



Noise Emission Assessment Temporary Carpark Dining Pittwater RSL Mona Vale NSW



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GLOSSARY

NOISE

Noise is produced through rapid variations in air pressure at audible frequencies (20 Hz – 20 kHz). Most noise sources vary with time. The measurement of a variable noise source requires the ability to describe the sound over a particular duration of time. A series of industry standard statistical descriptors have been developed to describe variable noise, as outlined in **Section 2** below.

NOISE DESCRIPTORS

L_{eq} – The sound pressure level averaged over the measurement period. It can be considered as the equivalent continuous steady-state sound pressure level, which would have the same total acoustic energy as the real fluctuating noise over the same time period.

L_{Aeq(15min)} – The A-weighted average equivalent sound level over a 15 minute period.

L_{A90} – The A-weighted noise level that has been exceeded for 90% of the measurement duration. This descriptor is used to describe the background noise level.

RBL – Rating Background Level. The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24hr period used for assessment background level) This is the level used for assessment purposes.

dB – Decibels. The fundamental unit of sound, a Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. Probably the most common usage of the Decibel in reference to sound loudness is dB sound pressure level (SPL), referenced to the nominal threshold of human hearing. For sound in air and other gases, dB(SPL) is relative to 20 micropascals (μPa) = 2×10^{-5} Pa, the quietest sound a human can hear.

A-WEIGHTING

"A-weighting" refers to a prescribed amplitude versus frequency curve used to "weight" noise measurements in order to represent the frequency response of the human ear. Simply, the human ear is less sensitive to noise at some frequencies and more sensitive to noise at other frequencies. The A-weighting is a method to present a measurement or calculation result with a number representing how humans subjectively hear different frequencies at different levels.

NOISE CHARACTER, NOISE LEVEL AND ANNOYANCE

The perception of a given sound to be deemed annoying or acceptable is greatly influenced by the character of the sound and how it contrasts with the character of the background noise. A noise source may be measured to have only a marginal difference to the background noise level, but may be perceived as annoying due to the character of the noise.

Acoustic Dynamics' analysis of noise considers both the noise level and sound character in the assessment of annoyance and impact on amenity.

1 INTRODUCTION

1.1 SUMMARY

Acoustic Dynamics is engaged by **Paynter Dixon** on behalf of **Pittwater RSL** to assess noise emission at nearby sensitive receiver locations resulting from the proposed temporary use of the existing carpark area (for outdoor dining), located at 80-82 Mona Vale Road, Mona Vale NSW.

This document provides an assessment of noise impacts associated with the proposed use when assessed at nearby receivers and is prepared in accordance with the various acoustic assessment requirements of Northern Beaches Council.

1.2 DESCRIPTION OF PROPOSAL AND LOCATION

The subject site is located at 80-82 Mona Vale Road, Mona Vale in the Northern Beaches Council area of NSW. The site currently operates as a commercial operation (RSL venue) and due to the ongoing COVID-19 restricted internal patron capacity, is seeking approval to utilise the carpark deck area for the purpose of temporary outdoor dining.

The area of the carpark to be utilised is located on the north eastern aspect of the site (bordering Mona Vale Road) and adjacent to the existing eastern and northern outdoor patron areas.

Acoustic Dynamics understands that the proposed outdoor dining arrangement is to serve the existing patrons of the RSL (i.e. not seeking approval for additional patrons).

The proposal is seeking approval to operate temporary outdoor dining for up to **250 patrons** during the following hours:

- Friday and Saturday: 11:00am to 11:00pm;
- Sunday: 2:30pm to 11:00pm; and
- Special events (i.e. Calendar Events including Melbourne Cup Day, Anzac Day): 11:00am to 9:30pm.

For the purpose of the assessment of noise emission, the nearest residential receiver properties are as follows:

- 79 to 91 Mona Vale Road.

The site is shown in the location map, aerial image and drawings presented within **Appendix A**.

1.3 SCOPE

Acoustic Dynamics has been engaged to provide a noise assessment of the proposal. A summary of the scope is provided below.

- Review of Council, NSW Office of Liquor and Gaming, EPA and other relevant documents relating to acoustics;
- Travel to site to conduct inspections of the proposed carpark dining area, and the location of the adjacent receivers;
- Conduct background noise measurements at a representative location to determine existing ambient noise levels;
- Establish relevant project specific noise emission criteria; and
- Determine the noise emission levels at nearby receiver locations, resulting from the proposed use.

