

# MEMORANDUM



210354\_16 Wyatt Av, Belrose\_Acoustic SOFAC\_BW\_R0

**TO:** John Holman  
**COMPANY:** Holman Engineering  
**FROM:** Ben White  
**SUBJECT:** 16 Wyatt Avenue, Belrose  
Acoustic Response to SOFAC

**DATE:** 7 June 2022

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## 1 Introduction

This report details the review which has been undertaken for the proposed boarding house project located at 16 Wyatt Avenue, Belrose including the acoustic items included in the Statement of Facts and Contentions. The acoustic review and responses have been based on the following:

1. The NSW Land and Environment Court *Statement of Facts and Contentions* filed on the 3 May 2022.
2. The projects *Noise Impact Assessment* completed by Pulse White Noise Acoustics with reference 210354 - 16 Wyatt Avenue, Belrose Boarding House Development - DA Acoustic Assessment – R4 and dated 5 May 2022.

This report details the acoustic review of the relevant items included in the SOFAC, including items (i) and (j) details of which are included in the following sections.

## 2 Acoustic Items within the SOFAC

Included within the SOFAC, under *inadequate acoustic report* are items (i) and (j) which include the following:

### Inadequate acoustic report

- i) The acoustic report prepared by PWNA dated 13 August 2021 has not been updated to address the amended plans, under which additional outdoor communal spaces have been added. An updated report is required.
- j) The acoustic report is:
  - To address the amended design and each of the proposed outdoor open communal spaces;
  - To address a variety of scenarios relating to the use of those spaces, including for informal gatherings, BBQs and the like, and assuming reasonable levels of use by residents, based on a rule of thumb of one person per square metre.
  - To clarify whether any use by residents of the grounds surrounding the development is acceptable in terms of acoustic impact, and if so, under what conditions.
  - To address the noise arising from traffic movements into and out of the site, including the parking of vehicles on street and deliveries to residents (take-away food as well as general items) with reference to research derived from boarding houses of similar scale and located in a similar, fringe urban location, away from any centre containing a wide range of shops and services. Irrespective of whether the noise of vehicles entering and leaving the site is an offence, it is a consideration relevant to amenity and character.
  - To remodel acoustic impacts to test the practicality of removing the following assumptions which impact negatively on the amenity and well-being of future residents:
    - The limitation on hours of use of internal communal areas.
    - The requirement that windows and doors of the communal areas be kept closed between 10:00pm-7:00am Monday to Saturday and 10:00pm-8:00am on Sundays and Public Holidays.

Based on the items included in the SOFAC, and the projects *Noise Impact Assessment* the following items below are discussed:

1. Item (i) – The projects Acoustic report has been updated to include the projects amended plans, including the proposed outdoor communal areas. Details of the acoustic assessment are included in Revision 4 and 5 of the projects *Noise Impact Assessment*.

2. Item (j) *The acoustic report*

- a. Bullet Point 1 – Assess the proposed outdoor open communal areas.

The acoustic report includes the assessment of the proposed outdoor communal areas, including Section 4.3 of the *Noise Impact Assessment*. The report details the required mitigations and management controls for the use of the external areas such that noise emissions from the site will be acoustically acceptable.

- b. Bullet Point 2 – Use of the external areas

The acoustic report has assessed the potential for the use of the external communal areas, including Section 4.3 of the *Noise Impact Assessment*. The acoustic report includes recommendations for the mitigations and management of external areas such that noise emissions will be acceptable, including the following:

- Permitted use of the external communal areas is to include the hours of 7:00am-12:00am Monday to Saturday and 8:00am-12:00am on Sundays and Public Holidays.
- The external communal area on ground level of the Lower Building will have no more than twenty (20) people utilising the space at any one time with an assumption that one in two are speaking in conversation. The external communal area on ground level of the Upper Building will have no more than ten (10) people utilising the space at any one time with an assumption that one in two are speaking in conversation.
- No playing of amplified music is to be undertaken on the external communal area. No external speakers should be included in the design and construction of the external areas.

c. Bullet Point 3 – Use of external grounds by residence.

