

3 Central Road, Avalon Beach

S4.55 Acoustic Assessment

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## 1 INTRODUCTION

This report has been prepared to assess noise impacts associated with the proposed residential development to be located at 3 Central Road, Avalon Beach.

This document addresses the noise impacts associated with the external noise intrusion and noise emissions which include:

- Traffic noise impacts from Barrenjoey Road, and
- Noise emissions from mechanical plant and equipment servicing the development (in principle).

The subject site and local context are indicated in Figure 1.

## 2 REFERENCED DOCUMENTS

### 2.1 BACKGROUND INFORMATION USED

This assessment has been conducted using the following documentation

- "3 Central Road, Avalon Beach" architectural drawings provided by COTTEEPARKER, Project No. 5914 dated 19/05/2025.
- Previously prepared "Acoustic Design Report" by SLR (*ref: 610.30873-R01*, Version No: -v0.1, dated July 2022)

### 2.2 PLANNING GUIDELINES

Acoustic Logic have used the following documents and regulations in the assessment of the above noise impacts:

- Northern Beaches Council Document 'Pittwater 21 Development Control Plan (**DCP**),
- NSW Department of Planning and Environment's document 'State Environmental Planning Policy (**SEPP**) (Transport and Infrastructure) 2021",
- NSW Department of Planning's 'Developments near Rail Corridors or Busy Roads – Interim Guideline' (**DNRCBR**), and
- NSW Environmental Protection Authority (EPA) – 'Noise Policy for Industry' (**NPfi**) 2017.

### 3 SITE DESCRIPTION AND THE PROPOSAL

The project site is located at 3 Central Road, Avalon Beach and proposes a residential development consisting of the following:

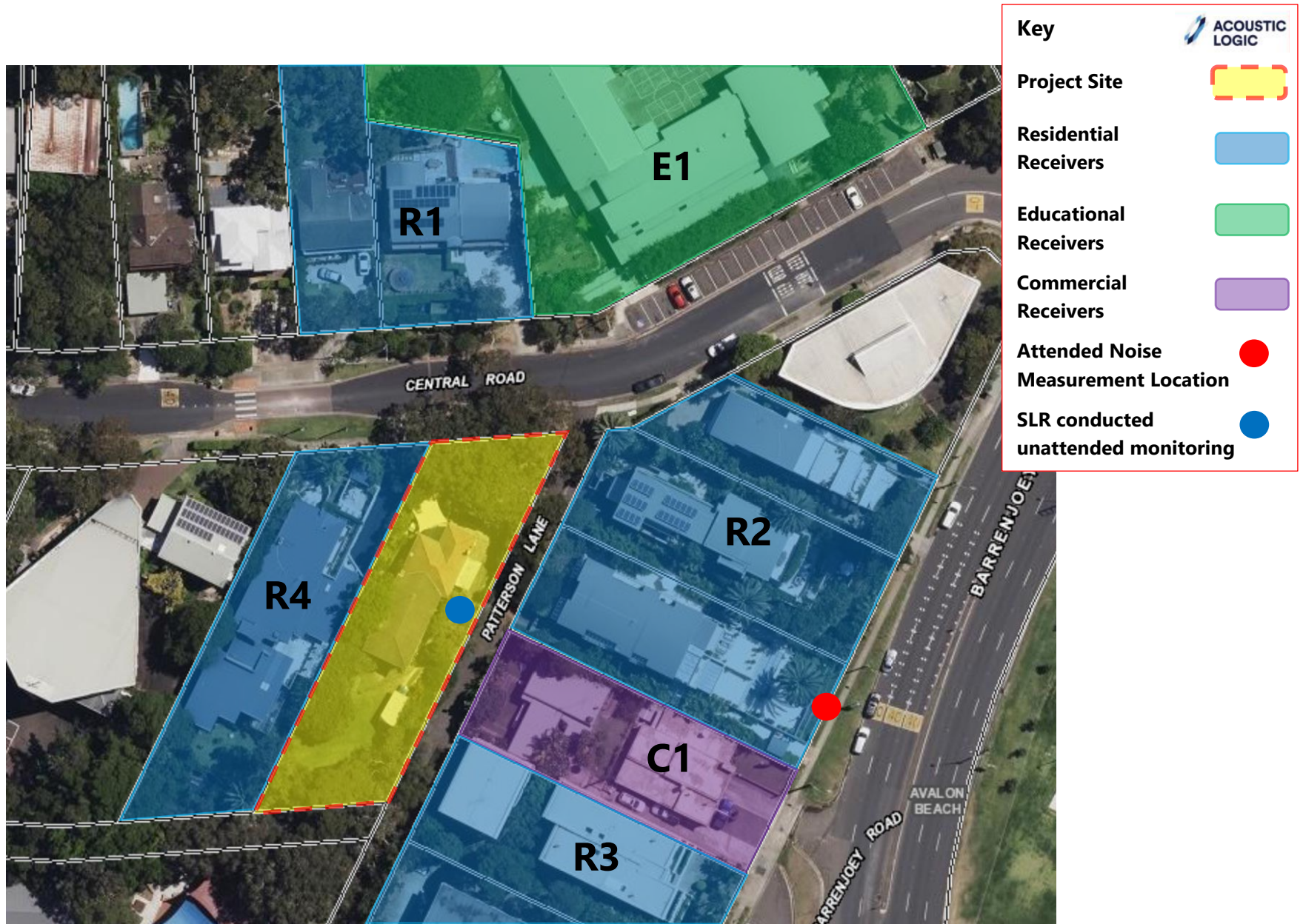
- A lower ground floor for car parking spaces and 2 residential accommodation units, and
- 2 levels of residential accommodation.