2 ASSESSMENT CRITERIA AND STANDARDS

Acoustic Dynamics has conducted a review of the local council, state government and federal legislation that is applicable to noise emission assessment from the subject site. The relevant sections of the legislation are presented below. The most stringent criteria which have been used in this assessment of the subject development are summarised below.

2.1 NORTHERN BEACHES COUNCIL

2.1.1 PITTWATER LEP (2014) AND DCP

Acoustic Dynamics has conducted a review of the Pittwater Local Environmental Plan 2014 and the Pittwater Development Control Plan, with no relevant acoustic information contained within.

2.2 NSW EPA ENVIRONMENTAL NOISE CRITERIA

2.2.1 NOISE POLICY FOR INDUSTRY (NPfI)

The EPA, in its Noise Policy for Industry (NPfI) document published in October 2017, outlines and establishes noise criteria for industrial or other noise sources in various zoning areas. Acoustic Dynamics advise that the following criteria have been applied for the assessment of the noise emission associated with the proposed use of the site.

Project Intrusiveness Noise Level

The intrusiveness noise level is determined as follows:

$$L_{Aeq, 15min} = \text{rating background noise level} + 5 \text{ dB}$$

where:

$L_{Aeq, 15min}$	represents the equivalent continuous (energy average) A-weighted sound pressure level of the source over 15 minutes.
and	
Rating background noise level	represents the background level to be used for assessment purposes, as determined by the method outlined in Fact Sheets A and B.

Project Amenity Noise Level

The recommended amenity noise levels represent the objective for **total** industrial noise at a receiver location, whereas the **project amenity noise level** represents the objective for a noise from a **single** industrial development at a receiver location.

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows:

$$\text{Project amenity noise level for industrial developments} = \text{recommended amenity noise level (Table 2.2) minus 5 dB(A)}$$

The NPfI provides exceptions to the above method to derive the project amenity noise level. Exception 4 states:

“Where cumulative industrial noise is not a necessary consideration because no other industries are present in the areas, or likely to be introduced into the area in the future. In such cases the relevant amenity noise level is assigned as the project amenity noise level for the development.”

In accordance with the residential receiver categories of the NPfI, Acoustic Dynamics advises that the project amenity noise level is based on the “Suburban” receiver type. The local area typically has moderate through-traffic along roads within the area and is dominated by urban hum.

2.2.2 SITE BACKGROUND NOISE MEASUREMENT

To establish the acoustic environment at the subject site in accordance with the guidelines of the NSW EPA’s NPfI, Acoustic Dynamics conducted attended background measurements onsite which are correlated with long-term noise logging data previously conducted in the local vicinity.

Acoustic Dynamics conducted measurements adjacent to the receivers along Mona Vale Road, on Tuesday 31 August 2021, between 10:00pm and 11:00pm. The noise environment was dominated by light vehicular traffic flow.

The attended measurements results are as follows:

- $L_{A90(15\text{minute})} = 35$ dB; and
- $L_{Aeq(15\text{minute})} = 50$ dB.

Note. The attended background noise measurements were conducted on 31 August 2021, during the COVID-19 lockdown and due the reduced traffic flow and commercial activity, the measured background is considered to be atypical.

To ensure the noise emission objective is based on typical background noise levels for the area, Acoustic Dynamics has correlated the results of the attended measurement with noise logging data conducted at a site within close proximity (i.e. a residential site located 220 metres to the south west of the RSL).

Following the general procedures outlined in the EPA’s NPfl, a summary of the established noise environment, is presented in **Table 2.3**.

Table 2.1 Measured Noise Levels and Project Noise Objectives – External Receivers

Location	Assessment Period	L_{A90} Rating Background Noise Level (RBL) [dB]	Measured L_{Aeq} [dB]	Project Intrusiveness Noise Level L_{Aeq} [dB]	Project Amenity Noise Level L_{Aeq} [dB] ²	Project Noise Trigger Level L_{Aeq} [dB]
Nearest Residential Receiver(s)	Day (7am to 6pm)	48	61	53	58	53
	Evening (6pm to 10pm)	38	54	43	48	48
	Night (10pm to 7am) ¹	35	54	40	43	40

Note: 1) Night time being 10:00pm to 7:00am on Sundays and public holidays.

