Taree Large Format Centre, 202 Bushland Drive, Taree – DA Acoustic Assessment

AJA Developments Pty Ltd

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Information reported herein is based on the interpretation of data collected,
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1 INTRODUCTION

Pulse White Noise Acoustics Pty Ltd (PWNA) has been engaged by Andres Property Group to undertake an acoustic assessment for the proposed Taree Large Format Centre to be located at 202 Bushland Drive, Taree NSW 2430.

This assessment will address the following:

- Noise emissions on nearby receivers from operation of any building services (i.e., electrical, hydraulic, mechanical plant and electrical).
- Noise emissions on nearby receivers from onsite vehicle movements (both passenger and trucks) servicing or access the facility.
- Additional noise impacts on NSW public roads as a result on the increase of vehicle traffic on the local road network associated with the facility.
- Noise emissions on nearby receivers from the tenancies and proposed gym.
- A review of construction noise and vibration impacts associated with the construction of the proposed facility.

This report will discuss the relevant acoustic criteria which have been adopted as well as the outcome of the assessment.

A list of acoustic terminology used in this report is included in Appendix A of this report.

1.1 Relevant Guidelines

Furthermore, the noise emission from the operation of any building services, use of any tenancy and vehicle movements onsite are regulated by the NSW EPA *Noise Policy for Industry (NPI) 2017*.

Noise levels on local roads associated with vehicles accessing the site is regulated by the NSW EPA *Road Noise Policy (RNP)* 2011.

Noise and vibration impacts associated with the construction of the development is regulated by the NSW EPA *Interim Construction Noise Guideline (ICNG) 2009* and NSW EPA *Assessing Vibration – A technical guideline 2006.*

1.2 Proposed Development and Operation Use/Hours

The proposed development includes the following:

- Sixteen (16) commercial tenancies (including a gym within tenancy 15).
- Perimeter service road for deliveries and the like.
- 492 passenger vehicle parking spaces.

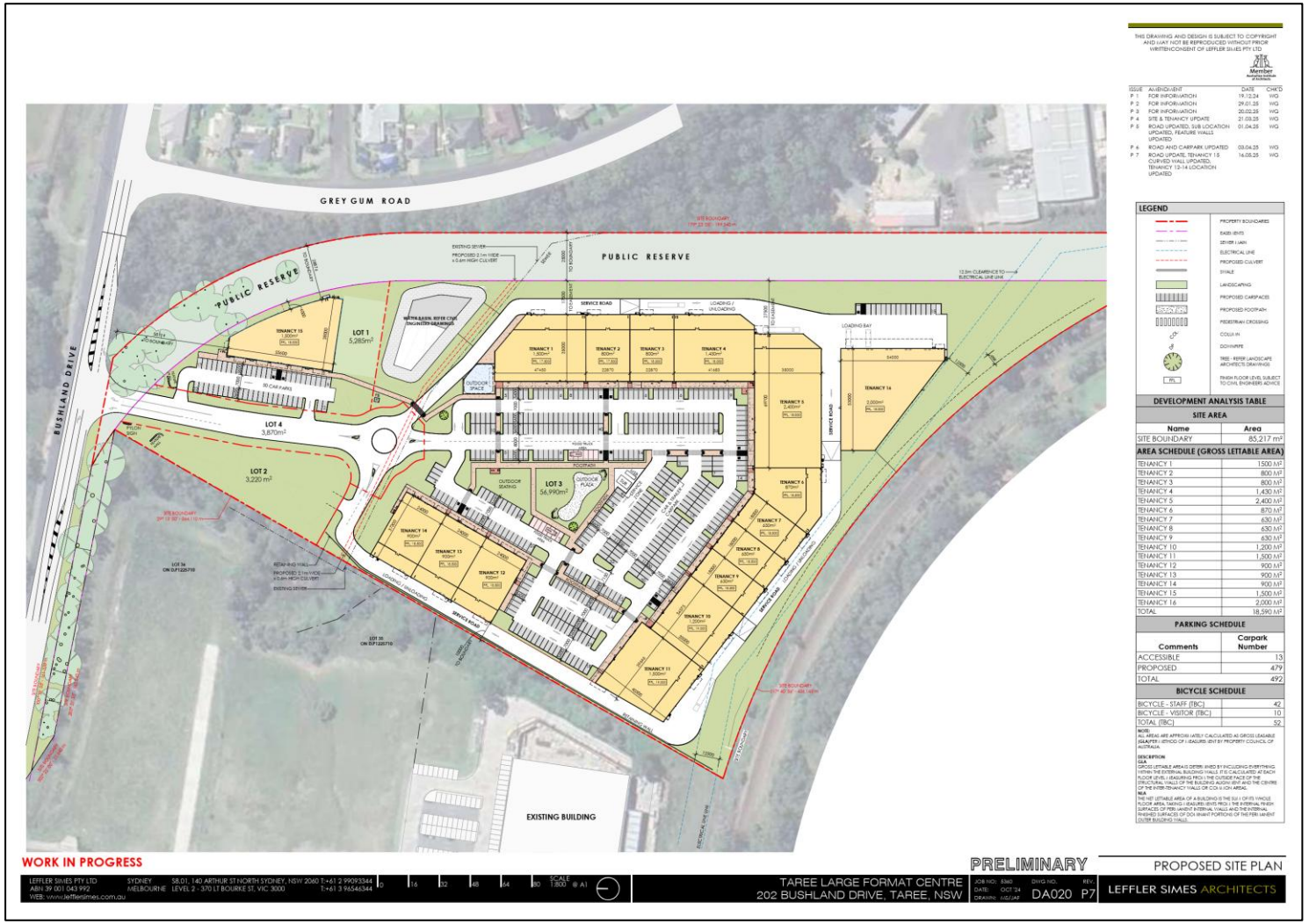
Core operation hours for the majority of the commercial tenancies are likely 7:00am to 9:00pm Monday to Friday and 7:00am to 7:00pm Saturday, Sunday and Public Holiday. In the event a specific tenancy wishes to operate greater number of hours, a separate Development Application (DA) will be undertaken.

PWNA has been instructed that the movement of trucks onsite will not occur before 7:00am Monday to Saturday and 8:00am on Sunday and Public Holidays. Additionally, all truck movements will cease by 6:00pm and will not continue until the following times mentioned afore.

For the gym tenancy it is proposed that the use will be 24-hours.

Architectural drawings for the proposed development, which have been used in our assessment, are prepared by Leffer Simes Pty Ltd, dated 16/05/2025.

Figure 1 Architectural Site Plan



1.3 Site Description

The proposed site is located at 202 Bushland Drive, Taree NSW 2430. The site is defined as a E4 use and has surrounding E3, RE2 and R1 surrounding the site as described in the NSW Planning ePlanning Spatial Viewer Zoning Maps.

Located along the northern boundary of the site is Bushland Drive which carries a medium volume of traffic, further north is existing bushland and other commercial tenancies along Flametree Close.

Situated along the immediate eastern boundary of the site is a Public Reserve with bushland and residential dwellings located beyond along Greg Gum Road. Situated to the southeast of the site is further industrial tenancies situated also along Grey Gum Road.

To the south of the site is a rail corridor and Club Taree Golf Course located further beyond. Additional residential dwellings are situated to the south and western boundaries across the rail corridor and Club Taree Golf Course.

Finally to the immediate western boundary of the site is Bunnings Taree and vacant plots of land likely for further commercial type tenancies to be constructed in the future. Beyond the vacant parcels of land are residential dwellings located along the eastern and western sides of Wingham Road which carried a medium volume of traffic.

The nearest sensitive receivers to the site have been identified below.

Receiver 1: Residential dwellings to the east of the site across Grey Gum Road, located at 24-54 Greg Gum Drive, Taree.

Receiver 2: Residential dwellings situated to the west of the site along Wingham Road, located at 264-276 Wingham Road and 290-292 Bushland Drive, Taree.

Receiver 3: Residential dwelling situated to the north of Bushland Drive opposite the site, located at 163 Bushland Drive, Taree

A map showing the site location and all measurement locations as well as the nearest receivers is provided in Figure 2 below.

Figure 2 Site Map, Measurement Locations and Surrounding Receivers – Sourced from SixMaps NSW

2 ACOUSTIC NOISE SURVEY

2.1 Onsite Noise Measurements

2.1.1 Unattended Noise Monitoring

An unattended noise survey was conducted between Friday 24th January 2025 and Saturday 1st February 2025 at the nearest moist sensitive residential receivers along Grey Gum Road. This is presented in Figure 2 above. This survey was conducted to measure the existing background noise level. All data in the graphs presented in Appendix B have not been corrected (i.e., raw data is presented).