#### 3.1 NEAREST SENSITIVE RECEIVERS

**Table 1 – Sensitive Receivers**

<b>Receiver (Refer Figure 1)</b>	<b>Land Use</b>	<b>Comment</b>
<b>R1</b>	Residential	A collection of residential receivers located at 54 and 56 Central Road, Avalon Beach maintained north of the project site.
<b>R2</b>	Residential	A collection of multistorey residential dwellings located from 691-695 Barrenjoey Road, Avalon Beach maintained east of the project site.
<b>R3</b>	Residential	A collection of multistorey residential dwellings located at 63 and 65 Old Barrenjoey Road, Avalon Beach maintained southeast of the project site.
<b>R4</b>	Residential	5 Central Road, Avalon Beach; a residential complex maintained west of the project site.
<b>E1</b>	Educational	Maria Reginal Catholic Primary School, an educational receiver maintained northeast of the project site.
<b>C1</b>	Commercial	Fire and Rescue NSW Avalon Fire Station, a commercial receiver maintained east of the project site.

An aerial view of the project site and measurement locations are presented in Figure 1 below.



**Figure 1: Project Site Map with Local Context**

## 4 NOISE DESCRIPTORS

Ambient noise constantly varies in level from moment to moment, so it is not possible to accurately determine prevailing noise conditions by measuring a single, instantaneous noise level.

To quantify ambient noise, a 15-minute measurement interval is typically utilised. Noise levels are monitored continuously during this period, and then statistical and integrating techniques are used to characterise the noise being measured.

The principal measurement parameters obtained from the data are:

**$L_{eq}$**  - represents the average noise energy during a measurement period. This parameter is derived by integrating the noise levels measured over the measurement period.  $L_{eq}$  is important in the assessment of noise impact as it closely corresponds with how humans perceive the loudness of time-varying noise sources (such as traffic noise).

**$L_{90}$**  – This is commonly used as a measure of the background noise level as it represents the noise level heard in the typical, quiet periods during the measurement interval. The  $L_{90}$  parameter is used to set noise emission criteria for potentially intrusive noise sources since the disturbance caused by a noise source will depend on how audible it is above the pre-existing noise environment, particularly during quiet periods, as represented by the  $L_{90}$  level.

**$L_{10}$**  is used in some guidelines to measure noise produced by an intrusive noise source since it represents the average of the loudest noise levels produced at the source. Typically, this is used to assess noise from licenced venues.

**$L_{max}$**  is the highest noise level produced during a noise event and is typically used to assess sleep arousal impacts from short term noise events during the night. It is also used to assess internal noise levels resulting from aircraft and railway ground vibration induced noise.

**$L_1$**  is sometimes used in place of  $L_{max}$  to represent a typical noise level from a number of high-level, short-term noise events.



## 5 EXISTING ACOUSTIC ENVIRONMENT

Unattended noise monitoring was conducted at the site in order to establish the existing ambient noise environment.

### 5.1 UNATTENDED NOISE MONITORING

Unattended noise monitoring has been provided within the acoustic design report prepared by SLR consulting. A summary of the unattended noise monitoring has been extrapolated from the report and presented below.

