The Acoustic Group

CONSULTING ACOUSTICAL AND VIBRATION ENGINEERS

ACOUSTICAL ASSESSMENT

PASADENA SYDNEY

1858 PITTWATER ROAD, CHURCH POINT

53.488.R3:MSC

Back Schwartz Vaughan

Level 1, 156 Edgecliff Road

WOOLLAHRA NSW 2025

Date: 19 April 2023

6/62 ARGYLE STREET, SOUTH WINDSOR NSW 2756 AUSTRALIA

ph: (+612) 9555 4444 tag1@acoustics.com.au ABN 73 082 704 701

CONTENTS

APPENDICES

1. INTRODUCTION

The purpose of this report is to present the results and findings of an acoustic assessment of noise emission from Pasadena Sydney (the venue) at 1858 Pittwater Road, Church Point.

The venue is the subject of a disturbance complaint under the Liquor Act 2007 and has been provided a redacted acoustic report from Acoustic Directions (reference 221121_PCP_v1.0, dated 21 November 2022). The redacted report purports to identify a breach of the liquor licence but does not provide the necessary material to substantiate the claim. The redacted report contains a significant number of technical errors rendering the "acoustic report" to be of no assistance to the matter.

The redacted acoustic report identifies that the main acoustic issue relates to noise from the conduct of functions (such a wedding receptions) having a significant number of patrons and involving the provision of music in the form of DJ music and/or live bands.

The redacted acoustic report identifies the complaints originate from residents located on the southern side of Scotland Island that have direct views to Pasadena Sydney. The redacted acoustic report refers to measurements undertaken at one residential balcony but does not identify the specific or general location where the measurements were taken.

The venue has a number of licensed areas, whilst the redacted acoustic report refers to an indoor area and an outdoor area for patrons – not the entire premise.

As a result of the inadequate acoustic report, so as to respond/address the complaint it was necessary to undertake acoustic testing of the venue under operations that involve the provision of music and patrons on the premises. Therefore, the conduct of an acoustic compliance test was dependent on the occurrence of a wedding function (or similar) where music was to be provided with a level of patron capacity to represent the scenario alleged to be the source of complaint.

The first opportunity for such testing occurred on 18 March 2023. Arrangements were made with Liquor & Gaming to undertake measurements at the complainant's premises with only one contact provided by Liquor & Gaming.

The conduct of compliance testing on Scotland Island presents a number of challenges due to the requirement for transport by boat to and from the island.

The redacted acoustic report formed the basis of my testing. As there was no identification of the complaint's address (in the redacted report), in accordance with prior directions issued by the Liquor Administration Board ("**LAB**")/Office of Liquor, Gaming and Racing ("**OLGR**"), the privacy of the complainant is to be maintained. Accordingly, Appendix A2 identifies by way of an orange ellipse a general area northwest of Bells Wharf where the complainant is located.

Subsequent to the testing I have been provided with an unredacted version of the acoustic report. It would appear the only differences between the redacted version and the unredacted version are the identification of the complainant's address and the exclusion/inclusion of Figure 1.

Therefore, the errors and incorrect material/statements in the unredacted report still apply.

I am aware of the location of the venue, having conducted measurements in the area in 1996 and 2016, and I have undertaken reviews of proposed development applications for the site that do not relate to the current development.

2. THE SITE

The venue is located on a parcel of land between Pittwater Road and the water's edge at Church Point, being directly opposite Scotland Island (see Appendix A).

Travelling just past the venue Pittwater Road then becomes McCarrs Creek Road.

The existing building fronts Pittwater Road with the emphasis on the view out on to Pittwater and across to Scotland Island.

There are no residential dwellings in the immediate proximity of the venue.
To the east/south-east of the venue is a large car park which is used for the parking of vehicles predominantly associated with Scotland Island and/or Elvina Bay to the north-west.

Public access to Scotland Island and Elvina Bay is by boat from a ferry terminal on the western side of the venue or a pontoon northwest of the venue.

As part of the ferry terminal operation is a general store to the west of the venue.

Scotland Island is completely surrounded by water and has no road connection between the mainland. As shown in Appendix A there are roads on the island and dwellings situated around the perimeter of the island with dwellings on the southern side of the island.

Appendix A sets out aerial photos of the subject area identifying locations used for the assessment of noise emission from the venue.

Appendix A2 identifies the measurement location on the wharf and a large open orange ellipse in which the complainant's balcony and front boundary measurement location are situated. Also included in Appendix A2 is a view from the balcony to the venue showing the wharf below on Scotland Island that had boat arrivals and departures during the monitoring.

3 ISSUES WITH THE ACOUSTIC DIRECTIONS REPORT

The document management sheet identifies the author of the report as Osborn Fong and the reviewer as Camile Hanrahan-Tan. However, Section 1.2 states the author of the report as Glenn Leembruggen.

Section 2c) of the report refers to advice from L & G on the noise condition applied to the venue – which can be found as Condition 220 on Liquor Licence LIQO600462049 issued by NSW Liquor and Gaming ("**L&G**").

The acoustic report fails to identify that Condition 220 is not the standard LA10 Condition used by the L&G.

Section 3 of the acoustic report does not identify the measurements were conducted in accordance with Australian Standard AS 1055. If a reference had been provided with respect to the measurements being conducted in accordance with the Standard there would have been identification that the measurements were not conducted in accordance with the Standard as the microphone of the meter would be subject to reflections from surfaces within 3m of the microphone (e.g., glass windows of the dwelling behind the meter).

If the author of the report comprehended the technical aspects of Condition 220 the author would have noted that the measurement location is not at the boundary of the affected residence. The author of the report should have comprehended the condition

refers to noise emitted from the premises and therefore the post processing of the measured data identified in 3g) is not the contribution of noise emitted from the premises but noise from the premises plus ambient noise.

Under Site Observations (section 4):

a) identifies noise from patrons was heard but does not identify the level of patron noise.
b) identifies music was heard from 8pm but does not identify the range of music levels during the monitoring period.
c) claims patrons yelling and cheering were audible continually throughout the night but does not identify the range of levels, whilst the upper spectrogram in Figure 2 does not reveal continuous yelling and cheering.
d) refers to repeated bursts of elevated levels of 125 Hz octave band and that similar levels of low-frequency noise were heard throughout the night. The quantification of “elevated levels” is unknown and indicates a bias in the reporting.
e) refers to other sources of environmental noise but does not place in context the other sources of environmental noise relative to the noise from the venue.
f) identifies an increase in noise after 9.30pm associated with a live band.
g) refers to brief periods of elevated overall noise assumed to be doors being open but fails to identify when such elevated levels occurred, how long and what were the levels without such openings.
h) refers to the last song and patron noise being occasionally audible but does not quantify the levels of patron noise.

