

ATTACHMENT 7 - ACOUSTIC ASSESSMENT

JRPP-15-482 - Assessment of a Residential Aged Care Facility (RACF)

12-16 Florence Street, Oakhurst

The development application is supported by an Acoustic Assessment prepared by Renzo Tonin and dated February 2015 which has examined the conditions of the site and the potential noise impacts received within the proposed development, as well as the potential noise impacts generated by the development.

The Acoustic Assessment is based on long-term noise monitoring surveys (from 18 to 26 September 2014 inclusive) in 2 locations within the site as shown in the image below:

Location 1 – at the north-western corner of the site (near the Swim School).

Location 2 – at the southern end of the site near the Cassar Place boundary.

C.1 Long-term monitoring details

Location 1 - Cassar Place Boundary

Location 2 - Florence Street Boundary



As a result of the noise monitoring surveys, the predicted external noise levels are a maximum of **55 dB(A)** during the day, and a minimum of **50 dB(A)** during the night (10pm to 7am).

Within the Building

This report considers the operation of the development in accordance with the NSW Environmental Protection Authority (EPA) noise criteria in its Industrial Noise Policy (INP). The recommended design sound levels for building interiors within the proposed development is as follows:

Table 1: Recommended design sound levels for building interiors

Occupancy	Windows & Doors Condition	Design Noise Level	
		Day, L _{Aeq} (15hour)	Night, L _{Aeq} (9hour)
Sleeping areas	Closed	-	35 dB(A)
Living Areas	Closed	40 dB(A)	40 dB(A)
Apartment common areas	Closed	55 dB(A)	55 dB(A)

The assessment confirms that the development is capable of satisfying the above recommended levels during both the day time and night periods, with the implementation of window glazing measures.

Impact on neighbouring residential properties

Plant and equipment

The report considers the potential impact of the external noise emission from building services such as mechanical plant. **Tables 3 and 4** of the report (reproduced below) establishes the maximum noise emission from mechanical plant during the night period (10pm to 7am) is 40dB(A) (in accordance with the EPA's INP).

Table 3: Northern End of Site (Florence Street) L_{Aeq} design criteria for noise emission from mechanical plant (EPA INP)

	Column 1	Column 2	Column 3	Column 4
Time of Day	Rating Background Level (RBL) L90	Intrusiveness Criterion (RBL+5)	Amenity Criterion (Acceptable)	Project Specific Design Criterion L _{Aeq} , T
Day (7am to 6pm)	44 dB(A)	49 dB(A)	55 dB(A)	49 dB(A)
Evening (6pm to 10pm)	42 dB(A)	47 dB(A)	45 dB(A)	45 dB(A)
Night (10pm to 7am)	37 dB(A)	42 dB(A)	40 dB(A)	40 dB(A)

Table 4: Southern End of Site (Cassar Place) L_{Aeq} design criteria for noise emission from mechanical plant (EPA INP)

	Column 1	Column 2	Column 3	Column 4
Time of Day	Rating Background Level (RBL) L90	Intrusiveness Criterion (RBL+5)	Amenity Criterion (Acceptable)	Project Specific Design Criterion L_{Aeq} , T
Day (7am to 6pm)	41dB(A)	46 dB(A)	55 dB(A)	46 dB(A)
Evening (6pm to 10pm)	41 dB(A)	46 dB(A)	45 dB(A)	45 dB(A)
Night (10pm to 7am)	36 dB(A)	41 dB(A)	40 dB(A)	40 dB(A)

Explanatory notes:

Column 1 is the background noise level identified by the long-term noise survey.

Column 2 is the intrusiveness criterion, being the background noise plus 5 dB(A) (*which is considered to be a low or conservative allowance*).

Column 3 is the recommended L_{Aeq} noise level pursuant to the EPA's INP (based on 'Residence – Suburban' area in Section 2.2, Table 2.1 Amenity Criteria (Recommended L_{Aeq} noise levels from industrial noise sources).

Column 4 is the project specific design criterion based on the EPA's INP – being the lower of Columns 2 and 3.

Based on the above background readings taken from the 2 receiver locations, it is considered that the proposal is capable of being designed to meet the design criteria for noise emission from mechanical plant for neighbouring residents.

By way of background, when considering potential noise impacts during the night period, an alternative assessment criteria is 'sleep disturbance,' which is an event which has the potential to raise someone from their slumber, such as a police siren or someone yelling. Such an event is measured at the background noise level plus 15dB(A). The Acoustic Report which accompanies this application applies the relevant noise emission assessment as required by the requirements of the EPA's INP, being background level plus 5dB(A), which is lower / more conservative than the sleep disturbance criteria.