**Table 3 Summary of Unattended Noise Logging Results**

ID	Address	Measured Noise Levels (dBA)					
		Background Noise (RBL)			Average Noise (LAeq)		
		Day	Evening	Night	Day	Evening	Night
L01	3 Central Road, Avalon Beach	44	38	33	55	48	45

Note 1: The assessment periods are the daytime which is 7 am to 6 pm Monday to Saturday and 8 am to 6 pm on Sundays and public holidays, the evening which is 6 pm to 10 pm, and the night-time which is 10 pm to 7 am on Monday to Saturday and 10 pm to 8 am on Sunday and public holidays. See the NSW EPA *Noise Policy for Industry*.

### 5.2 ATTENDED NOISE MEASUREMENTS

Acoustic Logic have undertaken attended noise measurements to supplement the SLR unattended noise monitoring provided by SLR consulting.

#### 5.2.1 Measurement Period

The attended noise measurement was conducted on Tuesday 1<sup>st</sup> of April 2025 between 3:45pm and 4:00pm.

#### 5.2.2 Measurement Equipment

The measurement was conducted using a Norsonic 140 Sound Analyser. The analyser was set to fast response and calibrated before and after the measurements using a Norsonic Sound Calibrator type 1251. No significant drift was noted.

#### 5.2.3 Measured External Noise Levels

The measured external noise level for the attended measurement is presented in the table below.

**Table 4 - Attended Traffic Noise Measurements-**

Location	Time of Measurement	Measured Noise Level dB(A) <sub>Leq(15min)</sub>
Barrenjoey Road (4m from kerb 180° view of the road)	3:45pm – 4:00pm 1/04/2025	66



## 6 EXTERNAL NOISE INTRUSION ASSESSMENT

The noise source assessed as potentially impacting the proposed development is traffic noise from Barrenjoey Road.

### 6.1 TRAFFIC NOISE INTRUSION CRITERIA

A traffic noise intrusion assessment has been conducted based off the requirements of the following acoustic noise criteria/standards:

- Northern Beaches Council Document 'Pittwater 21 Development Control Plan (**DCP**),
- NSW Department of Planning and Environment's document 'State Environmental Planning Policy (**SEPP**) (Transport and Infrastructure) 2021", and
- NSW Department of Planning's 'Developments near Rail Corridors or Busy Roads – Interim Guideline' (**DNRCBR**).

#### 6.1.1 Pittwater 21 DCP

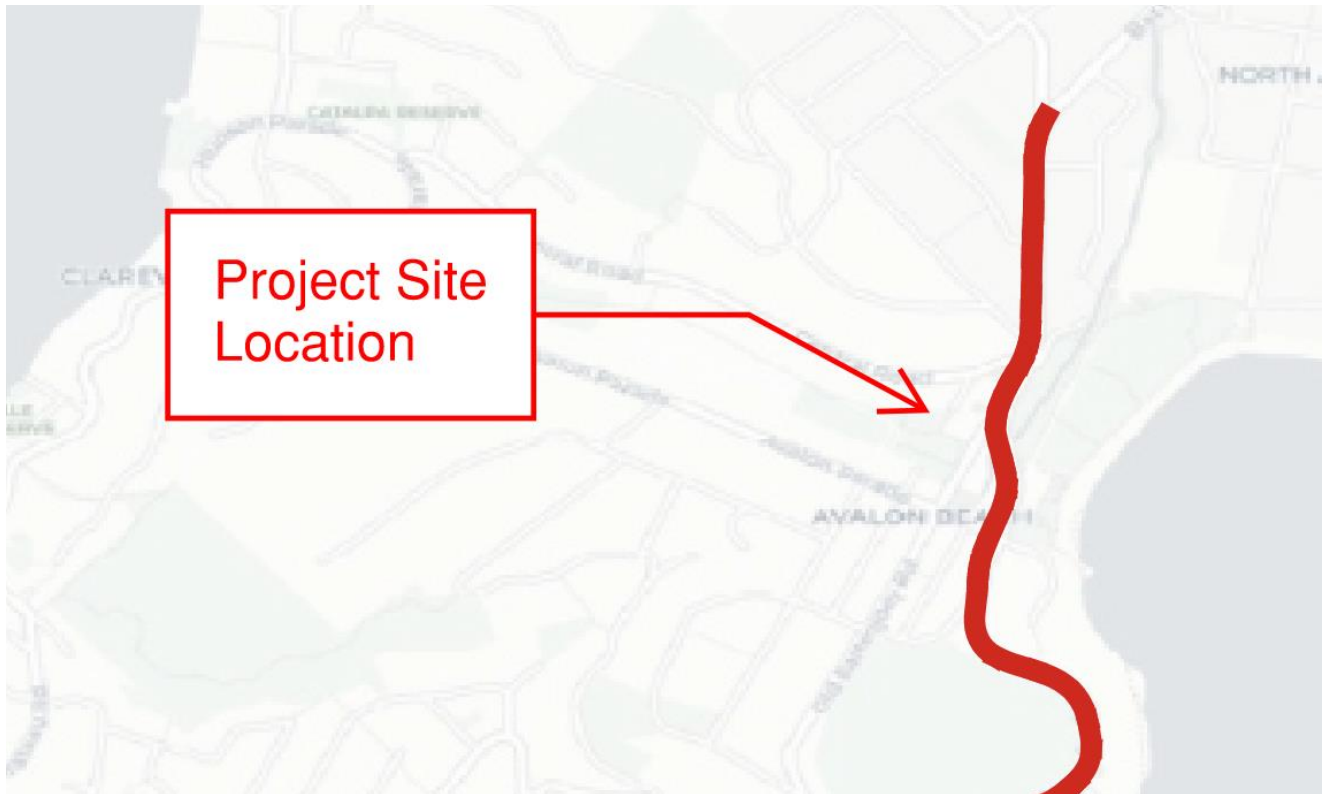
The Pittwater 21 DCP does not stipulate any quantitative requirements with respect to external noise intrusion treatments and as such the following criterion will be utilized for this assessment.