From the above it becomes obvious that the matter of audibility of noise from the venue versus measured levels should have been addressed as one can have audible noise and be well under the nominated limits. The relationship of the alleged noise from the venue versus the environment of the area has not been addressed – as a fundamental requirement in an acoustic assessment is to assess the noise of complaint in the environment in which it occurs.

Section 5 highlights the lack of experience of the author with respect to assessment of licensed premises.

One would expect a suitably qualified acoustician to be able to understand the criteria and the assessment that has been undertaken.

Firstly, the title of Table 1 refers to LAeq levels (not LA10 levels as required by Condition 220) and then refers to noise from within the restaurant from patron noise. But the first line of data in Table 1 refers to Patron and Music Noise.

Secondly, Table 1 expresses measured noise levels in linear octave bands, instead of the requirement under condition 220 of the licence for A-weighted octave bands. The condition specifically states the LA10 noise level as shown below.

> *The LA10 noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz-8kHz inclusive) by more than 5dB between 07:00 am and 12:00 midnight and between 12:00 midnight and 07:00 am at the boundary of any affected residence.*

Therefore, all the levels provided in Table 1 (other than for the 1kHz octave band) are incorrect. Furthermore, the first column of Table 1 "Description" expresses the measured levels as either LA10 or LA90 whereas the octave band data are linear results.

Thirdly, condition 220 of the licence refers to noise level emitted from the licensed premises not measured levels. A person appropriately trained in acoustics would be aware that the wording of "noise emitted from the licensed premises" is not a measured level but a contribution of just the noise from the licensed premises.

Using logarithmic addition unless the measured level is 10 dB or more above the background level then the measured level includes a contribution of the background level. One must subtract the background level from the measured level of noise from the premises to obtain the contribution. That exercise has not been undertaken.
Fourthly, one needs to obtain the measured level of the noise from the venue which is not the methodology used in the acoustic report (second sentence in the second paragraph in section 5). The author identifies taking the LA10 statistical level of the 15 minute sample and removing the extraneous noise unrelated to the venue.

The upper spectrogram in Figure 2 shows boxes of "extraneous noise" leaving the remainder of the data in the L10 level – but the remainder is not just noise from the venue.

Fifthly, in obtaining the background level from statistical measurements one does not need to extract extraneous noise, as suggested from the lower spectrum in Figure 2. An appropriately experienced acoustician would have extended the monitoring after 11.15pm or alternatively used the last 10 minutes to determine a background level as permitted by AS 1055.

The two spectrograms forming Figure 2 (expressed in Linear results – not A-weighted results) show a steady red line across the entire time below 63 Hz (left axis) – say 50Hz. This would suggest the continuous operation of an extraneous noise (air conditioning) that has not been removed.

The spectrograms show multiple red bands below the 50Hz horizontal line that identify frequencies below 20 Hz that have not been discussed. Item e) in Section 3 refers to low wind speed and makes no mention of wind gusts or whether such red levels could at times influence the measured levels.

The Conclusion, being Section 6 of the acoustic report, cannot be accepted as there is no material to substantiate an implied claim that the venue was non-compliant with the noise condition over the entire monitoring period identified as between 8pm and 11:30pm.

Table 1 purports to suggest measurement results from 10:45pm to 11:00pm for the venue relate to the LA10 criteria (which is incorrect) and then utilise background noise levels from 11pm to 11:15pm subject to some unexplained form of exclusion process.

There is no material to identify the noise levels from the venue from 8pm to 10:45 pm or the corresponding background levels that by reason of the ambient noise in the subject environment are expected to be higher than at 11:15pm.

There is no material to correlate the sound levels relative to audibility .

Taking into account the significant errors cited above that show the inadequacy of the assessment undertaken by the author of the “acoustic report” little weight should be given to the conclusions or the material set out in the “acoustic report”.

There is an expectation that a person appropriately qualified and experienced in acoustics to undertake assessments/compliance tests of licensed premises would be aware of the conditions specified by L&G or the NSW Independent Liquor and Gaming Authority and point out a conflict in the liquor licence.

The LA10 Noise Condition used by L&G is different to Condition 220. Condition 220 has two typographical errors as the LA10 should be expressed as LA10* to accord with other licences and Decisions by Liquor & Gaming that include the LA10 Noise Condition.

The first version of the noise condition was prepared in 1986 at the request of the Liquor Administration Board (LAB) as the EPA's condition in their *Environmental Noise Control Manual* (1985) only assessed noise from licensed premises in dB(A) levels.

The LAB requested input from two acousticians and one Senior Lecture in acoustics at Sydney University to provide input. I was one of those acousticians. Following the discussions and reaching a consensus of opinion I was tasked with writing the noise condition. At that time the LA10 used for acoustic assessments was the average maximum observed on a sound level meter (as defined in Australian Standard AS 1055) but could be approximated by a statistical L10.

Where there was extraneous noise (such as traffic) the L10 statistical level would not agree with the L10 level of noise from the premises.

In November 1997 as a result of a revision to AS1055 the definition of L10 became a statistical level that could be approximated by an average maximum level. As a result of the change to the L10 definition in AS 1055 the technical content of the noise condition was changed to LA10* with a definition included in the condition to identify the LA10* could be the average maximum deflection on a sound level meter. I was the author of the changes.

The LAB morphed into the OLGR. The OLGR presented the standard noise condition on their website and fact sheets as the "L10 Condition". Condition 220 is identified on the Licence as having a start date of 1/7/2008. I take the condition to be imposed by the OLGR.

The EPA's previous *Noise Guide for Local Government (2004 & 2013),* identified in Section 4.1.1 *the "NSW Office of Liquor, Gaming and Racing"* were the Authority responsible for the control of noise from Licensed Premises on page 1.11 of the *Noise Guide for Local Government* the EPA the noise condition expressed as the LA_{10}*.

L&G do not provide a fact sheet on their website as to the LA10 Noise Condition. Using the search engine on the L&G website provides as the third item a Decision concerning The Station Newcastle that refers to the standard LA10 Noise Condition. The fourth item provides a Section 81 Decision in relation to the New Hampton Pty Ltd in Potts Point (file no A15/004913). Annexure 1 in the Decision provides the LA10 Noise Condition (last accessed 16.4.23) that is expressed correctly in relation to the period of 7am to midnight but is missing the asterisk to the LA10 for the period between midnight and 7am.

4 ACOUSTIC CRITERIA

In assessing noise from licensed premises normally there are two sperate noise components to be considered, mechanical plant noise and noise from activities (music/people) associated with licensed premises. These different noise sources are assessed under different criteria.

For the subject investigation mechanical plant is not an issue.