2) Amenity adjustment based on “Suburban” receiver type. The noise emission objective has been modified in accordance with the recommendations detailed within the NPfl Section 2.2, for time period standardising of the intrusiveness and amenity noise levels ($L_{Aeq,15\text{min}}$ will be taken to be equal to the $L_{Aeq, \text{period}} + 3$ decibels (dB).

NB. Project noise trigger level is the lowest value of project intrusiveness or project amenity noise level after conversion to L_{Aeq} equivalent value. The EPA’s NPfl specifies additional noise emission level corrections that should be applied when a noise source is determined to include “modifying factors” that can vary the perceived intrusiveness of a noise source. Such modifying factors include tonal, low frequency, or intermittent noise.

2.3 PROTECTION OF THE ENVIRONMENT OPERATIONS (POEO) ACT 1997

Noise emission from the site must also comply with the requirements of the relevant legislation, being the *Protection of the Environment Operations (POEO) Act 1997*. The POEO Act 1997 requires that the site must not generate “offensive noise”.

Offensive noise is defined as follows:

“offensive noise” means noise:

- (a) *that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
 - (i) *is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
 - (ii) *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- (b) *that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.”*

2.4 SLEEP DISTURBANCE

Acoustic Dynamics advises that sleep disturbance is a complex issue, and the potential for sleep disturbance to occur depends on both the level of noise at a residential receiver, and the number of events that occur.

The EPA recommends the following noise objectives when assessing sleep disturbance at a residential receiver location:

- $L_{Aeq,15minute}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater.

Conservatively based on an assumed minimum ambient background noise level, the following sleep disturbance screening test level was determined:

Sleep Disturbance = L_{AFmax} 52 dB(A)

2.5 ROAD TRAFFIC NOISE CRITERIA

The EPA’s Road Noise Policy (RNP) 2011 provides non-mandatory road traffic noise target levels for land use developments with potential to create additional traffic on existing local roads. **Table 2.2** shows the assessment criteria relevant to the project.

Table 2.2 RNP Road Traffic Noise Assessment Criteria for Residential Land Uses

Road Category	Type of Project / Land Use	Assessment Criteria [dB]	
		Day (7am-10 pm)	Night (10 pm-7am)
Local Roads	Existing residences affected by additional traffic on existing local roads generated by land use developments	55 $L_{Aeq,1hour}$ (external)	50 $L_{Aeq,1hour}$ (external)

Accepted application of Section 2.4 of the RNP is that where road traffic noise levels already exceed the assessment criteria, an increase of less than 2 dB represents a minor impact that is barely perceptible to the average person.

2.6 NSW OFFICE OF LIQUOR AND GAMING

Prior to the *Liquor Act 2007* being gazetted by the NSW State Parliament, and establishment of the *Liquor Regulation 2008*, noise emission from licensed premises had to comply with the Office of Liquor and Gaming noise emission criteria, detailed below. Acoustic Dynamics advises that many NSW liquor licenses still specify the following noise emission criteria:

“The L_{A10} noise emitted from the licensed premises shall not exceed the background noise level in any octave band frequency (31.5 Hz to 8 kHz inclusive) by more than 5 dB(A) between 7.00am and midnight at the boundary at any affected residence.

The L_{A10} noise level emitted from the licensed premises shall not exceed the background noise in any octave band centre frequency (31.5 Hz to 8 kHz inclusive) between midnight and 7.00am at the boundary of any affected residence.

Notwithstanding compliance of the above, noise from the licensed premises shall not be audible in any habitable room in any residential premises between the hours of midnight and 7.00am.”

Based on the background noise measurement conducted on site and previous long-term and short-term measurements conducted in similar types of areas, Acoustic Dynamics has adopted the following suburban background noise spectrums for the assessment of premises based noise impacts during the proposed dining operating hours:

Table 2.3 Suburban Background Noise Spectrum and OLG Criteria

Time Period	Descriptor	Octave Band Frequency (Hz) [dB(A)]									dB(A)
		31.5	63	125	250	500	1k	2k	4k	8k	
Day/evening 6pm to 10pm ¹	L_{90} Spectrum	10	22	28	30	35	33	29	20	12	38
	Criteria ($L_{90} + 5$)	15	27	33	35	40	38	34	25	17	43
Night (10pm to midnight)	L_{90} Spectrum	6	19	25	29	31	29	24	18	12	35
	Criteria ($L_{90} + 5$)	11	24	30	34	36	34	29	23	17	40

Note. 1) Acoustic Dynamics has adopted a more conservative 6pm to 10pm spectrum to remove the influence of the typically higher background noise levels during the daytime.