Instrumentation for the conducted survey featured a Rion NL-42 (serial number 00396931) sound level meter. Calibration of the logger was checked prior to and following the measurements. Drift in calibration did not exceed ±0.5 dB. All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

Charts presenting summaries of the measured daily noise data are attached in Appendix B. The charts present each 7-day period and show the LA10, LAeq and LA90 noise levels for the corresponding 15-minute periods. This data has been filtered to remove periods affected by adverse weather conditions based on weather information.

2.1.2 Results in accordance with the NSW EPA Noise Policy for Industry (NPI) 2017 (RBL's)

In order to assess the acoustical implications of the development at nearby noise sensitive receivers, the measured background noise data of the logger was processed in accordance with the NSW EPA's Noise Policy for Industry (NPI,2017).

The Rating Background Noise Level (RBL) is the background noise level used for assessment purposes at the nearest potentially affected receiver. It is the 90th percentile of the daily background noise levels during each assessment period, being day, evening and night. RBL $L_{A90\ (15minute)}$ and L_{Aeq} noise levels are presented in the table below.

Data affected by adverse meteorological conditions and by spurious and uncharacteristic events have been excluded from the results, and also excluded from the data used to determine the noise emission criteria. Meteorological information has been obtained from the Taree Airport (ID 060141) which is located within 30 km from the project site. Levels presented below are processed results with extraneous weather events removed.

Table 1 Measured Ambient Noise Levels corresponding to the NPI's Assessment Time Periods

Measurement Location	Daytime [1]		Evening [1]		Night-time [1]	
	L_{A90} [2] (dBA)	L_{Aeq} [3] (dBA)	L_{A90} [2] (dBA)	L_{Aeq} [3] (dBA)	L_{A90} [2] (dBA)	L_{Aeq} [3] (dBA)
34 Grey Gum Road, Taree - See Figure 2	57	62	38	56	31	51

Note 1 For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am.

Note 2 The LA90 noise level is representative of the "average minimum background sound level" (in the absence of the source under consideration), or simply the background level.

Note 3 The LAeq is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

3 ACOUSTIC CRITERIA

3.1 Midcoast Council Local Environmental Plan (LEP)

A review of the Midcoast Council LEP indicates no specific acoustic requirements, in the absence the NSW EPA *Noise Policy for Industry (NPI) 2017* will be adopted.

3.2 Midcoast Council Development Control Plan (DCP)

A review of the Midcoast Council DCP indicates no specific acoustic requirements, in the absence the NSW EPA *Noise Policy for Industry (NPI) 2017* will be adopted.

3.3 NSW EPA Noise Policy for Industry (2017)

In NSW, the control of noise emissions is the responsibility of Local Government and the NSW Environment Protection Authority (NSW EPA). In October 2017, the NSW EPA released the *Noise Policy for Industry* (NSW NPI). The purpose of the policy is to ensure that noise impacts associated with particular industrial developments are evaluated and managed in a consistent and transparent manner. The policy aims to ensure that noise is kept to acceptable levels in balance with the social and economic value of industry in NSW.

The NSW NPI criteria for industrial noise sources have two components:

- Controlling the intrusive noise impacts for residential receivers in the short-term; and
- Maintaining noise level amenity of particular land uses for residents and sensitive receivers in other land uses.

The project noise trigger level is derived from the more stringent value out of the project intrusiveness noise level and the project amenity noise level.

The NSW Environmental Protection Authority (EPA) *Noise Policy for Industry* (NPI), previously the Industrial Noise Policy, details noise criteria for the control of noise generated from the operation of developments and the potential for impact on surrounding receivers.

The NPI includes both intrusive and amenity criteria which are summarised below.

1. Intrusive noise level criteria, The NPI states the following:

   'The intrusiveness *of an industrial noise source may generally be considered acceptable if the level of noise from the source (represented by the LAeq descriptor), measured over a 15minute period, does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment.'*

2. Amenity noise level criteria, The NPI states the following:

   'To limit continuing increases in noise levels from application of the intrusiveness level alone, the ambient noise level within an area from all industrial noise sources combined should remain below the recommended amenity noise levels specified in Table 2.2 where feasible and reasonable. The recommended amenity noise levels will protect against noise impacts such as speech interference, community annoyance and some sleep disturbance.'

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

   Where the resultant project amenity noise level is 10 dB or more lower than the existing industrial noise level. In this case the project amenity noise levels can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.

The LAeq is determined over a 15-minute period for the project intrusiveness noise level and over an assessment period (day, evening and night) for the project amenity noise level. This leads to the situation where, because of the different averaging periods, the same numerical value does not necessarily represent the same amount of noise heard by a person for different time periods. To standardise the time periods for the intrusiveness and amenity noise levels, this policy assumes that the LAeq,15min will be taken to be equal to the LAeq, period + 3 decibels (dB), unless robust evidence is provided for an alternative approach for the particular project being considered.

Project amenity noise level (ANL) is urban ANL (Table 2.1) minus 5 dB(A) plus 3 dB(A) to convert from a period level to a 15-minute level (dB = decibel; dB[A] = decibel [A-weighted]; RBL = rating background noise level).

3.3.1 Intrusive Noise Impacts

The NSW NPI states that the noise from any single source should not intrude greatly above the prevailing background noise level. Industrial noises are generally considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (L_{Aeq}), measured over a 15-minute period, does not exceed the background noise level measured in the absence of the source by more than 5 dB(A). This is often termed the Intrusiveness Criterion.

The 'Rating Background Level' (RBL) is the background noise level to be used for assessment purposes and is determined by the methods given in the NSW NPI. Using the rating background noise level approach results in the intrusiveness criterion being met for 90% of the time. Adjustments are to be applied to the level of noise produced by the source that is received at the assessment point where the noise source contains annoying characteristics such as tonality or impulsiveness.

3.3.2 Protecting Noise Amenity

To limit continuing increases in noise levels, the maximum ambient noise level within an area from industrial noise sources should not normally exceed the acceptable noise levels specified in Table 2.2 of the NSW NPI. That is, the ambient L_{Aeq} noise level should not exceed the level appropriate for the particular locality and land use. This is often termed the 'Background Creep' or Amenity Criterion.

The amenity assessment is based on noise criteria specified for a particular land use and corresponding sensitivity to noise. The cumulative effect of noise from industrial sources needs to be considered in assessing the impact. These criteria relate only to other continuous industrial-type noise and do not include road, rail or community noise. If the existing (measured) industrial-type noise level approaches the criterion value, then the NSW NPI sets maximum noise emission levels from new sources with the objective of ensuring that the cumulative levels do not significantly exceed the criterion.

3.3.3 Area Classification

The NSW NPI characterises the "Suburban Residential" as an area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has the following characteristic: evening ambient noise levels defined by the natural environment and human activity.

For the considered receptors in the suburban area, the recommended amenity noise level is shown in Table 2 below. When the existing noise level from industrial noise sources is close to the recommended "Amenity Noise Level" (ANL) given above, noise from the new source must be controlled to preserve the amenity of the area in line with the requirements of the NSW NPI.

Table 2 NSW NPI – Recommended L_{Aeq} Noise Levels from Industrial Noise Sources

Type of Receiver	Indicative Noise Amenity Area	Time of Day[1]	Recommended Amenity Noise Level ($L_{Aeq, period}$)[2]
Residence	Suburban	Day	55
		Evening	45
		Night	40

Note 1: For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am.

Note 2: The L_{Aeq} is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

3.3.4 Project Trigger Noise Levels

The intrusive and amenity criteria for industrial noise emissions derived from the measured data are presented in Table 3. The amenity and intrusive criterion are nominated for the purpose of determining the operational noise limits for noise sources associated with the development which can potentially affect noise sensitive receivers.

For each assessment period, the project trigger noise levels are the lower (i.e. the more stringent) of the amenity or intrusive criteria. The project trigger noise levels are shown in bold text in Table 3.

Table 3 External noise level criteria in accordance with the NSW NPI

Location	Time of Day [2]	Project Amenity Noise Level, $L_{Aeq, period}$ [4] (dBA)	Representative Background Noise level $L_{A90, 15\ min}$ (RBL) [3] (dBA)	Measured $L_{Aeq, period}$ [4] Noise Level (dBA)	Intrusive $L_{Aeq, 15\ min}$ Criterion for New Sources (dBA) [4]	Amenity $L_{Aeq, 15\ min}$ Criterion for New Sources (dBA) [4 5 6]
Residence (Suburban)	Day	50	57	62	62	**53**
	Evening	40	38	56	**43**	**43**
	Night	35	31	51	**36**	38
Commercial	When in use	60	-	-	-	**63**
Industrial	When in use	65	-	-	-	**68**

Note 1: For Monday to Saturday, Daytime 7:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 7:00 am. On Sundays and Public Holidays, Daytime 8:00 am – 6:00 pm; Evening 6:00 pm – 10:00 pm; Night-time 10:00 pm – 8:00 am.

Note 2: L_{A90} Background Noise or Rating Background Level, including L_{A90} Background Noise or Rating Background Level based on the assumed minimum rating of the EPA NPfI.