The acoustic compliance testing of the current operations that I undertook (the subject of the complaint) only considered noise emission in terms of the LA10 Noise Condition issued by the Liquor Authority responsible for licensed premises under the Liquor Act.

> *The LA_{10}* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz-8kHz inclusive) by more than 5dB between 7:00 am and 12:00 midnight at the boundary of any affected residence.*
>
> *The LA_{10}* noise level emitted from the licensed premises shall not exceed the background noise level in any Octave Band Centre Frequency (31.5Hz-8kHz inclusive) between 12:00 midnight and 7:00 am at the boundary of any affected residence.*
>
> *Notwithstanding compliance with the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 7:00 am.*
>
> ** For the purpose of this condition, the LA_{10} can be taken as the average maximum deflection of the noise emission from the licensed premises.*

The LA10 noise condition is a more stringent set of noise criteria to that normally imposed by the EPA for industrial noise sources. As noted above the measurements are evaluated in the form of an average maximum level compared to the background level in octave bands, rather than the Leq approach adopted by the EPA/DECC for industrial noise sources.

The use of octave band results breaks up the analysis into frequency components using octave bands with centre frequencies from 31.5 Hz to 8 kHz. Musically speaking, low frequency is typical of the bass guitar and bass drum whilst high frequency is like a cymbal or a triangle. The octave bands measured encompass most of the audible spectrum and the LA10 noise condition analysis requires the music to be assessed in individual octave bands.

As the background level is defined as the level that is exceeded for 90% of the time and therefore is measured on a statistical basis, the impact of the acoustic environment of the area (that is affected by other noise) on a statistical L10 level does not permit one to determine the noise level contribution attributed to the licensed premises. This is why the LA10 Condition is normally expressed in terms of the LA10* emitted from the premises, where the ***LA10* means the average maximum deflection on a sound level meter – not a statistical L10 level.***

There is often a misconception/misinformation in terms of the permitted LA10 numerical criteria and inaudibility. Compliance **with the before midnight criterion permits noise from the licensed premises to be audible at residential boundaries and permits measurable increases above the background level.** This means noise from licensed premises is permitted to be audible inside the dwellings before midnight.

For the after-midnight period noise from licensed premises c**an be audible at the residential boundary and comply with the boundary noise limits.** The inaudibility criterion **ONLY** applies inside the residential premises after midnight. From acoustic standards/policy documents in Australia the normal practice is to apply the inaudibility criterion to habitable rooms, not bathrooms, dressing rooms or garages.

Function operations at the venue do not operate after midnight so therefore the after midnight criterion has not been assessed.

5.0 MEASUREMENT TECHNIQUES

The measurement of noise emitted from the venue and ambient measurements were taken in accordance with the Australian Standard AS1055 *"Acoustics - Description and Measurement of Environmental Noise"* and the short term ambient background measurement procedures set out in Fact Sheet B of the EPA's *Noise Policy for Industry ("***NPfI***")*.

For the acoustic compliance testing the ambient background levels that were used were conducted in accordance with part B2 of the NPfI, “determining background noise using short-term noise measurements”.

Part B2 of the NPfI is identifies the appropriate background noise monitoring technique for:

- establishing the difference between the background noise level and the source being measured
- checking the noise compliance of a development
- determining the effect of background noise on a source-noise measurement.

Under Australian Standard AS 1055, the parameters used for the measurement of the subject venue were:

L10 - being a statistical level representing the sound level exceeded for 10 % of the sampling time for all noise detected during the measurement

L90 – being a statistical level representing the sound level exceeded for 90 % of the sampling time for all noise detected during the measurement (commonly called the background level)

Meter setting - FAST response being the exponential decay of the detector in the sound level meter.

The parameters used for the measurement/assessment of the venue were:

L10* - as required by the LA10 Noise Condition being the average maximum deflection of the venue noise when measured at residential receiver locations

L10 - when measuring a noise source on site (being the dominant source of concern) the statistical level exceeded for 10% of the sampling time

L90 – being a statistical level under AS 1055 (representing the sound level exceeded for 90 % of the sampling time for all noise detected during the measurement) and classified under the EPA’s NPfI as the background level from short term measurements

The attended sound level measurements were recorded using Brüel & Kjær 2270 Sound Level Meters (serial No. 3009636 & 3029844). Unattended sound level measurements on the northern boundary of the venue were recorded using a Bruel & Kjaer 2250 Sound Level Meter (serial no. 3004338).

The reference calibration level of each meter was checked prior to and after measurements using a Brüel & Kjær Sound Level Calibrator Type 4231 and exhibited no system drift. The calibration of both sound level meter to manufacturer's or NATA requirements that was current at the time of the measurements.

All of the above Bruel & Kjaer Sound Level Meters used for the measurements have a number of packages that analyse the recorded data to permit different forms of acoustic testing. For the testing of the venue the Enhanced Logging Software and Sound Recording Option were used.

The Enhanced Logging Software produces the time traces obtained at the measurement locations for attended measurements and provides the results of the statistical analysis undertaken by the meter. The L90 level refers to the level exceeded for 90% of the measurement sample.

The meter provides during measurement a real time running L90 level that can be used for direct comparison with the L10* level to ascertain acoustic compliance.

The L90 levels provided are the results determined by the sound level meter. The L10* noise from the venue was determined at the Scotland Island locations in accordance with the LA10* definition and can only occur when the noise was audible and gave rise to a measurable increase above the background level.

For the venue measurements I arranged for testing of the doors being opened and arrange for the B & K 2250 meter to be removed from the garden and place 1 metre inside the open doorway. For the measurement of the music inside the venue the L10 statistical level for those short periods has been used.

6.0 MEASUREMENT RESULTS

Measurements were conducted on the night of Saturday 18 March 2023.

The weather conditions at the time of the survey were mild, clear sky and negligible wind at the monitoring locations on the island.

The nearest Bureau of Meteorology station is at Terry Hills which is significantly elevated above sea level and experienced at the BOM site light winds from the NNE at the commencement of the survey reducing to very low winds from the North at the end of the survey.

On the basis that the prevailing wind recorded at Terry Hills was from the NNE/N then the wind experienced on the Scotland Island locations would be shielded by the Island and therefore lower than that recorded at the BOM site.

It is noted that on occasions light puffs of wind were detected at the complainant's balcony coming from the south and could potentially give rise to an enhancement of noise emission from the venue at the complainant's balcony.

On attending the complainant's premises the conduct of the proposed noise monitoring was discussed, noting there was little noise from the venue.

I advised the complainant that a sound level meter had been set up on the northern side of the venue for the purpose of monitoring noise emission from the venue for correlation with the testing at the complainant's premises.