2.7 AAAC LICENSED PREMISES NOISE ASSESSMENT TECHNICAL GUIDELINE

Acoustic Dynamics advises that the Association of Australasian Acoustical Consultants (AAAC) Licensed Premises Noise Assessment Technical Guideline (2020) provides useful information and methodologies for the assessment of patron noise associated with licensed venues.

Patron noise emission predictions within this assessment rely on the patron sound level data, computational methods and the operational considerations contained within the AAAC guideline, to ensure the potential impacts associated with patron noise are adequately addressed.

2.8 NOISE MEASUREMENT EQUIPMENT & STANDARDS

All measurements were conducted in general accordance with Australian Standard 1055.1-1997, *“Acoustics - Description and Measurement of Environmental Noise Part 1: General Procedures”*. Acoustic Dynamics’ sound measurements were carried out using precision sound level meters conforming to the requirements of IEC 61672-2002 *“Electroacoustics: Sound Level Meters – Part 1: Specifications”*. The instrumentation used during the survey is set out in **Table 2.4**. The reference sound pressure level was checked prior to and after the measurements using the acoustic calibrator and remained within acceptable limits.

Table 2.4 Noise Survey Instrumentation

Type	Serial Number	Instrument Description
2270	2664115	Brüel & Kjaer Modular Precision Sound Level Meter
4189	2385698	Brüel & Kjaer 12.5 mm Prepolarised Condenser Microphone
4230	623588	Brüel & Kjaer Acoustic Calibrator

3 NOISE EMISSION ASSESSMENT

The following section provides an assessment of the noise emission from the proposed use the carpark area, against the various noise emission criteria and objectives outlined in **Section 2** above.

3.1 OPERATIONAL NOISE EMISSION

Based on our measurements, previous experience and information provided by the proponent, Acoustic Dynamics has conservatively undertaken modelling and calculations to predict the likely maximum noise emission levels at the nearest receiver locations, resulting from the noise activities associated with the proposal. Based on information provided by the proponent, the following provides information regarding each of the proposed uses of the site:

Noise Emission Scenario 1 (Operating until 10:00pm)

- Expected capacity – 250 dining patrons;
- Expected staff – 1 staff member per 25 people;
- Live music performer located adjacent to barrier, orientated away from receivers; and
- 1 passenger vehicle per 4 patrons.

Noise Emission Scenario 2 (Operating until 11:00pm)

- Expected capacity – 250 dining patrons;
- Expected staff – 1 staff member per 25 people;
- Live music performer located adjacent to barrier, orientated away from receivers; and
- 1 passenger vehicle per 4 patrons.

NB. Acoustic Dynamics understands there will be no additional fixed or mobile mechanical plant installed, or food preparation occurring outside in support of the carpark dining.

In addition, it is understood that the proposal is intended to service the existing development patrons. As such, there is not expected to be an increase of on-site vehicle noise (i.e. the number of vehicles using the site would not vary if the patrons were utilising the existing restaurants and bars associated with the RSL).

Nevertheless, (for transparency) off-site vehicle impacts associated with the carpark dining have been assessed so that appropriate noise controls can be implemented as required.

The calculated maximum noise emission levels at the nearest external receiver locations resulting from the proposed use and operation of the site and the relevant noise emission criteria are presented in **Table 3.1** and **Table 3.2** below. Noise emission has been calculated using octave band sound power data for the noise sources. It is advised that by achieving compliance with the nearest residential receiver locations, compliance will also be achieved at those further away.

Acoustic Dynamics advises that the noise emission levels presented below are based on a worst case 15 minute period for the following scenario:

- 250 patrons in the carpark dining area;
- Background music (acoustic guitar and vocalist or similar, located adjacent to the barrier and orientated away from the receiver properties); and
- 25 vehicles entering or exiting the site via local roads in any 15 minute period.

The predicted noise emission levels presented above in **Table 3.1** and **Table 3.2** below include allowances for relevant distance losses, direction and demonstrate the benefit of including an acoustic barrier along the north eastern perimeter of the carpark. Noise emission associated with the use of the carpark dining area would generally be less than the worst-case noise emission results presented below.