#### 6.1.2 NSW Department of Planning and Environment (SEPP) (Transport and Infrastructure) 2021

##### **"2.120 Impact of road noise or vibration on non-road development**

- (1) *This clause applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transit way or any other road with an annual average daily traffic volume of more than 20,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:*
  - (a) *a building for residential use,*
  - (b) *a place of public worship,*
  - (c) *a hospital,*
  - (d) *an educational establishment or childcare centre.*
- (3) *If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:*
  - (a) *in any bedroom in the building--35 dB(A) at any time between 10 pm and 7 am,*
  - (b) *anywhere else in the building (other than a garage, kitchen, bathroom or hallway) --40 dB(A) at any time."*

Represented in Figure 2 and based on Clause 2.120 item 1, it is expected that the stretch of Barrenjoey Road is a road carrying an annual average daily traffic volume of more than 20,000. Therefore, the project site will be assessed based on the requirements of Clause 2.120 item 3 above.



**Figure 2: SEPP Traffic Volume Map with Project Site Location**

### **6.1.3 NSW Department of Planning and Environment's Document – 'Developments near Rail Corridors or Busy Roads – Interim Guideline'**

Section 3.5 of the NSW Department of Planning's 'Development near Rail Corridors and Busy Roads (Interim Guideline)' states:

*"The following provides an overall summary of the assessment procedure to meet the requirements of clauses 87 and 102 of the Infrastructure SEPP. The procedure covers noise at developments for both Road and Rail.*

- *If the development is for the purpose of a building for residential use, the consent authority must be satisfied that appropriate measures will be taken to ensure that the following  $L_{Aeq}$  levels are not exceeded:*
  - *in any bedroom in the building: 35dB(A) at any time 10pm-7am*
  - *anywhere else in the building (other than a garage, kitchen, bathroom or hallway): 40dB(A) at any time.*

#### 6.1.4 Summary of Noise Intrusion Criteria

The governing project criteria is presented in the table below based on requirements above.

**Table 2 – Summary of Internal Noise Level Criteria**

<b>Space/Activity Type</b>	<b>Internal Traffic Noise Criteria dB(A)<math>L_{eq}(\text{period})</math></b>
Bedroom	35dB(A) $L_{eq}(9\text{hour})$
Living Room	40dB(A) $L_{eq}(15\text{hour})$

#### 6.2 CALCULATION OF FACADE NOISE LEVELS

The measured noise levels have been used as a basis for predicting noise levels around the development by:

- Correcting for different distances between the noise source compared to the monitoring location.
- Barrier effects, where applicable.
- Reflections off adjacent structures where significant.

The CoRTN traffic noise prediction model has been used to calculate the above adjustments as indicated above.

##### 6.2.1 Discussion

The analysis indicates that mitigation of noise impacts is needed to achieve compliance with the nominated assessment criteria. Complying mitigation is provided in Section 7.