I advised the complainant that as a result of the redacted acoustic report I had arranged for the manager of the venue to open the doors when entertainment (DJ and live music) was occurring and move the meter inside the doors for a few minutes to obtain an internal noise level.

During the setting up of the meter there was a barely audible level of music from the venue and was advised by the complainant that the noise being experienced at the time was not normal and that it was quieter than on previous occasions.

For monitoring on the balcony, it was identified that the appropriate positions were in front of the sliding doors but having the doors open so to not have a reflected vertical surface within 3 metres of the microphone. The monitoring for the acoustic report was in front of glass windows and was not identified in the acoustic report.

The complainant retired to a rear bedroom whilst the measurements were undertaken.

A series of 15 minute measurements were undertaken on the balcony where observations and notes were made in relation to the acoustic environment and identification/measurement of noise from the venue. The predominate extraneous noise was that associated with boats using the water way and wharf visible from the balcony.

The testing on the balcony included two tests with one sliding door open for DJ music and another for the live band.

Appendix B presents a series of time splice graphs that show the variation in the A-weighted sound level over time and identify the acoustic environment is subject to significant variations in the A-weighted level. The identification of the variation in the overall noise level cannot be obtained from the spectrograms contained in the redacted acoustic report.

Using the first time splice in Appendix B1 there are orange horizontal lines superimposed over the time splice that relate to noise events associated with boat/vessels giving rise to a noticeable increase in noise.

It was observed that depending upon the speed of the boats there were significant differences in the overall noise levels. For example, the orange line over 9:17pm relates to a vessel producing both engine and water noise whereas the higher noise level at 9:20pm related to a small water taxi passing the site and then into Church Point at a speed much higher than other vessels.

The orange line at 9:22 pm relates to a boat that left one of the berths on the eastern side of Bells Wharf and then headed to the mainland at Church Point.

At 9:23 pm the was noise from occupants of the dwelling immediately to the south.

The noticeable increase above the background from 9:25pm to the end of the first sample related two vessels from the mainland coming to the wharf, where one vessel was dropping off people with the second vessel standing off the wharf until the first vessel had departed and headed to the west. The second vessel then approached the wharf and went around the wharf into a berth off the eastern side of the walkway to the wharf.

The second time splice in Appendix B1 follows on from the first sample. It can be seen by way of the orange lines there are a significant number of boat events as a result of vessels passing up and down the bay, vessels arriving and departing Bells Wharf and vessels into and out of Church Point.

The blue line above 9:31 pm relates to the door to venue being opened for testing of the DJ music. However, during that test, there was a boat arriving and going to a berth on the eastern side of the walkway ramp to Bells Wharf that interfered with the measurement for the door open.

At 9.34 pm the boat event was a water taxi traveling down the bay to Church Point. At 9.36pm a water taxi arrived at Bells Wharf.

At 9:41 pm there was a boat on the western side of the walkway ramp to Bells Wharf that started and then idled for some time (loading gear into the boat) before departing to Church Point.

The upper time splice graph on Appendix B2 relates to the third sample on the complainant's balcony and in addition to identifying other boat events, included another test of the door being opened at 9:50pm in view of contamination of the levels for the test in the previous sample.

The door open test identified an increase in the background level and slightly higher LA10* levels. The complainant was in attendance for the second door open test and created peak levels (recorded by the meter) higher than the music/patron noise.

Following the completion of the three samples on the complainant's balcony a discussion occurred with the complainant in relation to the results of the testing where I advised from my manual measurements with the door closed there was compliance with the LA10 Noise Condition but with the door open for the second test there were some minor exceedances if the balcony was on the boundary.

On identification that the LA10 Noise Condition refers to the residential boundary I requested if I could take to the NE corner of the property boundary (on the road above the property) to conduct a short measurement at that location. In the absence of streetlights and no identification of boundaries the complainant's partner provided a light and escorted me to the measurement location.

No music could be detected at the NE boundary position in view of the ambient background level being controlled by crickets. Patron noise could be detected that gave rise to marginal increases above the background level in some octave bands.

On returning to the complainant's premises, I summarised the preliminary results of the testing and identified full compliance with the LA10 condition for the majority of the testing and some occasional breaches as a result of patrons' yells/calls.

The complainant responded that the noise even reduced for the night in question (in her opinion) was unsatisfactory and the only acceptable situation was inaudibility. The complainant's partner identified that whilst there was no bass (low frequency) evident, whilst on the balcony, there was low frequency in the rear room of the dwelling.

I explained the LA10 Noise Condition did not require the functions to be inaudible, but I would address those matters in my report, and I confirmed the address and name of the complainant would not be provided in my report.

On the basis of my measurements, I advised I did not require to undertake any more measurements on the balcony and wanted to undertake observations along the road to Bells Wharf and investigate the issue of propagation differences for water level and elevated level whilst the function was still in progress.

The complainant was agreeable with my packing up and going to undertake further observations. I observed the difference in noise from the venue at the top of the stairs to Bells Wharf, midway down the stairs and on the wharf. As I had some time before a water taxi arrived, I conducted measurements on the wharf that appear as the second time splice in Appendix B2.

The measurement on the wharf identifies noise levels from various boat events to be well above the background level. The time splice identifies multiple peaks that are the result of the pontoon rocking against the pylons as a result of waves from boats and noise from lapping of waves.

During my attendance at the wharf, music noise and people noise was clearly audible from a dwelling on the southern side of the island, NNE of the wharf and above Richard Road. There is a potential for such music noise to be incorrectly attributed to the subject venue.

The propagation of noise from boats at the ferry wharf was more noticeable on Bells Wharf in view of a lower background level obtained at that location.

No music noise from the venue could be detected at Bells Wharf as the music had ceased before the measurements were commenced.

Appendices B3 and C1 provide the A-weighted statistical/LA10* octave band results on the basis of the manual measurements that were undertaken on site, supplemented by use of the B & K BZ 5503 Partner Suite and the B& K Evaluator Program BZ7802 used to prepare the time splice graphs.

Due to nature of the acoustic environment as a result of the multiple boat events observed and recorded on the night and the variation in music and patron noise from time to time the LA10* results for patron and music noise vary from sample to sample. Processing of the door open tests required multiple runs to separate music and patron noise from boat noise. Processing of the door closed (normal operations) had similar issues but longer sample sizes to obtain the average maximum level.

7.0 ACOUSTIC FINDINGS

The result of my compliance testing found general compliance with the LA10 Noise Condition on the complainant's balcony if (contrary to the LA 10 Noise Condition) was applied at the complainant's boundary with the doors were closed as per the testing.