Note 3: The L_{Aeq} is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

Note 4: Project Noise Trigger Levels are shown in bold.

Note 5: According to Section 2.2 of the NSW NPI, the LAeq, 15 minutes is equal to the LAeq, period + 3 dB

3.4 NSW EPA Road Noise Policy (RNP) 2011

For existing residences and other sensitive land uses affected by additional traffic on existing roads, the NSW *Road Noise Policy (RNP)* states that for noise associated with increased road traffic generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB during both day and night-time periods. An increase of 2 dB represents a minor impact that is considered barely perceptible to the average person.

4 NOISE AND VIBRATION ASSESSMENT

4.1 Mechanical Services Equipment

At this stage of the project, the exact equipment selections have not been determined. Without the detailed information regarding the selections and their associated noise levels a detailed acoustic review cannot be undertaken.

However, to ensure the proposal is suitable, and can be shown to comply with the noise emission requirements listed in section 3 of this report, a preliminary assessment has been conducted. This assessment is based on our experience with similar type developments and the associated plant items which serve them.

For the general ventilation systems, it is anticipated that the physical fans would be installed on the roof of each tenancy. From our experience and assumption of typically noise levels associated with the system isolation of the fan from the base building structure with a correctly sized vibration isolator is recommended. Other standard mechanical components will be sufficient.

Regarding the toilet exhaust systems, it is anticipated that the physical fans would be installed on the roof of each tenancy. From our experience and assumption of typically noise levels associated with the system isolation of the fan from the base building structure with a correctly sized vibration isolator is recommended. Other standard mechanical components will be sufficient.

With regards to air conditioning plant, the following preliminary treatments are recommended to be installed.

- Isolate the air conditioning condensers from the base building structure with a correctly sized vibration isolator.
- Acoustic louvres or screens around the roof air conditioning plant will be required to an equal height of 500mm above the top of the units.
- Night operation mode should be enabled between 10:00pm and 7:00am to provide between a 4-5dBA reduction.
- The rigid ductwork is to include 50mm thick internally lined insulation.

Note: Prior to the issue of the Construction Certificate the recommended acoustic treatments for the engineering services should be reviewed to ensure final selections and mechanical airflow requirements are achieved.

However, on the assumption the recommended treatments outlined above are installed, compliance will be achieved.

4.2 Operational Activity Noise Levels (Including Vehicle Movements)

Assessment of the noise generated by the tenancies including the gym are detailed below. This assessment is being carried out in accordance with the NSW EPA Noise Policy for Industry (NPI) 2017. The assessment below assumes the following:

- All tenancies have external walls which are constructed from a minimum of R_w 40.
- All tenancies have external roofs which are constructed from a minimum of R_w 30
- All tenancies have a minimum glazing thickness of 6mm float with a minimum R_w 29.
- All penetrations through an external skin are to be acoustically sealed.
- Roller shutters to all tenancies are permitted as nominated currently on the architectural drawings.

- **PWNA has been instructed that the movement of trucks onsite will not occur before 7:00am Monday to Saturday and 8:00am on Sunday and Public Holidays. Additionally, all truck movements will cease by 6:00pm on all days and will not continue until the following times mentioned afore.**
- **A sign should be installed at the entry to the service road to ensure all vehicles (including passenger vehicles) do not access the service road after 6:00pm and before 7:00am Monday to Saturday and before 8:00am and on Sunday and Public Holidays.**
- For the purpose of this assessment, we have assumed a single (1) truck movement in/out of the site in anyone (1) 15-minute period.
- **Tenancy One (1):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - B Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
- **Tenancy Two (2):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
- **Tenancy Three (3):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes

- One (1) forklift on service road handstand.
- Doors open or closed:
  - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
  - Front entry doors closed except for entry and exiting.

- **Tenancy Four (4):**
  - Intended use: Large Format Retail (LFR)
  - Operation hours:
    - 7:00am to 9:00pm Monday to Friday.
    - 7:00am to 7:00pm Saturday and Sunday.
  - Use of background music inside tenancy: Yes
  - One (1) forklift on service road handstand.
  - Doors open or closed:
    - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
    - Front entry doors closed except for entry and exiting.
- **Tenancy Five (5):**
  - Intended use: Large Format Retail (LFR)
  - Operation hours:
    - 7:00am to 9:00pm Monday to Friday.
    - 7:00am to 7:00pm Saturday and Sunday.
  - Use of background music inside tenancy: Yes
  - One (1) forklift on service road handstand.
  - Doors open or closed:
    - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
    - Front entry doors closed except for entry and exiting.
- **Tenancy Six (6):**
  - Intended use: Large Format Retail (LFR)
  - Operation hours:
    - 7:00am to 9:00pm Monday to Friday.
    - 7:00am to 7:00pm Saturday and Sunday.
  - Use of background music inside tenancy: Yes
  - One (1) forklift on service road handstand.
  - Doors open or closed:

        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.

- **Tenancy Seven (7):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
- **Tenancy Eight (8):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
- **Tenancy Nine (9):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.

- **Tenancy Ten (10):**
    - Intended use: Specialised retail
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
- **Tenancy Eleven (11):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
- **Tenancy Twelve (12):**
    - Intended use: Large Format Retail (LFR)
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
- **Tenancy Thirteen (13):**
    - Intended use: Large Format Retail (LFR)

- Operation hours:
  - 7:00am to 9:00pm Monday to Friday.
  - 7:00am to 7:00pm Saturday and Sunday.
- Use of background music inside tenancy: Yes
- One (1) forklift on service road handstand.
- Doors open or closed:
  - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
  - Front entry doors closed except for entry and exiting.

- **Tenancy Fourteen (14):**
  - Intended use: Large Format Retail (LFR)
  - Operation hours:
    - 7:00am to 9:00pm Monday to Friday.
    - 7:00am to 7:00pm Saturday and Sunday.
  - Use of background music inside tenancy: Yes
  - One (1) forklift on service road handstand.
  - Doors open or closed:
    - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
    - Front entry doors closed except for entry and exiting.
- **Tenancy Fifteen (15) - Gym:**
  - Intended use: Gym
  - **Operation hours: 24-hours, seven (7) days a week.**
  - Use of background music inside tenancy: Yes
  - Front entry doors to remain closed except for entry and exiting.
  - Building envelope constructions as per the advice provided above.
  - Windows are permitted on all facades (assumed to be closed at all times as per comment afore).
  - Parking associated with the gym does not need to be limited to the immediate parking area adjacent to Tenancy 15. All other parking areas can be used, even during the evening and night period.
- **Tenancy Fourteen (16):**
  - Intended use: Large Format Retail (LFR)
  - Operation hours:
    - 7:00am to 9:00pm Monday to Friday.
    - 7:00am to 7:00pm Saturday and Sunday.
  - Use of background music inside tenancy: Yes

- One (1) forklift on service road handstand.
- Doors open or closed:
  - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
  - Front entry doors closed except for entry and exiting.

- The site contains a service road around the perimeter to provide rear delivery/collection access to each of the tenancies. As such a combination of vehicle movements and loading/unloading activities will be located in this location. These are restricted to daytime hours as per the NSW EPA NPI 2017, as described in detail above.

Predicted noise levels outlined in Table 4 are the worst-case noise levels at 1.5m above ground level, 1.5m within the neighbouring property.

Table 4 Predicted Operational Noise Levels

Receiver Location	Barrier vs. No Barrier	Predicted Noise Level dBA $L_{Aeq(15\ minute)}$	Criteria Noise Level dBA $L_{Aeq(15\ minute)}$	Compliance
Receiver 1 – See figure 1	**No Acoustic Barrier Installed.**	51 (Includes general retail noise, gym noise, loading dock noise and truck movements).	Day: **53**	**Yes.**
		<35 (Includes general retail noise, gym noise, **no** use of the loading dock noise and **no** truck movements).	Evening: **43**	**Yes.** **No** loading dock and **No** truck movements permitted.
		<35 (Includes general retail noise, gym noise, **no** use of the loading dock noise and **no** truck movements).	Night: **36**	**Yes.** **No** loading dock and **No** truck movements permitted.
Receiver 2 – See figure 1	**No Acoustic Barrier Installed.**	<45 (Includes general retail noise, gym noise, loading dock noise and truck movements).	Day: **53**	**Yes.**
		<35 (Includes general retail noise, gym noise, **no** use of the loading dock noise and **no** truck movements).	Evening: **43**	**Yes.** **No** loading dock and **No** truck movements permitted.
		<35 (Includes general retail noise, gym noise, **no** use of the loading dock noise and **no** truck movements).	Night: **36**	**Yes.** **No** loading dock and **No** truck movements permitted.
Receiver 3 – See figure 1	**No Acoustic Barrier Installed.**	<50 (Includes general retail noise, gym noise, loading dock noise and truck movements).	Day: **53**	**Yes.**
		<35 (Includes general retail noise, gym noise, **no** use of the loading dock noise and **no** truck movements).	Evening: **43**	**Yes.** **No** loading dock and **No** truck movements permitted.
		<35 (Includes general retail noise, gym noise, **no** use of the loading dock noise and **no** truck movements).	Night: **36**	**Yes.** **No** loading dock and **No** truck movements permitted.