Table 3.1 Maximum Noise Emission Levels & Relevant Criteria – Nearest Receivers (NPfI)

Receiver Location	Noise Source	Maximum $L_{Aeq(15min)}$ Noise Emission Level [dB]	Overall $L_{Aeq(15min)}$ Noise Emission Level [dB]	Noise Emission $L_{Aeq(15min)}$ Criterion [dB]	Complies
Scenario 1 – Operations until 10:00pm (with no acoustic barrier)					
R1 (on Mona Vale Rd)	250 people on site	46	47	48 (daytime/ evening)	Yes
	Background music	39			
Scenario 2 – Operations after 10:00pm (with no acoustic barrier)					
R1 (on Mona Vale Rd)	250 people on site	46	47	40 (night)	No
	Background music	39			
Scenario 2 – Operations after 10:00pm (with 2 metre high acoustic barrier)					
R1 (on Mona Vale Rd)	250 people on site	36	37 ¹	40 (night)	Yes
	Background music	29			

Note. 1) Compliance is predicted to be achieved with the criterion inclusive of a correction for noise character.

Table 3.2 Maximum Noise Emission Levels & Relevant Criteria – Nearest Receivers (OLG)¹

Receiver Location	Criteria ($L_{Aoct10} \leq L_{Aoct90} + 5$)	Octave Band Frequency (Hz) [dB(A)]									dB (A)	Complies ?
		31.5	63	125	250	500	1k	2k	4k	8k		
Scenario 1 (No acoustic barrier)	Day/Evening Criteria	15	27	33	35	40	38	34	25	17	43	-
R1 (on Mona Vale Rd)	L_{A10} Cumulative Noise	0	9	24	31	36	43	43	36	29	47	No
Scenario 1 (2m acoustic barrier)	Day/Evening Criteria	15	27	33	35	40	38	34	25	17	43	-
R1 (on Mona Vale Rd)	L_{A10} Cumulative Noise	0	4	18	24	31	33	29	21	11	37	Yes
Scenario 2 (2m acoustic barrier)	Night Criteria	11	24	30	34	36	34	29	23	17	40	-
R1 (on Mona Vale Rd)	L_{A10} Cumulative Noise	0	4	18	24	31	33	29	21	11	37	Yes

Notes 1) Acoustic Dynamics advises that noise emission includes noise associated with patrons and music but does not include noise from mechanical plant or vehicles (as per the Noise Guideline for Local Government responsible authorities checklist for liquor licence assessments).

3.2 ROAD TRAFFIC NOISE IMPACT ASSESSMENT

Patron and staff vehicles will access the site via Foley Street. Offsite vehicle impacts are assessed with consideration to the daytime 55 dB $L_{Aeq,1hr}$ and night-time 50 dB $L_{Aeq,1hr}$ criteria outlined earlier in **Section 2.5**.

Noise calculations were conducted to predict potential road traffic noise impacts during a representative **worst-case** scenario (i.e. 100 vehicles per hour). Actual traffic pass-by numbers are likely to be lower than the numbers assumed within this assessment.

Table 3.3 presents the predicted results with the results indicating vehicles are expected to comply with the RNP night-time noise criteria.

Table 3.3 Predicted Sensitive Receiver Night-time $L_{Aeq(1hr)}$ Sound Pressure Level

Receiver	Predicted $L_{eq(1hr)}$ Sound Pressure Level [dB]	Most Stringent Criterion (Night) $L_{Aeq(1hr)}$ [dB] ¹	Complies?
Adjacent Residential Properties	42	50	Yes

Note: 1) Compliance with the night-time criteria will ensure compliance with all other time periods.

3.3 SLEEP DISTURBANCE ASSESSMENT

Acoustic Dynamics has calculated the potential maximum L_{Amax} noise emission from the operation of the carpark dining area, including the closing of car doors, transient patron events (such as a patrons shouting or laughing loudly) and carpark activity at the nearest potentially affected sensitive receivers, during the night time assessment period.

The transient noise impacts are assessed as a worst-case scenario (i.e. a door slamming at the edge of a carpark closest to a receiver property or a patron laughing loudly at a location within close proximity to a receiver property). Although such a scenario is unlikely to occur regularly, the assessment is conducted in such a manner to ensure the amenity of neighbouring residents is protected.

A summary of the predicted maximum sound pressure levels at the nearest identified receivers due to the transient maximum noise impacts is shown in **Table 3.4**. The results are assessed against the applicable sleep disturbance criterion.