Based on the proposed external grounds of the project, the following comments regarding the potential for acoustic impacts on neighbours are made:

- i. The proposed external grounds will include residential use only including the residential occupants and their visitors.
- ii. The proposed external grounds are acoustically similar to that of any external areas of a residential property. That is, the use of the grounds will be used for residential uses and is similar to that of an external garden, pool or the like. The use of external areas for residential properties are not governed by the acoustic criteria of Northern Beaches Council, the EPA or other such legislation which otherwise applies to building services (mechanical equipment) or commercial/industrial properties.
- iii. The use of the external grounds will result in noise levels similar to that of other residential uses which can include children playing, outdoor activities or the like. It is noted that the surrounding residential properties include a number of pools, external gardens and the like. The resulting noise levels from the proposed balconies would be similar to those levels generated from other residential properties within proximity to the site and considered as a normal residential use.
- iv. The use of the proposed external grounds would be required to be used by residential occupants exhibiting normal behaviour including a requirement to be “good neighbours” as applies within all residential areas. As part of the use of the space, controls are to be enforced, including the following:
  - a. No fixed speakers are to be included as part of the external grounds area.
  - b. Use of the external grounds is not to include the playing of amplified music for entertainment levels. That is music can be played for background levels only.
  - c. The use of the external grounds is to be used for normal residential activities including use by the dwellings of the building and their guests only. The use of the proposed external terraces would be required to be used by residential occupants exhibiting normal behaviour including a requirement to be “good neighbours” as applies within all residential areas. Details of these requirements are to be included in the relevant protocols and boarding house agreements.

Based on the discussion detailed in the points above, the proposed external grounds is acoustically consistent with a residential area and would not be considered to result in unreasonable noise impacts to adjoining receivers.

The requirement for the items above is include in Revision 5 of the *Noise Impact Assessment*.

d. Bullet Point 4 – Traffic Noise Impacting the site

An assessment of noise resulting from traffic movements in and out of the site has been conducted and details are included in Section 4.4 of the *Noise Impact Assessment*. Based on the assessment of noise resulting from traffic movements on the site the resulting noise impacts have been found to be acoustically acceptable. Recommended mitigations from traffic movements on the site include the following:

- i. The *Plan of Management* for site includes the encouragement of lodgers to use public transport and bicycles such that motorised movements will be minimised.
- ii. There should not be any speed humps or uneven surfaces used for speed control.
- iii. Any required grates and drains should include fixings to prevent noise resulting from movement of surfaces.

e. Bullet Point 5 – Mitigation of noise from internal areas

The assessment of noise resulting from the internal communal areas of the development has been undertaken and are included in Section 4.3 of the *Noise Impact Assessment*. Revision 5 of the report includes recommended mitigations and management controls for the internal communal areas, including the following:

- i. There are no time controls for the use of the internal communal areas.
- ii. The windows to the internal communal areas can be open during periods of normal use for general activities such as cooking and the like at all times of the day, evening and night. In the event the space is to be used for high noise activities, such as the playing of amplified music or the like, the external windows and doors of the internal communal areas are recommended to be closed between 10:00pm-7:00am Monday to Saturday and 10:00pm-8:00am on Sundays and Public Holidays. This is similar to the use of typical residential areas such that noise from the use of the internal communal areas is mitigated as part of being part of a neighbourhood.
- iii. All internal communal areas are to have a glazing construction of 6.38mm Laminate with a  $R_w (C;Ctr): 30 (0;-3)$ .

Providing the proposed acoustic mitigations and management controls detailed above are included in the design, construction and operation of the boarding house then noise emissions from the proposed development will be acoustically acceptable.

### 3 Conclusion

This report details the acoustic review of the items include in the SOFAC regarding the boarding house project located at 16 Wyatt Avenue, Belrose.

Details of the acoustic assessment are included in the projects *Noise Impact Assessment* and providing the recommended acoustic treatments and controls are included in the design, construction and operation of the development noise emissions from the boarding house will be acoustically acceptable.

If you have any additional questions, please contact the author below.

Regards

A handwritten signature in blue ink that reads "BG White". The signature is written in a cursive, flowing style.

Ben White  
Director

Pulse White Noise Acoustics

## 4 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; <ul style="list-style-type: none"> <li>0dB the faintest sound we can hear</li> <li>30dB a quiet library or in a quiet location in the country</li> <li>45dB typical office space. Ambience in the city at night</li> <li>60dB Martin Place at lunch time</li> <li>70dB the sound of a car passing on the street</li> <li>80dB loud music played at home</li> <li>90dB the sound of a truck passing on the street</li> <li>100dB the sound of a rock band</li> <li>115dB limit of sound permitted in industry</li> <li>120dB deafening</li> </ul>
<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<sub>Max</sub></i>	The maximum sound pressure level measured over a given period.
<i>L<sub>Min</sub></i>	The minimum sound pressure level measured over a given period.
<i>L<sub>1</sub></i>	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
<i>L<sub>10</sub></i>	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
<i>L<sub>90</sub></i>	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L <sub>90</sub> noise level expressed in units of dB(A).
<i>L<sub>eq</sub></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 <sub>A90</sub> 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<sub>w</sub></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 R <sub>w</sub> 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'<sub>w</sub></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<sub>p</sub> 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<sub>w</sub> 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.