Note 1: The LAeq is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

As indicated above, compliance with the established Noise Management Levels (NML's) are achieved.

4.3 Noise on Local Public Roads

Noise impacts from the increase in vehicle movements along Bushland Drive to be assessed in accordance with the NSW EPA Road Noise Policy (RNP) 2011.

Table 3 from the NSW EPA RNP outlines the relevant project noise level targets for existing residences affected by additional traffic on public roadways (i.e. additional noise on local roadways created by the proposal).

Figure 3 Extract NSW EPA RNP – Table 3

Table 3 Road traffic noise assessment criteria for residential land uses

Road category	Type of project/land use	Assessment criteria – dB(A)	
		Day (7 a.m.–10 p.m.)	Night (10 p.m.–7 a.m.)
Freeway/ arterial/ sub-arterial roads	1. Existing residences affected by noise from **new** freeway/arterial/sub-arterial road corridors	$L_{Aeq,\ (15\ hour)}$ 55 (external)	$L_{Aeq,\ (9\ hour)}$ 50 (external)
	2. Existing residences affected by noise from **redevelopment** of existing freeway/arterial/sub-arterial roads	$L_{Aeq,\ (15\ hour)}$ 60 (external)	$L_{Aeq,\ (9\ hour)}$ 55 (external)
	3. Existing residences affected by **additional traffic** on existing freeways/arterial/sub-arterial roads generated by land use developments		
Local roads	4. Existing residences affected by noise from **new** local road corridors	$L_{Aeq,\ (1\ hour)}$ 55 (external)	$L_{Aeq,\ (1\ hour)}$ 50 (external)
	5. Existing residences affected by noise from **redevelopment** of existing local roads		
	6. Existing residences affected by **additional traffic** on existing local roads generated by land use developments		

As part of the submission, *Intersect Traffic* (IT)have been engaged to prepare a ***Traffic Impact Assessment (TIA)*** for the proposal. As part of this assessment, IT have provided classification of the surrounding roadways, existing traffic volumes and additional traffic level likely to be generated by the development, see below.

Figure 4 Extract Intersect Traffic Report – Existing Road Network – Bushland Drive

3.1 Bushland Drive

Bushland Drive under a functional road hierarchy is a local urban collector road that collects traffic from the northern areas of Taree to the sub-arterial road network at Wingham Road in the vicinity of the site. As such it is under the care and control of Mid-Coast Council. Near the site, Bushland Drive is generally a two-way two-lane urban road approximately 12.5 metres wide which allows travel lanes, one per direction of 3.5 metres and some on-street car parking or additional turn lanes at major intersections. A 60 km/h speed limit exists on Bushland Drive adjacent to the site and it is centre line marked. At the time of inspection, Bushland Drive was observed to be in good condition as shown in ***Photograph 3*** below. Bushland Drive intersects with Wingham Road via a single lane roundabout with a bypass lane for through traffic on Wingham Road as shown in ***Photograph 4*** below.

Figure 5 Extract Intersect Traffic Report – Traffic Volumes – Bushland Drive

Table 2 – Predicted 2025 & 2035 peak daily and hourly traffic volumes (Classifier counts).

Road	Section	Daily Peak 2025 (vtpd)	Peak hour - 2025 AM (vtph)	Peak hour - 2025 PM (vtph)	Daily Peak 2035 (vtpd)	Peak hour - 2035 AM (vtph)	Peak hour - 2035 PM (vtph)
Wingham Road	south of Bushland Drive	11596	1099	1215	14136	1339	1481
Bushland Drive	west of Grey Gum Road	7831	812	905	9545	990	1103
Grey Gum Road	south of Butea Drive	4432	419	602	5402	511	734

Figure 6 Extract Intersect Traffic Report – Distribution of Vehicles – Bushland Drive

Based on the above advice the maximum peak hour traffic generation for the site during the road network peak, can be calculated as follows;

AM peak = 3.6 x 1500/100 + 2.72 x 15010/100 + 15
= 54 + 408.27 + 15
= **478 vtph rounded up.**

PM peak = 3.6 x 1500/100 + 2.72 x 15010/100 + 20
= 54 + 408.27 + 20
= **483 vtph rounded up.**

Based on the information provided above, the following comparison is provided below (existing vs. potential future increase).

Table 5 Predicted Noise Levels – Additional Noise on Public Roads

Road Location		Existing AM Peak (2025)	Predicted Site Trip Generations	TOTAL	Percentage Increase
Bushland Drive	Day Period	812	478	1290	**+63%**
	Night Period	905	483	1388	**+65%**

Note 1: The LAeq is the energy average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

As mentioned above, Bushland Drive is deemed a "Local Road" and a requirement of 55dBA and 50dBA would apply in the assessment of increase noise levels at any residential receivers.

From the acoustic site survey and traffic survey, the existing flow of traffic would exceed these noise levels at the residence along Bushland Drive (Receiver 3). Based on the maximum trip generation detailed above, this is equal to a 65% increase or in decibels an approximately a 1.9dB increase.

In accordance with section 3.4 of the Road Noise Policy, a 2dB represents a minor impact that is considered barely perceptible to the average person. As the potential trip generation from the site is below this, we deemed the relative increase as acoustically acceptable and not likely to change the existing acoustic amenity of surrounding residential receivers.

4.4 Construction Noise and Vibration Assessment

Outlined below is a preliminary review of the possible noise and vibration mitigation measures that will need to be considered as part of the sites construction works. This should be detailed in a site-specific *Construction Noise & Vibration Management Plan (CNVMP)* in the event of project approval.

4.4.1 Acoustic Management Procedures

4.4.1.1 Summary of Management Procedures

Table 6 below summarises the management procedures recommended for airborne noise and vibration impacts. These procedures are also further discussed in the report. Hence, where applicable, links to further references are provided in Table 6.

Table 6 Summary of mitigation procedures

Procedure	Abbreviation	Description	Further Reference
General Management Measures	GMM	Introduce best-practice general mitigation measures in the workplace which are aimed at reducing the acoustic impact onto the nearest affected receivers.	Refer to Section 4.4.7 For noise impact, also refer to Section 4.4.2 For vibration impact, also refer to Section 4.4.3

Project Notification	PN	Issue project updates to stakeholders, discussing overviews of current and upcoming works. Advanced warning of potential disruptions can be included. Content and length to be determined on a project-by-project basis.	Refer to Section 5.2
Verification Monitoring	V	Monitoring to comprise attended or unattended acoustic surveys. The purpose of the monitoring is to confirm measured levels are consistent with the predictions in the acoustic assessment, and to verify that the mitigation procedures are appropriate for the affected receivers. If the measured levels are higher than those predicted, then the measures will need to be reviewed and the management plan will need to be amended.	For noise impact, refer to Section 4.4.2.3. For vibration impact, refer to Section 4.4.3.2
Complaints Management System	CMS	Refer to Complaint Management System	Refer to Section5.5 and 5.6
Specific Notification	SN	Refer to Complaint Management System	Refer to Section 5.7.
Respite Offer	RO	Offer provided to stakeholders subjected to an ongoing impact.	Refer to Section 4.4.2.1
Alternative Construction Methodology	AC	Contractor to consider alternative construction options that achieve compliance with relevant criteria. Alternative option to be determined on a case-by-case basis. It is recommended that the selection of the alternative option should also be determined by considering the assessment of on-site measurements (refer to Verification Monitoring above).	Refer to Section 4.4.7.1 and 4.4.7.2

The application of these procedures is in relation to the exceedances over the relevant criteria. For airborne noise, the criteria are based on NMLs. The allocation of these procedures is discussed in Section 4.4.1.2

For vibration, the criteria either correspond to human comfort, building damage or scientific and medical equipment. The application of these procedures is discussed in Section 4.4.1.3.

4.4.1.2 Allocation of Noise Management Procedures

For residences, the management procedures have been allocated based on noise level which occur over the designated NMLs. The allocation of these procedures is summarised in Table 7 below.

Table 7 Allocation of noise management procedures – residential receivers

Construction Hours	Exceedance over NML (dB)	Management Procedures (see definition above)
Standard Hours Mon – Fri: 7:00 am to 6:00 pm Sat: 8:00 am – 1:00 pm	0 - 3	GMM
	4 - 10	GMM, PN, V 1, CMS, AC
	> 10	GMM, PN, V, CMS, SN, AC
	> 75dBA	GMM, PN, V, CMS, SN, AC, RO
Verification monitoring to be undertaken upon complaints received from affected receivers		

4.4.1.3 Allocation of Vibration Management Procedures

Table 8 below summarises the vibration management procedures to be adopted based on exceedance scenarios (i.e., whether the exceedance occurs over human comfort criteria, building damage criteria, or criteria for scientific and medical equipment). Please note these management procedures apply for any type of affected receiver (i.e., for residences as well as non-residential receivers).