Table 3.4 Modelled Sensitive Receiver External L_{Amax} Sound Pressure Level

Receiver ¹	Predicted L_{Amax} External Sound Pressure Level [dB]	L_{Amax} Sleep Disturbance Criterion [dB]	Complies?
R1	48	52	Yes

Note. 1) Compliance at the nearest receiver locations ensures compliance at all other locations located further away.

Acoustic Dynamics advises that although there may be instantaneous noise events (i.e. car door closing, vehicle activity in the carpark or instantaneous patron noise events) that occasionally exceed the external $L_{A\text{Max}}$ objective ($L_{A\text{Max}} \leq 52 \text{ dB}$) at the nearest residential receivers, the maximum instantaneous internal noise levels are predicted to comply with the NSW EPA internal noise guideline ($L_{\text{Max}} \leq 50\text{-}55 \text{ dB(A)}$) and is unlikely to cause awakening reactions.

Acoustic Dynamics advises that the above calculated noise emission levels are conservatively based on the maximum source noise levels and maximum capacity operations (i.e. **worst-case scenario**) at the proposed development. Acoustic Dynamics advises that such a scenario is unlikely to occur for the majority of the time.

4 DISCUSSION

The predicted worst-case maximum noise emission results associated with the proposal (inclusive of the mitigation and management measures outlined in **Section 5**) indicates the following:

Operating until 10:00pm:

1. Noise associated with the proposed operation of the carpark dining area is predicted to **comply with** the requirements of the Noise Policy for Industry;
2. Without the benefit of an acoustic barrier, noise associated with the proposed operation of the carpark dining area is predicted to **exceed** the octave band requirements of the Office of Liquor and Gaming;
3. **However**, with the installation of a 2 metre high acoustic barrier along the north eastern perimeter of the carpark, noise associated with the proposed operation of the carpark dining area is predicted to **comply with** the octave band requirements of the Office of Liquor and Gaming;
4. Off-site road noise is predicted to comply with the requirements of the NSW RNP at all nearby sensitive receiver locations; and
5. Worst-case maximum instantaneous internal noise levels are predicted to **comply with** the NSW EPA Sleep Disturbance internal noise guideline ($L_{\text{Max}} \leq 50\text{-}55 \text{ dB(A)}$) and is unlikely to cause awakening reactions.

Operating until 11:00pm:

1. Without the benefit of an acoustic barrier, noise associated with the proposed operation of the carpark dining area after 10:00pm is predicted to **exceed** the requirements of the Noise Policy for Industry;

2. Without the benefit of an acoustic barrier, noise associated with the proposed operation of the carpark dining area after 10:00pm is predicted to **exceed** the octave band requirements of the Office of Liquor and Gaming;
3. **However**, with the installation of a 2 metre high acoustic barrier along the north eastern perimeter of the carpark, noise associated with the proposed operation of the carpark dining area after 10:00pm is predicted to **comply with** the requirements of the Noise Policy for Industry and **comply with** the octave band requirements of the Office of Liquor and Gaming;
4. Off-site road noise is predicted to **comply with** the requirements of the NSW RNP at all nearby sensitive receiver locations; and
5. Worst-case maximum instantaneous internal noise levels are predicted to **comply with** the NSW EPA Sleep Disturbance internal noise guideline ($L_{Max} \leq 50-55 \text{ dB(A)}$) and is unlikely to cause awakening reactions.

5 RECOMMENDATIONS & ADVICE

The following discusses mitigation and noise management measures which are required to be incorporated for the compliant use of the carpark area for outdoor dining.

1. A minimum 2 metre high acoustic screen/barrier is to be erected along the north eastern perimeter of the carpark as indicated in the mark-up provided in **Appendix A**;
2. The acoustic barrier must provide a minimum surface density of **15 kg/m²** and contain **no gaps** along the surface of the barrier. The acoustic barrier could be fixed to the existing carpark safety barrier and constructed to be:
 - Transparent Perspex or equivalent;
 - Lapped timber palings;
 - A double layer Colorbond (or equivalent) barrier(s); or
 - A minimum 9mm thick compressed fibros-cement sheeting on a timber or steel stud;
3. Visual and physical impacts of the barrier can be reduced through the use of green-walls (i.e. vegetation and plantings along the length of the barrier);
4. Live music performers should be located adjacent to the acoustic barrier (i.e. within 3 metres), and should be orientated away from the receivers on Mona Vale Road;
5. Speakers must not be positioned higher than the adjacent barrier (i.e. < 2 metres high);
6. Live music performances should not be conducted on an elevated stage or platform;