The criteria set out on the liquor licence for the venue under condition 220, the *LA_{10} noise level emitted from the licensed premises* refers to noise emitted from the subject premises which, in a technical sense, is not the noise levels measured at residential boundaries but is more accurately defined as the contribution from the venue determined without the influence of the ambient noise. That means that the background level, which is automatically included in the average maximum deflection on a sound level meter as an ambient background noise component must be eliminated (by logarithmic subtraction) so as to determine the contribution.

On a statistical LA10 basis I was unable to determine the noise contribution in the existing acoustic environment.

Adopting the LA10* parameter set out in the LA10 Noise Condition available on the L&G website, an assessment of the noise contribution from the venue can be undertaken.

Table 1 sets out the derived noise contribution based upon the measurement results provided in Appendix B at the complainant's premises. Where the octave band LA10* noise contribution exceeds background + 5 dB(A) the resultant level in that octave band is highlighted in red.

Table 1 reveals compliance with the LA10 Noise Condition at the NE boundary.

If the LA10 Noise Condition is applied at the complainant's balcony (which is not a boundary) the results in Table 1 reveal compliance for all locations under normal operations (doors closed) except for Sample 1 in the 8kHz octave band.

For the door open scenario, the results in Table 1 reveals a marginal breech in Sample 3 as a result of a 1 dB reduction in the ambient background level from sample 2.

A qualification to the above position is that the internal level of music was at 92/93 dB(A) shown in Appendix C1,

I am instructed the venue conducts sound level measurements on the northern boundary and inside the venue where a limit on the northern boundary of 61 dB(A) Slow response is maintained and accords with the level I obtained over an extended period of time from the time splice in Appendix C1.

I am instructed the venue has been operating to the above limit for some time – which was disputed by the complainant.

TABLE 1: Sound Level Contributions (Saturday night) 18 March 2023

Location	Parameter	dB(A)	A-weighted Octave Band Centre Frequency (Hz)								
			31	63	125	250	500	1k	2k	4k	8k
Balcony – sample 1	Patrons L10* door closed	35	<8	<17	26	<20	32	31	22	<15	<15
	Ambient L_{90}	39	18	28	28	30	32	31	26	25	25
Balcony – sample 2	Patrons L10* door closed	37	<8	<18	25	<24	35	33	<20	29	**30**
	Music L10* Door closed	33	<8	<18	27	30	35	29	22	27	<14
	Patrons L10* door open	<30	<8	<18	32	33	30	31	26	20	20
	Music L10* door open	35	<8	<18	<17	33	33	34	<20	<24	<14
	Ambient L_{90}	37	18	28	27	28	30	29	24	24	24
Balcony – sample 3	Patrons L10* door closed	39	<18	-	<16	25	<28	<24	23	21	<20
	Music L10* Door closed	35	<18	-	31	32	33	27	<20	19	<20
	Patrons L10* door open	39	<18	26	32	**33**	34	27	25	27	22
	Music L10* door open	39	18	32	**33**	29	**36**	32	27	21	26
	Ambient L_{90}	37	18	28	26	27	29	27	23	23	24
NE boundary	Patrons L_{10}	<31	<0	<8	<10	<8	24	25	19	<25	<17
	Ambient L_{90}	37	7	18	20	18	24	23	21	35	27

The above contributions are noticeably lower than the incorrect analysis undertaken by Acoustic Directions without noise source levels (inside or on the northern boundary) for the Acoustic Directions report then correlation between the alleged levels and what has been measured for this assessment cannot be undertaken.

It is noted that inaudibility in residential premises from the function is not a requirement of the LA10 Noise Condition for the period of 7am to midnight.

The functions occur in the Restaurant area and the Covered Area off the Restaurant. The Covered Area has a fixed waterproof membrane erected over the area.

Contrary to the claim in the Acoustic Directions report of the noise from the venue is not predominately coming out open doors.

The nature of female yells being more audible at the complainant's balcony than male voices identify to a suitably experience acoustician the presence of gaps/openings in the structure (see Appendix D).

With all the doors closed the major leakage path of mid-high frequency noise from the Covered Area is via gaps between the membrane and the building envelope, and for low frequency noise transmission of noise through the membrane.

On retrieval of the meter on the northern boundary of the northern boundary of the venue, I could detect background music and the stacking of chairs coming over the building rather than through the glass.

As a result of this leakage path the residential premises near the level of Richard Road would have a greater exposure to noise from the venue than at wharf level.

With respect to the function area for the existing construction the following controls are recommended to maintain acoustic compliance for the levels obtained in the venue. The controls are based upon the internal music levels measured and now assigned to the Outdoor Area.

Immediate works

- The music levels inside the venue when assessed at the open door locations should be reduced by 2 dB(A) until completion of the building works at which time the levels can return to what was measured during my testing.

Physical/Operational Noise Controls

- With respect to the Outdoor Area, the current membrane is to be replaced by a solid structure of metal deck roofing panels over insulation over the appropriate supporting members. It is necessary to ensure there are no gaps between the new roof and the existing building structure. Fix one layer of 13 mm thick plasterboard to the underside of the supporting members and then install an acoustic absorption/ceiling finish having an NRC of not less than 0.85, or acoustic insulation similar to Martini MD50and faced with perforated FC sheet (minimum open area of 23%).

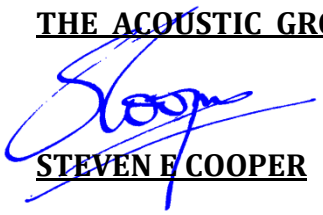
- Sound locks to the outdoor garden are required if access to the garden is permitted during functions when entertainment is provided. The sound lock(s) are to incorporate one 90° bend and have doors at either end of the sound lock. All doors to the sound lock are to have self-closers. The sound lock can be a glass construction using 12.76 Vlam Hush glass. The roof/ceiling of the sound lock is to be similar to the proposed roof/ceiling for the Outdoor Area.
- The Restaurant internal walls and ceiling are treated with acoustic panels or similar to control reverberation to less than 1.2 seconds.
- When the restaurant/outdoor area is in restaurant mode only there are no restrictions in terms of doors or windows being closed.
- However, when entertainment is provided that may be associated with functions or similar, then the doors and windows to the restaurant/covered area are to be closed and access to the outside is to be via the sound locks or the front door of the venue.

Sound System Controls

- In addition to the doors being closed there is a requirement for limiting of the music levels occurring to satisfy the LA10 Noise Condition. At the present time the sound levels are monitored by management.
- If all music is to be use an in-house sound system, it is preferred to use direct inputs so as to limit amplification of band instruments. The system is to have RMS compressor limiters controlling the entire signal chain. The compressor should have a ration of infinity to 1 with an attack time of 1ms and a release time of 1 second. The limiter should have an attack time of 1ms and a release time of 1 second. When the compressor/ limiters area installed the threshold levels for limiting are to be set so as to satisfy the LA10 Noise Condition.