Table 8 Allocation of vibration management procedures

Construction Hours	Exceedance Scenario	Management Procedures
Standard Hours Mon – Fri: 7:00 am to 6:00 pm Sat: 8:00 am – 1:00 pm	Over human comfort criteria	GMM, PN, V
	Over building damage criteria	GMM, V, AC, RO

4.4.2 Site Specific Noise Mitigation Measures

4.4.2.1 Respite Periods

In the event of a noise level at a surrounding residential receiver exceeds HNAL of 75dBA, respite periods should be provided in accordance with the procedures from the NSW EPA Interim Construction Noise Guideline (ICNG).

4.4.2.2 General Comments

The contractor will, where reasonable and feasible, apply best practice noise mitigation measures. These measures shall include the following:

- Maximising the offset distance between plant items and nearby noise sensitive receivers.
- Preventing noisy plant working simultaneously and adjacent to sensitive receivers.
- Minimising consecutive works in the same site area.
- Orienting equipment away from noise sensitive areas.
- Carrying out loading and unloading away from noise sensitive areas.

In order to minimise noise impacts during the works, the contractor will take all reasonable and feasible measures to mitigate noise effects.

The contractor will also take reasonable steps to control noise from all plant and equipment. Examples of appropriate noise control include efficient silencers and low noise mufflers.

The contractor should apply all feasible and reasonable work practices to meet the NMLs and inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels, duration of noise generating construction works, and the contact details for the proposal.

4.4.2.3 Noise Monitoring

All onsite measurements will be undertaken to investigate compliance (if required) against the noise management levels (NML's) which are formulated in section 3 above (i.e., Project Approval and NSW EPA ICNG).

The survey methodology and equipment will comply with the monitoring requirements as discussed in Australian Standard AS 1055.1-1997.

4.4.2.4 Alternate Equipment or Process

Exceedance of the site's NMLs should result in an investigation as to whether alternate equipment could be used, or a difference process could be undertaken.

In some cases, the investigation may conclude that the use of other equipment is not possible, however, a different process could be undertaken.

4.4.2.5 Acoustic Enclosures/Screening

Typically, on a construction site there are three different types of plant that will be used: mobile plant (i.e., excavators, skid steers, etc.), semi mobile plant (i.e., hand tools generally) or static plant (i.e., diesel generators).

For plant items which are static it is recommended that, in the event exceedances are being measured due to operation of the plant item, an acoustic enclosure/screen is constructed to reduce impacts. These systems can be constructed from Fibre Cement (FC) sheeting or, if airflow is required, acoustic attenuators or louvres.

For semi mobile plant, relocation of plant should be investigated to either be operated in an enclosed space or at locations away from a receiver.

With mobile plant it is generally not possible to treat these sources. However, investigations into the machine itself may result in a reduction of noise (i.e., mufflers/attenuators etc).

4.4.3 Vibration Mitigation Measures

4.4.3.1 General Comments

As part of the CNVMP, the following vibration mitigation measures should be implemented:

- Any vibration generating plant and equipment is to be in areas within the site in order to lower the vibration impacts.
- Investigate the feasibility of rescheduling the hours of operation of major vibration generating plant and equipment.
- Use lower vibration generating items of construction plant and equipment; that is, smaller capacity plant, where feasible
- Minimise conducting vibration generating works consecutively in the same area (if applicable).
- Schedule a minimum respite period in accordance with Condition 7.
- Use only dampened rock breakers and/or "city" rock breakers to minimise the impacts associated with rock breaking works.

4.4.3.2 Vibration Monitoring

All vibration measurements (when required) are to be undertaken in accordance with the methodologies outlined in British Standard 7385-1:1990 Evaluation and measurement for vibration in buildings, DIN V 4150-1 Vibrations in Building; Influence On Persons In Buildings and DIN 4150-1 Effects On Structures.

The measurement locations would be on a stiff part of the adjacent structure (at the foundation) on the side of the structure adjacent to the subject works, or in a suitable location at the site boundary.

4.4.4 Community Consultation

Active community consultation and the maintenance of positive relations with local residents and businesses would assist in alleviating concerns and thereby minimising complaint. It is common for construction projects to provide community consultation if an exceedance of noise goals has been predicted. This communication is commonly conducted in the form of a letter box drop or more active engagement with more highly impacted receivers.

This form of notification should provide specific notification of the duration and timing of the construction activities so that residents are informed about the proposed works ahead of time. The letter should also provide the community with a hotline number for a community liaison officer available to adequately respond to all project related enquiries.

Ideally the hotline number should provide concerned locals an opportunity to raise any concerns with the project proponent and provide an opportunity to determine the best method to satisfy all requirements.

Prior to the works onsite being undertaken, it is recommended that community consultation with the neighbouring affected parties be undertaken.

The communication however should not be limited to the beginning of the onsite works but throughout providing the community with constant updates to the progress and upcoming works. In our experience these could include:

- Site noticeboard.
- Email notifications; and
- Letterbox drops.

4.4.5 Complaints Management System

Should complaints arise they must be delt with in a responsible and uniform manner, therefore a management system to deal with complaints is detailed above.

4.4.6 Contingency Plans

Contingency plans are required to address noise or vibration problems if excessive levels are measured at surrounding sensitive receivers and/or if justified complaints occur. Such plans include:

- Stop the onsite works.
- Identify the source of the main equipment within specific areas of the site which is producing the most construction noise and vibration at the sensitive receivers; and
- Review the identified equipment and determine if an alternate piece of equipment can be used or the process can be altered.
- In the event an alternate piece of equipment or process can be used, works can re-commence.
- In the event an alternate piece of equipment or process cannot be determined implement a construction assessment to be performed by a suitably qualified acoustic consultant.

The Superintendent shall have access to view the Contractor's noise measurement records on request. The Superintendent may undertake noise monitoring if and when required.

4.4.7 General Mitigation Measures (Australia Standard 2436-2010)

As well as the above project specific noise mitigation controls, AS 2436-2010 "Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites" sets out numerous practical recommendations to assist in mitigating construction noise emissions. Examples of strategies that could be implemented on the subject project are listed below, including the typical noise reduction achieved, where applicable.

4.4.7.1 Adoption of Universal Work Practices

- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration.
- Regular identification of noisy activities and adoption of improvement techniques.
- Avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby sensitive receivers.
- Where possible, avoiding the use of equipment that generates impulsive noise.
- Minimising the need for vehicle reversing for example (particularly at night), by arranging for one-way site traffic routes.
- Use of broadband audible alarms on vehicles and elevating work platforms used on site.
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact.
- Minimising truck movements.

4.4.7.2 Plant and Equipment

- Choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks.
- Selecting plant and equipment with low vibration generation characteristics, where feasible.
- Operating plant and equipment in the quietest and most efficient manner.

4.4.7.3 On Site Noise Mitigation

- Maximising the distance between noise activities and noise sensitive land uses.
- Installing purpose-built noise barriers, acoustic sheds and enclosures around static plant.

4.4.7.4 Work Scheduling

- Providing respite periods which could include restricting very noisy activities to time periods that least affect the nearby noise sensitive locations, restricting the number of nights that after-hours work is conducted near residences or by determining any specific requirements.
- Scheduling work to coincide with non-sensitive periods.
- Planning deliveries and access to the site to occur quietly and efficiently and organising parking only within designated areas located away from the sensitive receivers.
- Optimising the number of deliveries to the site by amalgamating loads where possible and scheduling arrivals within designated hours.
- Including contract conditions that include penalties for non-compliance with reasonable instructions by the principal to minimise noise or arrange suitable scheduling.

4.4.7.5 Source Noise Control Strategies

Some ways of controlling noise at the source are:

- Where reasonably practical, noisy plant or processes should be replaced by less noisy alternatives.

- Modify existing equipment: Engines and exhausts are typically the dominant noise sources on mobile plant such as cranes, graders, excavators, trucks, etc. In order to minimise noise emissions, residential grade mufflers should be fitted on all mobile plant utilised on site.

- Siting of equipment: locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.

- Regular and effective maintenance.

4.4.7.6 Miscellaneous Comments

- Deliveries should be undertaken, where possible, during standard construction hours.

- No public address system should be used on site (except for emergency purposes).