## 7 COMPLYING MITIGATION

### 7.1.1 Glazed Windows

The following constructions are recommended to comply with the project noise objectives. Aluminium framed/sliding glass doors and windows will be satisfactory provided they meet the following criteria. All external windows and doors listed are required to be fitted with Q-Ion type acoustic seals. (**Mohair Seals are unacceptable**).

Thicker glazing may be required for structural, safety or other purposes. Where it is required to use thicker glazing than scheduled, this will also be acoustically acceptable.

The recommended constructions are listed in the table below.

**Table 3 – Recommended Glazing Thicknesses**

Space	Glazing Construction	Acoustic Seals
Bedroom Spaces	6.38mm Laminated	<b>Yes</b>
Living Room	6mm Float	<b>Yes</b>

It is recommended that only window systems having test results indicating compliance with the required ratings obtained in a certified laboratory be used where windows with acoustic seals have been recommended. All windows shall have glazing thicknesses equal to those recommended above and are to have Raven RP10 to the top, bottom and sides.

In addition to complying with the minimum scheduled glazing thickness, the  $R_w$  rating of the glazing fitted into open-able frames and fixed into the building opening should not be lower than the values listed in Table 4 below for all rooms. Where nominated, this will require the use of acoustic seals around the full perimeter of open-able frames and the frame will need to be sealed into the building opening using a flexible sealant.

**Table 4 – Minimum  $R_w$  of Glazing (with Acoustic Seals)**

Glazing Assembly	Minimum $R_w$ of Installed Window
6mm Float	29
6.38mm Laminate	31

### 7.1.2 External Roof/Ceiling Construction

Roof constructions of brick, concrete or masonry will not require acoustic upgrading. Where other systems are proposed they should be reviewed and approved by a suitably qualified acoustic consultant.

### 7.1.3 External Wall Construction

External walls constructed of brick, concrete or masonry will not require acoustic upgrading. Acoustic upgrading is required for the proposed new lightweight wall construction. The following is recommended.

**Table 5 – External Light Weight Wall Construction**

Space	Internal Lining	Stud System	External Lining
All Spaces	1 x 13mm Plasterboard	Minimum 92mm stud with 75mm thick 11kg/m <sup>3</sup> glasswool insulation to the stud cavity	9mm FC Sheet

If any penetrations are required through any of the external lining of any of the systems above for other building services, all gaps should be filled with acoustic sealant to ensure compliance with internal noise level requirements.

### 7.1.4 Ventilation Requirements

With respect to natural ventilation of the dwelling, the NSW Department of Planning document "Development near Busy Roads and Rail Corridors - Interim Guideline" dictates that:

- *"If internal noise levels with windows or doors open exceed the criteria by more than 10dB(A), the design of the ventilation for these rooms should be such that occupants can leave windows closed, if they so desire, and also to meet the ventilation requirements of the Building Code of Australia."*

With windows open, the allowable internal noise goal is permitted to be 10dB(A) higher than when the windows are closed (i.e. – allowable level in bedrooms becomes 45dB(A), and 50dB(A) in living rooms).

Analysis indicates that internal noise goals are achieved for the entire development with natural ventilation.

## 8 NOISE EMISSION ASSESSMENT

### 8.1 PROJECT NOISE EMISSION CRITERIA

The noise criteria for this site are established from the following documents:

- Northern Beaches Council Document 'Pittwater 21 Development Control Plan (**DCP**),
- NSW Environmental Protection Authority (EPA) – 'Noise Policy for Industry' (**NPfi**) 2017.

### 8.2 PITTWATER 21 DCP

Pittwater 21 DCP stipulates the following requirements with respect to noise emissions.

*"Noise generating plants including pool/spa motors, air conditioning units and the like shall not produce noise levels that exceed 5dBA above the background noise level when measured from the nearest property boundary."*

**Table 6 – External Mechanical Noise Criteria (Pittwater 21 DCP)**

Receiver	Time Period	External Noise Criteria (BG +5dB(A) $L_{eq15min}$ )
All surrounding receivers	Day (7am – 6pm)	49
	Evening (6pm – 10pm)	43
	Night (10pm – 7am)	38

### 8.3 NSW EPA NOISE POLICY FOR INDUSTRY (NPFI) 2017

The NSW EPA Noise Policy for Industry (NPfi) 2017, has two criteria which need to be satisfied: namely the Intrusiveness noise level criteria and the Project Amenity noise level criteria. The Project Noise Trigger Levels are then established based on the lower of the intrusiveness and project amenity levels.