Yours faithfully,

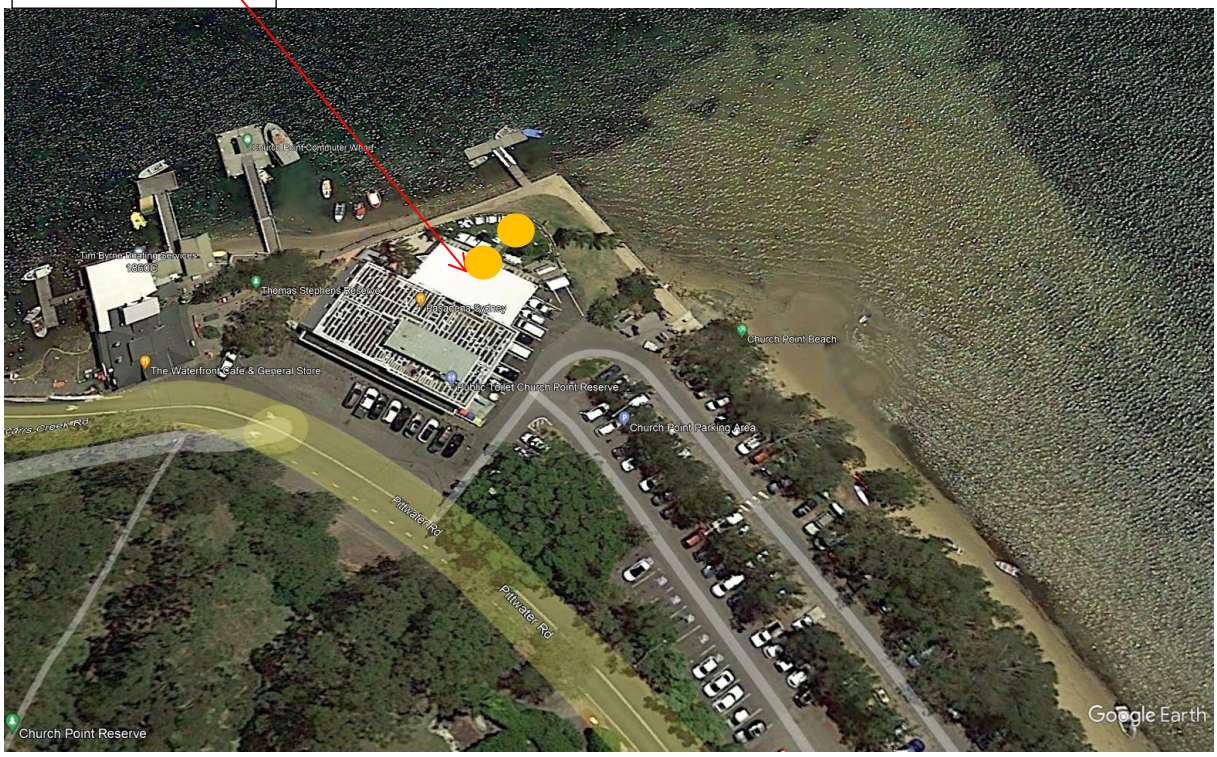
THE ACOUSTIC GROUP PTY LTD

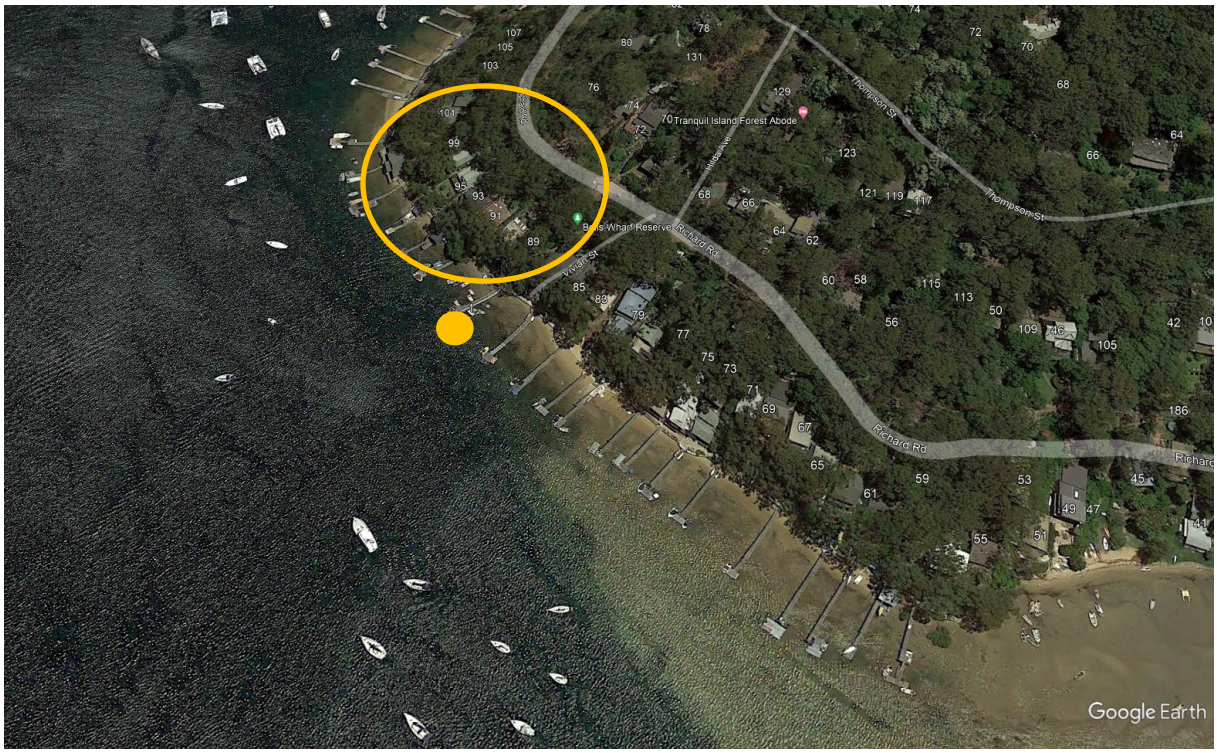


STEVEN E COOPER

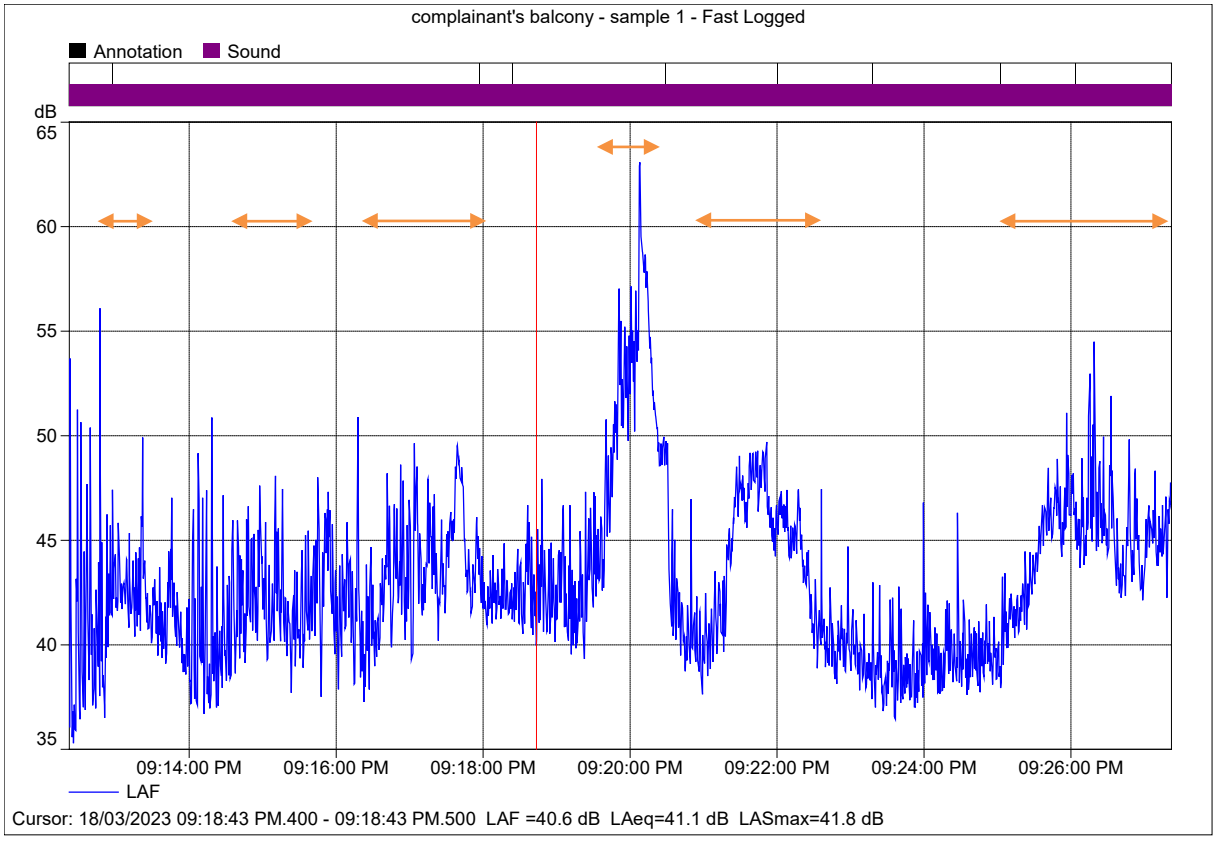
APPENDIX A: Site and Measurement Locations