5 OVERALL ACOUSTIC MITIGATION MEASURES

- All tenancies have external walls which are constructed from a minimum of R_w 40.
- All tenancies have external walls which are constructed from a minimum of R_w 30
- All tenancies have a minimum glazing thickness of 6mm float with a minimum R_w 29.
- All penetrations through an external skin are to be acoustically sealed.
- Roller shutters to all tenancies are permitted as nominated currently on the architectural drawings.
- Tenancy One (1) to Sixteen (16) (excluded Tenancy 15 – see below):
    - Intended use: Specialised retail
    - Operation hours:
        - 7:00am to 9:00pm Monday to Friday.
        - 7:00am to 7:00pm Saturday and Sunday.
    - Use of background music inside tenancy: Yes
    - One (1) forklift on service road handstand, limited to 7:00am to 6:00pm Monday to Saturday and 8:00am to 6:00pm on Sunday and Public Holidays.
    - Doors open or closed:
        - Back of house entry will be generally closed with exception of deliveries/collections or people entry.
        - Front entry doors closed except for entry and exiting.
    - Deliveries and truck movements limited to 7:00am to 6:00pm Monday to Saturday and 8:00am to 6:00pm on Sunday and Public Holidays.
- Tenancy Fifteen (15) - Gym:
    - Intended use: Specialised retail
    - Operation hours: 24-hours, seven (7) days a week.
    - Use of background music inside tenancy: Yes
    - Front entry doors to remain closed except for entry and exiting.
- Prior to the commencement of works onsite a site-specific *Construction Noise & Vibration Management Plan (CNVMP)* must be prepared which undertakes a detailed review of all noise and vibration impacts associated with the construction works and detail any all required noise and vibration mitigation measures as required.
- **A sign should be installed at the entry to the service road to ensure all vehicles (including passenger vehicles) do not access the service road after 6:00pm and before 7:00am Monday to Saturday and before 8:00am and on Sunday and Public Holidays.**
- All areas have background music at 70dBA L_{Aeq} (Sound Pressure Level).
- A contact number must be displayed for the purposes of receiving any complaints if they arrive.
- Signs must be displayed at all exits reminding people to be mindful of noise when leaving the premise.

6 CONCLUSION

Pulse White Noise Acoustics Pty Ltd (PWNA) has been engaged by Andres Property Group to undertake an acoustic assessment for the proposed Taree Large Format Centre to be located at 202 Bushland Drive, Taree NSW 2430.

This report details the acoustic assessment of the resulting noise impacts to the surrounding receivers as a result of the proposed development of the site. From this review we note:

- External noise emissions from the operation of any building services have been undertaken in accordance with the NSW Environmental Protection Authorities Noise Policy for Industry (NPI) 2017. From this review we can confirm that the proposal is capable of complying the requirements of the policy on the proviso acoustic mitigation measures are implemented. A detailed building services noise assessment is required to be undertaken prior to the issue of a Construction Certificate (CC) in order to ensure compliance.

- Based on the assessment undertaken of the future increase of noise increase associated with vehicles associated with the development on surrounding NSW public roadways, PWNA's assessment has shown a minor 1.9dB increase will occur. As the NSW EPA RNP deems a change less than 2dB to be barely perceptible to the average person, this is deemed acoustically acceptable and no subjective impact to the existing acoustic amenity of the existing residences.

- A review of the proposed service road and onsite vehicle activities associated with the development have been undertaken and do not believe the operation will affect the acoustic amenity of existing surrounding residential receivers.

- An assessment of the potential impacts associated with the proposed Large Format Retail and Gym has been undertaken including the formulation of the relevant acoustic criteria. From this assessment full compliance is achieved subject to the acoustic mitigation measures are implemented as detailed in section 5. If implemented we can confirm full compliance will be achieved and existing acoustic amenity of the surrounding environment will be maintained.

- Prior to the issue of the Construction Certificate, it is recommended that a Construction Noise and Vibration Management Plan (CNVMP) be undertaken to formulate

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

Regards

Matthew Furlong
Principal Acoustic Engineer
Pulse White Noise Acoustics
AAS Member and AAAC Member Firm

APPENDIX A: ACOUSTIC GLOSSARY

The following is a brief description of the acoustic terminology used in this report:

Ambient Sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Audible Range	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.
Character, acoustic	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.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. The following are examples of the decibel readings of every day sounds; 0dB the faintest sound we can hear 30dB a quiet library or in a quiet location in the country 45dB typical office space. Ambience in the city at night 60dB Martin Place at lunch time 70dB the sound of a car passing on the street 80dB loud music played at home 90dB the sound of a truck passing on the street 100dB the sound of a rock band 115dB limit of sound permitted in industry 120dB deafening
dB(A)	*A-weighted decibels* 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.
Frequency	Frequency is synonymous to *pitch*. 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.
Loudness	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
LMax	The maximum sound pressure level measured over a given period.
LMin	The minimum sound pressure level measured over a given period.
L1	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L10	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L90	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L_{90} noise level expressed in units of dB(A).
Leq	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
dB (A)	'A' Weighted overall sound pressure level
Sound Pressure Level, LP dB	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.
Sound Power Level, Lw dB	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

APPENDIX B: - UNATTENDED NOISE MONITOR – LOCATION 1

Weather Station: Taree Airport

Weather Station ID: 060141

Co-ordinates: Lat: -31.89°S, Lon: 152.51°E, Height 8 m AMSL

30 Grey Gum Road, Taree

Ambient noise monitoring report

Item	Information
Logger Type	SVAN 977C
Serial number	97569
Address	30 Grey Gum Road, Taree
Location	30 Grey Gum Road, Taree
Facade / free field	Free field
Environment	

Measured noise levels

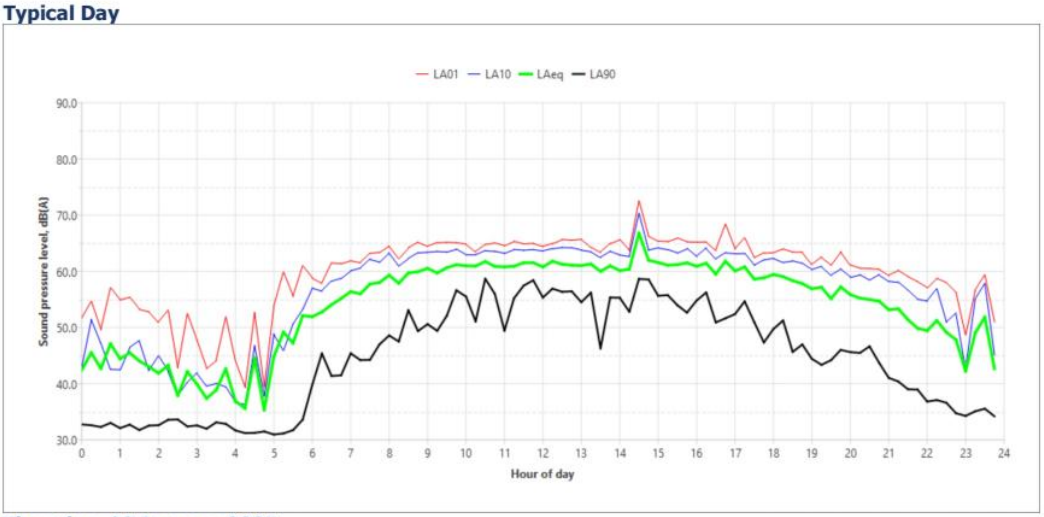
Logging date	Rating Background Level			$L_{Aeq,period}$		
	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am	Daytime 7am-6pm	Evening 6pm-10pm	Night-time 10pm-7am
Thu 23 Jan 2025	-	38	-	-	56	47
Fri 24 Jan 2025	57	37	31	63	55	52
Sat 25 Jan 2025	45	38	31	60	55	48
Sun 26 Jan 2025	41	37	30	58	54	48
Mon 27 Jan 2025	41	39	31	59	55	48
Tue 28 Jan 2025	57	39	30	63	56	52
Wed 29 Jan 2025	58	37	33	64	57	54
Thu 30 Jan 2025	58	39	31	63	58	53
Fri 31 Jan 2025	57	42	32	64	56	52
Sat 01 Feb 2025	43	38	32	60	56	48
Sun 02 Feb 2025	-	-	-	61	-	47
Summary	**57**	**38**	**31**	**62**	**56**	**51**

Note: Results with a '-' identify that there were not enough measurements available to correctly calculate the level, in accordance with the Noise Policy for Industry. The data has been excluded either from weather or manual exclusions. See the charts for more information