7. The music levels must be monitored to not exceed L_{Aeq} **75 dB** at 1 metre from a speaker (i.e. conversation should not require effort to be heard over the music);
8. Live music should be restricted to solo acoustic guitar and vocalist (or similar type of accompaniment). Percussive instrumentation should be avoided;
9. The use of sound system noise limiters/compressors and equalizers should be employed to reduce the level of low frequencies (bass) being broadcast by the system as this is what often causes the most disturbance to nearby residents;
10. To assist in the monitoring and control of music, a sound system limiter (capable of processing multiple frequency bands) should be installed. A qualified acoustic consultant should be engaged to assist in the selection and calibration of a suitable limiting and frequency control device (i.e. a Digital Signal Processor);
11. The venue must ensure performers and sound engineers are made aware of “backline” sound level restrictions. Sound levels should be set so that performers can hear themselves without increasing the overall level of music in the carpark dining area;
12. The venue must ensure performers are made aware of the potential for noise problems prior to their appearance and their performance must adhere to any noise level restrictions that are in place;
13. Speakers should be orientated away from the neighbouring sensitive receiver properties;
14. All music associated with the use of the carpark dining area should cease prior to 10:00pm. No music should be played after 10:00pm;
15. Signage should be installed reminding patrons to be aware of their neighbours and to leave in a quiet manner; and
16. Staff should be instructed to consider the neighbouring residents departing from the site in the late night period.

6 CONCLUSION

Acoustic Dynamics has conducted an assessment of the potential operational noise impacts on the surrounding environment from the proposed of the carpark area for outdoor dining, at the Pittwater RSL. Noise impacts were assessed in accordance with the requirements of Northern Beaches Council, the NSW EPA and the NSW Office of Liquor and Gaming.