At this stage of the project, being the Development Application stage, the details of the plant and equipment to be selected are not known, therefore we will be requiring appropriate measures to be in place during the detailed design, construction, and occupation phases to ensure that all plant and equipment sought to be installed meet the above noise emission criteria.

The Acoustic Report makes the following recommendations to ensure the above noise emission criteria are achieved:

"Although at this stage details of mechanical plant have not been finalised, the following in-principle advice is provided.

- Acoustic assessment of mechanical services equipment will need to be undertaken during the detail design phase of the development to ensure that they shall not either singularly or in total emit noise levels which exceed the noise limits in EPA's Industrial Noise Policy or Council's requirements;*
- As noise control treatment can affect the performance of the mechanical services system, it is recommend that consultation with an acoustic consultant be made during the initial phase of mechanical services system design in order to reduce the need for revision of mechanical plant and noise control treatment;*

- *Mechanical plant noise emission can be controllable by appropriate mechanical system design and implementation of common engineering methods that may include any of the following:*
 - *procurement of 'quiet' plant,*
 - *strategic positioning of plant away from sensitive neighbouring premises, maximising the intervening shielding between the plant and sensitive neighbouring premises,*
 - *commercially available silencers or acoustic attenuators for air discharge and air intakes of plant;*
 - *acoustically lined and lagged ductwork;*
 - *acoustic screens and barriers between plant and sensitive neighbouring premises; and/or*
 - *Partially-enclosed or fully-enclosed acoustic enclosures over plant.*
- *Mechanical plant shall have their noise specifications and their proposed locations checked prior to their installation on site; and*
- *Fans shall be mounted on vibration isolators and balanced in accordance with Australian Standard 2625 "Rotating and Reciprocating Machinery – Mechanical Vibration".*

The Acoustic Report confirms that an assessment of any noise from mechanical plant equipment servicing the buildings shall be undertaken during the detailed design and equipment selection stages to ensure that plant and equipment is designed in accordance with the relevant acoustic criteria.

This approach is considered suitable to ensure that the maximum noise emission from the facility's plant and equipment does not exceed 40dB(A) during the night period, and enables the plant and measures to be tested in a manner which is site specific and therefore most effective. **Conditions** of consent are recommended to be imposed which require:

- An Acoustic Statement to be submitted to Council for review prior to the issue of a Construction Certificate (at detailed design stage) confirming that all plant and equipment and associated noise mitigation measures are capable of meeting the criteria outlined within the EPA's INP (**Condition 3.2.3**).
- A Post Verification Acoustic Report to be submitted to Council for review which ensures that the operation of the plant and equipment meets the criteria outlined within the EPA's INP prior to the issue of any occupation certificate (**Condition 10.10.3**).
- A Post Operation Acoustic Report within 3 months of commencement of operation to verify that the operation of the plant and facility do not exceed the INP criteria and especially the sleep disturbance criteria (**Condition 12.1.2**).

The implementation of these measures is considered suitable to ensure that the acoustic amenity of the occupants and neighbouring properties is protected.

Impacts from staff movements

The applicant has indicated that there will be a maximum of 33 staff on site at any one time. This consists of approximately 6 office staff between the hours of 9am to 5pm. The day shift (7am to 3pm) will consist of approximately 27 staff. The afternoon shift (3pm to 10pm) will consist of approximately 14 staff. The night shift (10pm to 7am) will consist of approximately 7 staff.

The acoustic assessment does not address the noise impacts from staff entering and exiting the site.

However, we consider the staff shift / changeover times to occur at reasonable time periods which are not anticipated to adversely impact on the neighbouring properties during the night period, being 10pm to 7am. To ensure this is the case, a **condition** of consent is recommended to be imposed requiring the staff changeover periods to be undertaken in a manner which is respectful of the neighbouring properties and does not result in excessive noise impacts **Condition 12.3.6**).

Also that the Post Operation Acoustic Report measure the noise generated by the operation of the night time shift change and either ensure it complies with the noise emission criterion during the night period (10pm to 7am) or make any recommendations to be introduced to control the noise so as to meet the noise emission criterion during the night period (10pm to 7am) (**Condition 12.1.2**).

Waste collection and deliveries

To ensure that the waste collection and delivery area does not result in adverse noise impacts on the neighbouring properties, a **condition** of consent is recommended to be imposed restricting waste collection and deliveries to between 7am to 6pm Monday to Saturday only, no Sunday or public holiday collection is to be permitted (**Condition 11.1.3**).