Logger location

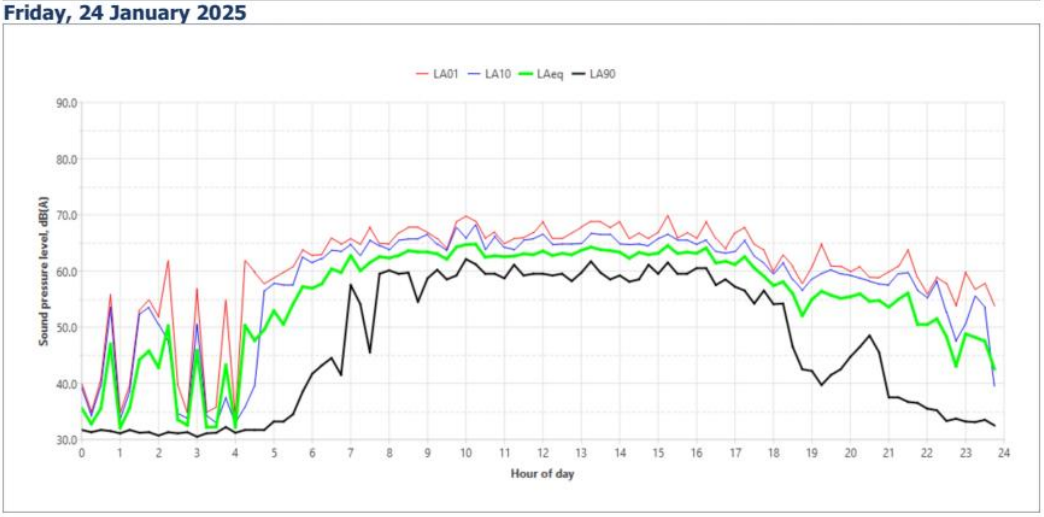
Logger deployment photo

Typical Day



Thursday, 23 January 2025

Friday, 24 January 2025



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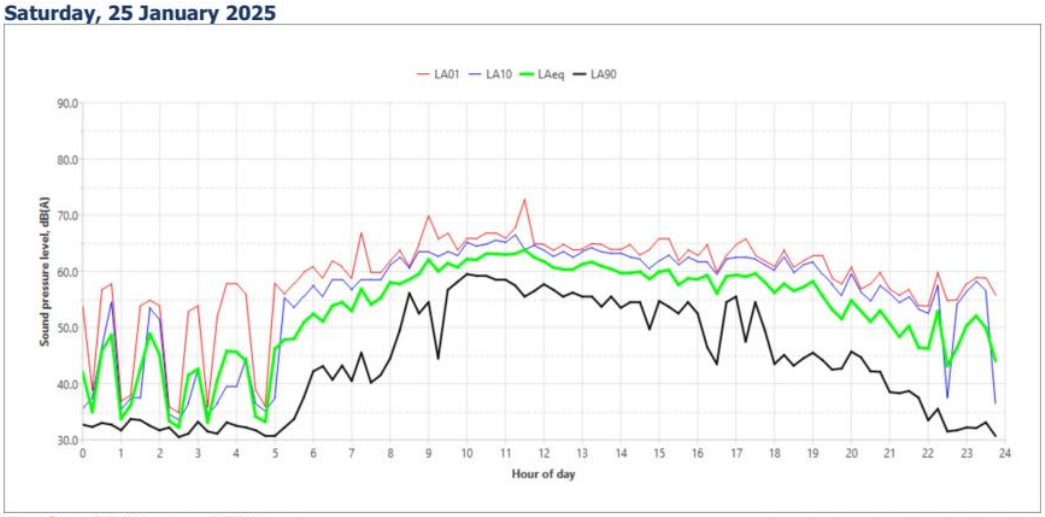
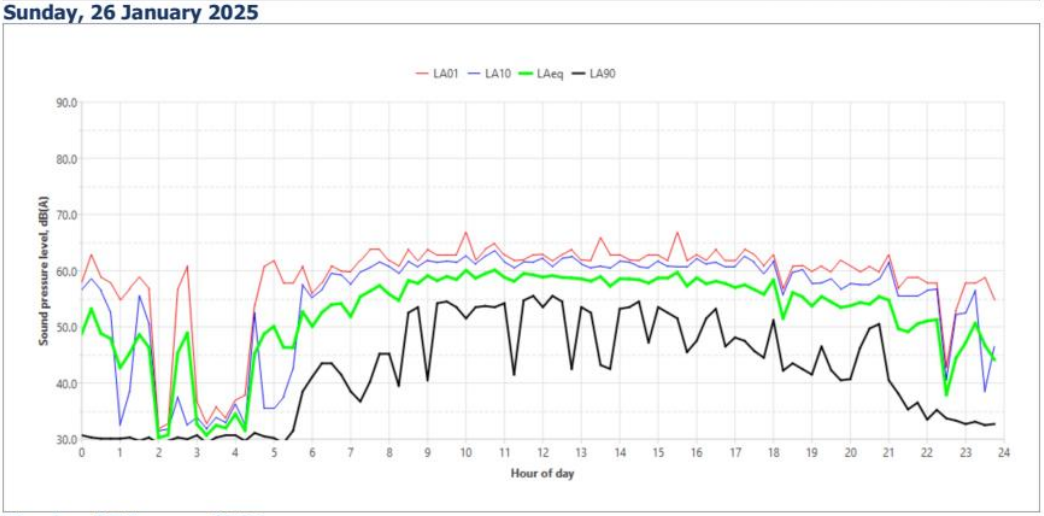
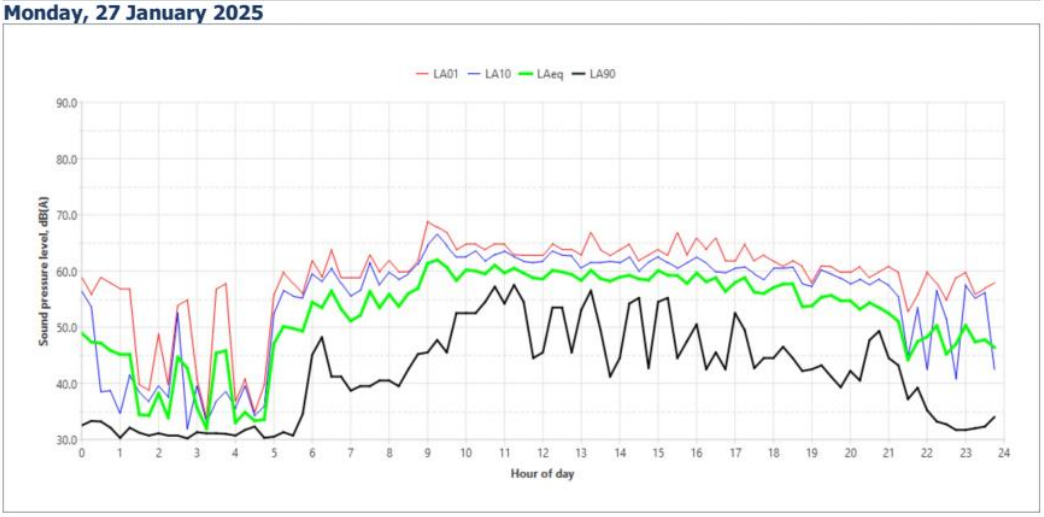
Saturday, 25 January 2025