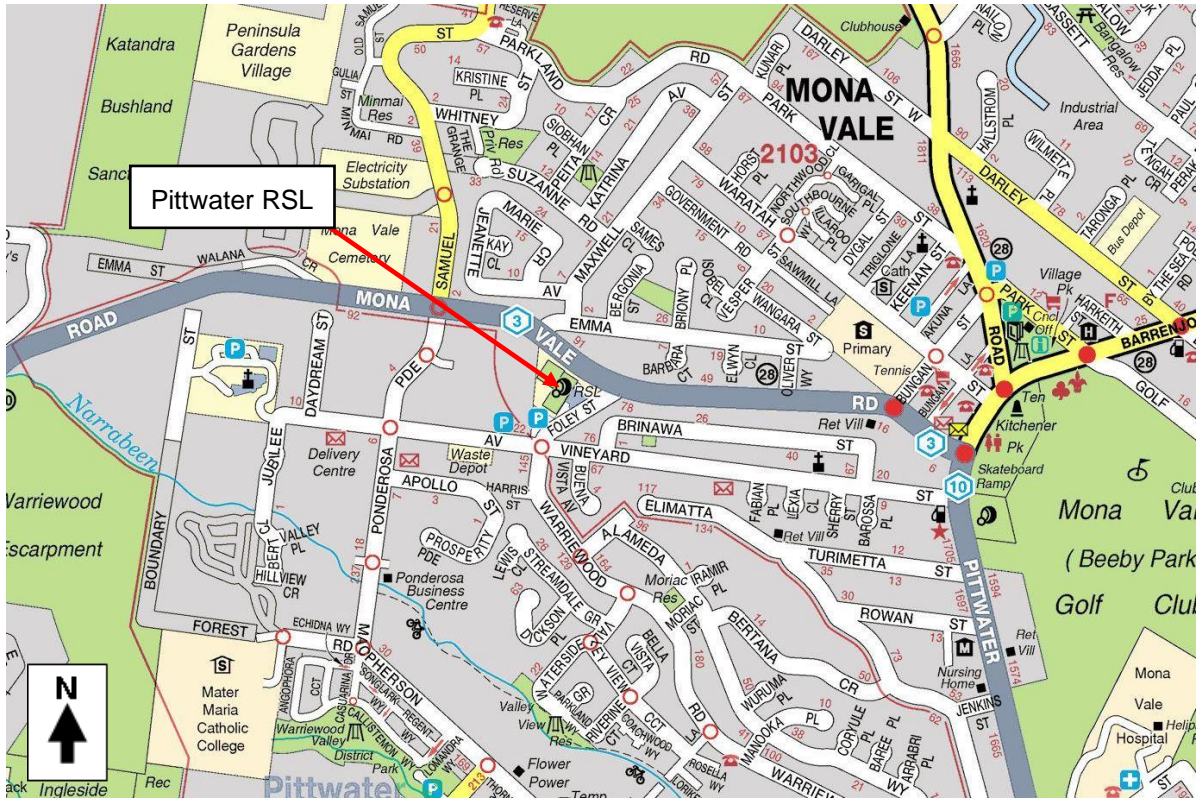
Acoustic Opinion

Based on the results and predictions of Acoustic Dynamics' assessment, following the incorporation of recommended acoustic mitigation and management measures, operational noise can be designed to achieve compliance with the requirements of Northern Beaches Council, the NSW EPA and the NSW Office of Liquor and Gaming and the POEO Act 1997.

We trust that the above information meets with your requirements and expectations. Please do not hesitate to contact us on 02 9908 1270 should you require more information.

APPENDIX A – LOCATION MAP, AERIAL IMAGE, DRAWINGS & PHOTOGRAPH

A.1 LOCATION MAP

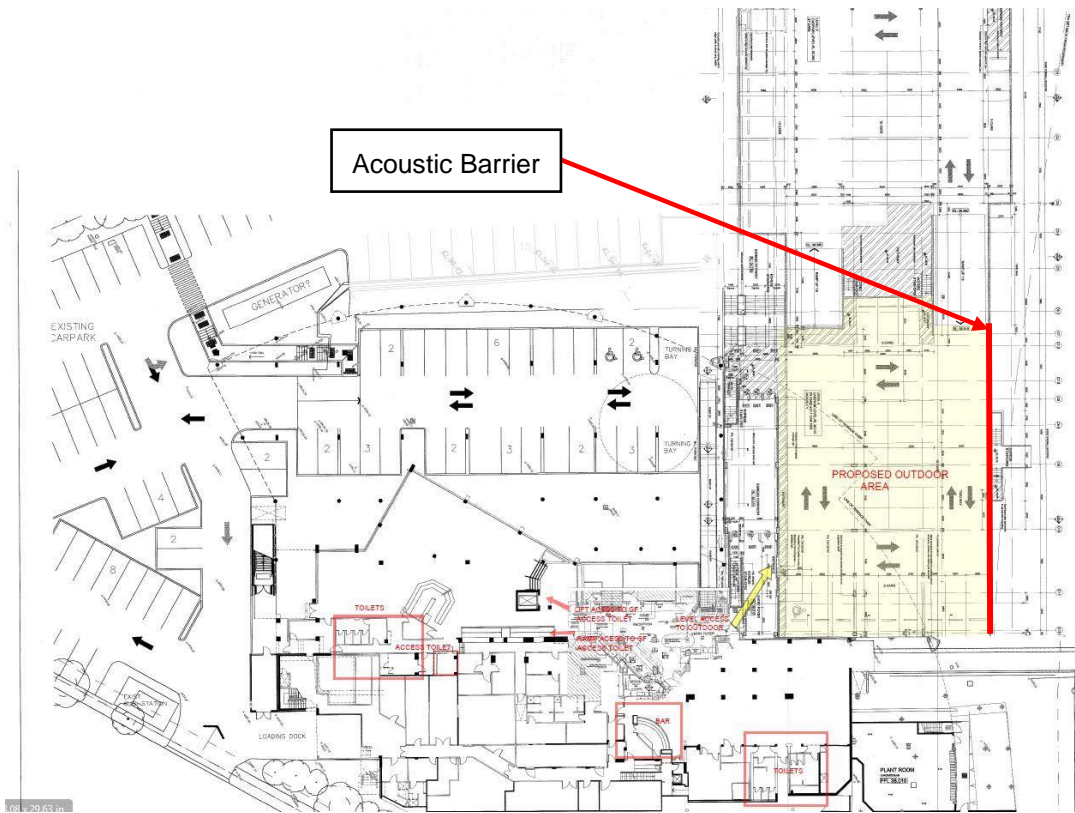


A.2 AERIAL IMAGE (COURTESY OF SIXMAPS)



A.3 DRAWINGS & PHOTOGRAPH

A.3.1 SITE PLAN



A.3.2 PHOTOGRAPH WITH BARRIER MARKUP