Noise levels are to be assessed at the property boundary or nearby dwelling, or at the balcony or façade of an apartment.

#### 8.3.1 Intrusiveness Noise Level Criteria

The guideline is intended to limit the audibility of noise emissions at residential receivers and requires that noise emissions measured using the  $L_{eq}$  descriptor do not exceed the background noise level by more than 5dB(A). Where applicable, the intrusive noise level should be penalised (increased) to account for any annoying characteristics such as tonality.

Background noise levels adopted are presented in Section 5 Noise emissions from the site should comply with the noise levels presented below when measured at nearby property boundary.

**Table 7 – Project Intrusiveness Noise Levels**

Receiver	Period/Time	Project Intrusiveness Noise Levels dB(A) $L_{Aeq}(15min)$
Residential Receivers <b>R1, R2, R3 and R4</b>	Day (7am-6pm)	49
	Evening (6pm-10pm)	43
	Night (10pm-7am)	38

### 8.3.2 Project Amenity Noise Level Criteria

The guideline is intended to limit the absolute noise level from all noise sources to a level that is consistent with the general environment.

The NSW EPA Noise Policy for Industry sets out acceptable noise levels for various localities. Table 2.2 on page 11 of the policy indicates 3 categories to distinguish different residential areas. They are rural, suburban, urban. This site is categorised by suburban receivers.

For the purposes of this condition:

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
- Evening is defined as the period from 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and public holidays.

The project amenity noise level is calculated by taking the recommended amenity noise level (as presented in table 2.2 of the policy), subtracting 5dB(A) and then adding 3dB(A) to convert from  $L_{Aeq, period}$  to a  $L_{Aeq, 15 minute}$  descriptor. The project amenity noise level criteria are presented in the table below.

**Table 13 – Project Amenity Noise Levels**

Location	Period/Time	Project Amenity Noise Levels dB(A) $L_{Aeq}$
Nearby residences – Suburban Receivers	Day (7am – 6pm)	53
	Evening (6pm – 10pm)	43
	Night (10pm – 7am)	38
Educational Receivers	Worst 1 hour	35 (internal)
Commercial Receivers	When in use	63



### 8.3.2.1 Project Noise Trigger Levels

The project noise trigger level (as outlined in section 2.1 of the policy) is the lower of the intrusiveness and project amenity noise levels. The project noise trigger levels are presented in the table below.

**Table 8 – Project Noise Trigger Levels (NPfl)**

Receiver(s)	Time Period	Assessment Background Noise Level dB(A)L <sub>90</sub>	Project Amenity Criteria dB(A) L <sub>eq</sub>	Intrusiveness Criteria L <sub>eq</sub>
<b>R1, R2, R3, R4</b>	Day	44	53	<b>49</b>
	Evening	38	43	<b>43</b>
	Night	33	38	<b>38</b>
<b>E1</b>	When in use	-	<b>35 (internally)</b>	-
<b>C1</b>	When in use	-	<b>63</b>	-

The project noise trigger levels are indicated by the bolded values in the table above.

## 9 MECHANICAL PLANT NOISE

Detailed plant selection and location has not been undertaken at this stage. Satisfactory levels will be achievable through appropriate plant selection, location and if necessary, standard acoustic treatments such as duct lining, acoustic silencers and enclosures.

Noise emissions from all mechanical services to the closest residential receiver should comply with the requirements of Section 8.

Detailed acoustic review should be undertaken at CC stage to determine acoustic treatments to control noise emissions to satisfactory levels.

## 10 CONCLUSION

This report presents an acoustic assessment of noise impacts associated with the proposed residential development to be located at 3 Central Road, Avalon Beach.

Internal noise criteria for external noise impacts have been formulated with reference to the following documents:

- Northern Beaches Council Document 'Pittwater 21 Development Control Plan (**DCP**),
- NSW Department of Planning and Environment's document 'State Environmental Planning Policy (**SEPP**) (Transport and Infrastructure) 2021", and
- NSW Department of Planning's 'Developments near Rail Corridors or Busy Roads – Interim Guideline' (**DNRCBR**).

External noise emissions criteria have been setup in this report to satisfy the requirements from the following documents:

- Northern Beaches Council Document 'Pittwater 21 Development Control Plan (**DCP**),
- NSW Environmental Protection Authority (EPA) – 'Noise Policy for Industry' (**NPfI**) 2017.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'A Pham', with a stylized, cursive script.

Acoustic Logic Pty Ltd  
Andrew Pham