Sunday, 26 January 2025



Monday, 27 January 2025



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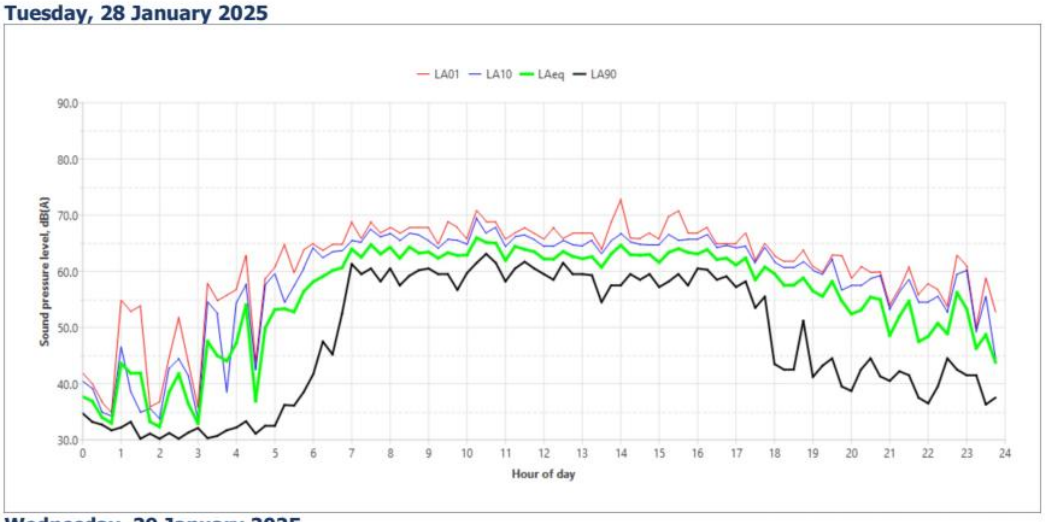
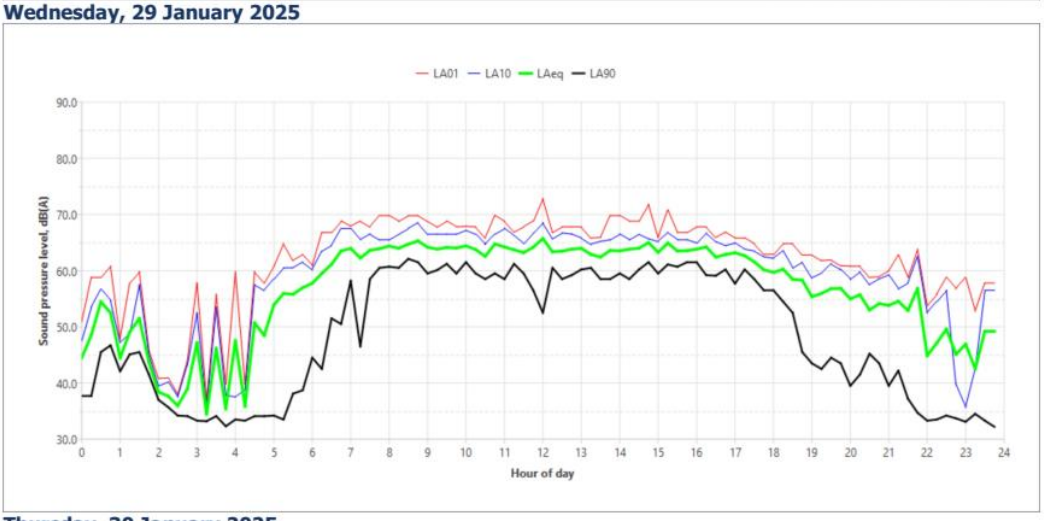
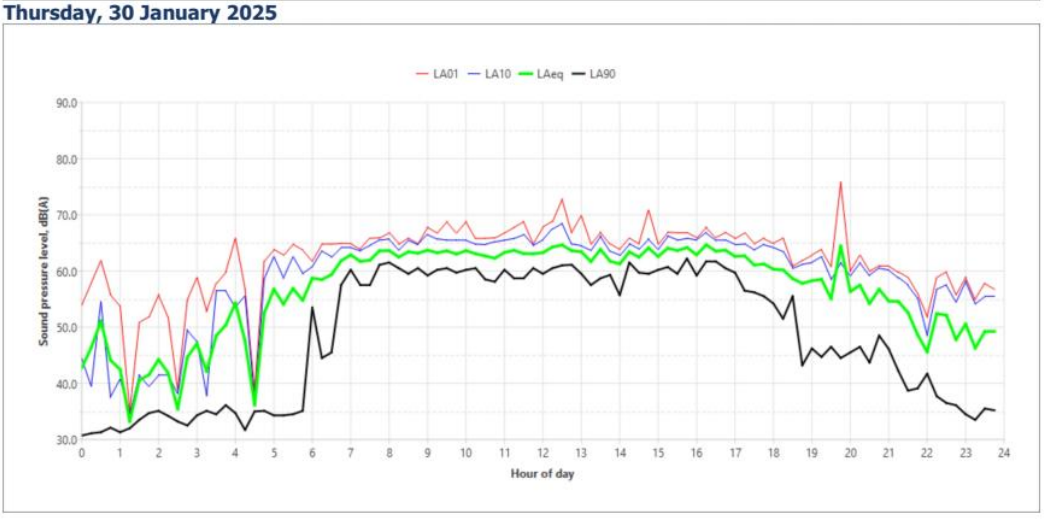
Tuesday, 28 January 2025



Wednesday, 29 January 2025



Thursday, 30 January 2025



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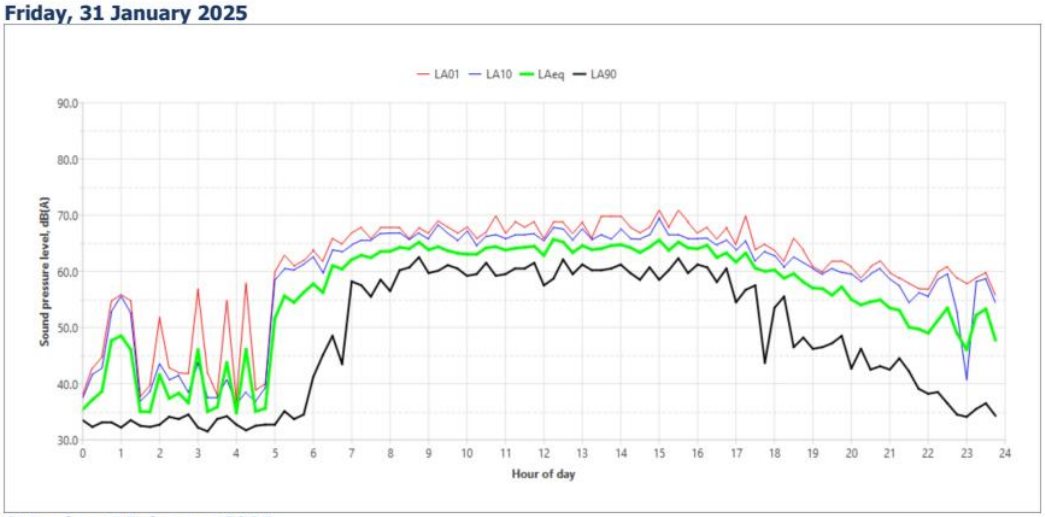
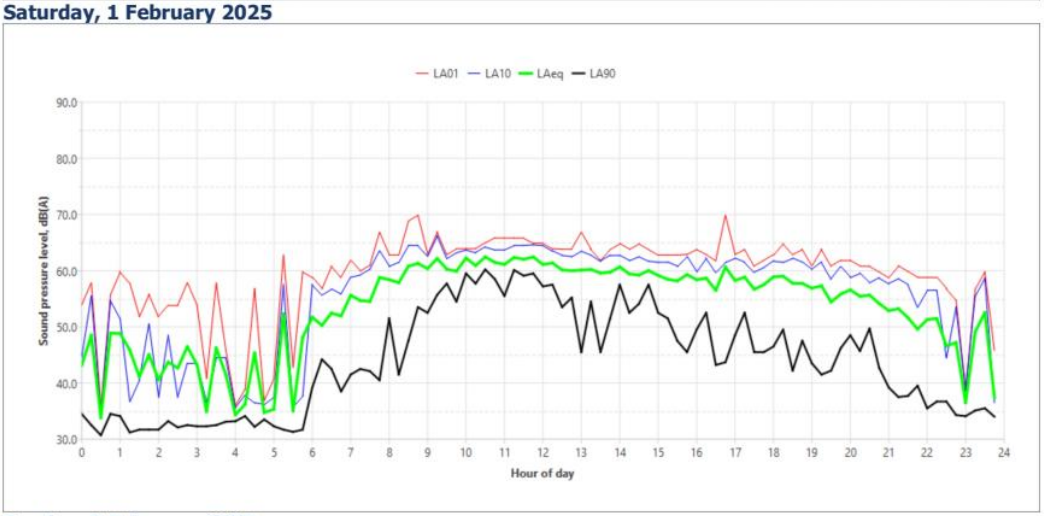
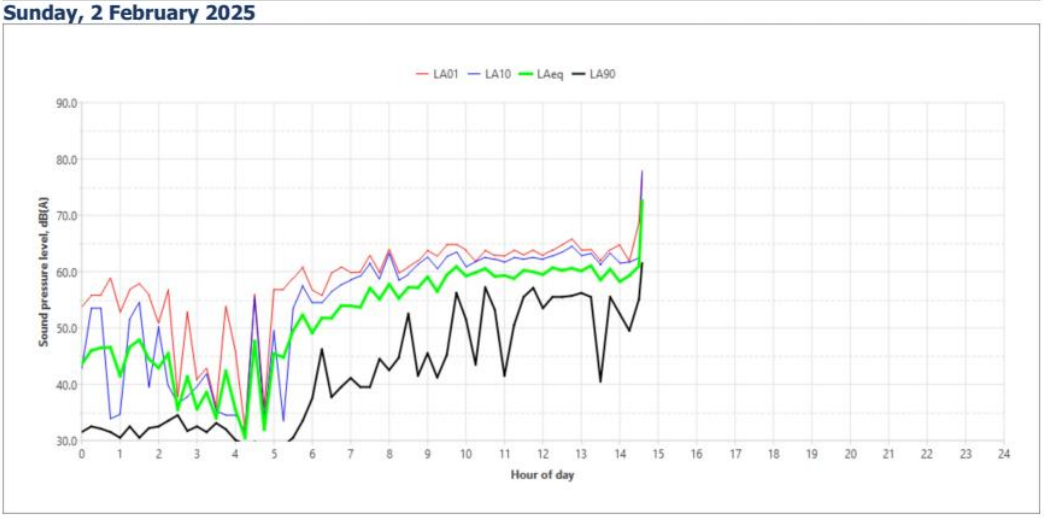
Friday, 31 January 2025



Saturday, 1 February 2025



Sunday, 2 February 2025



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APPENDIX C: - ARCHITECTURAL DRAWINGS