  
tapered down to 1.0m as per  
Section 8.3**