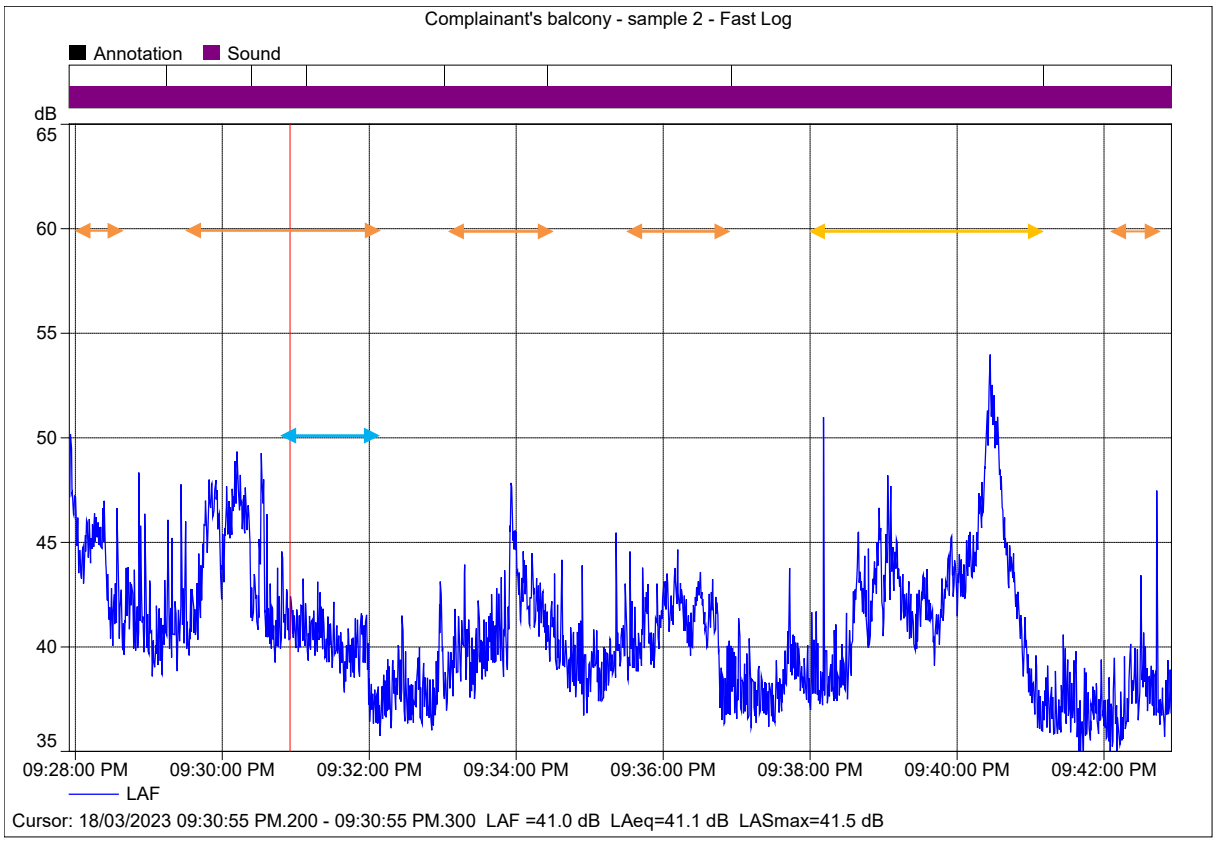
Site

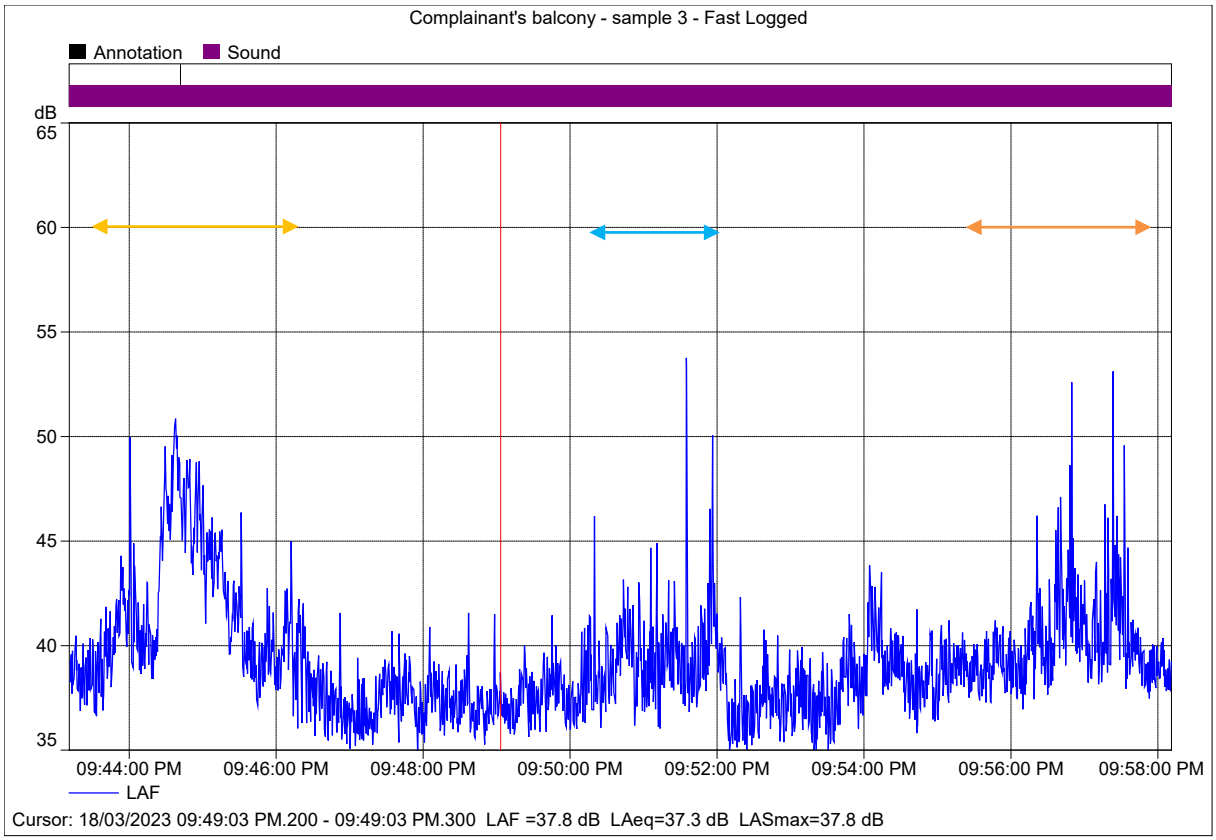


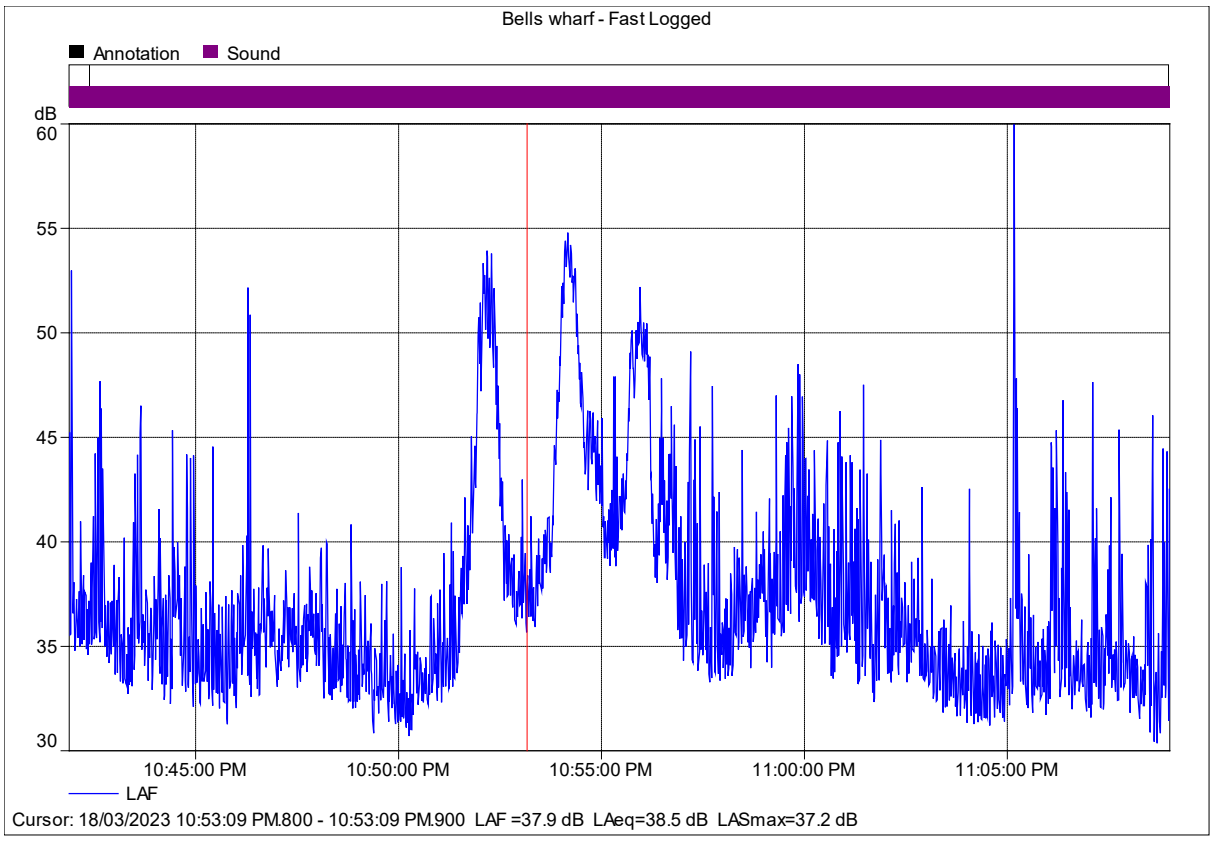

Tranquil Island Forest Abode
Thompson St
Richard Rd
Google Earth

APPENDIX B: Attended Measurement Results - Scotland Island



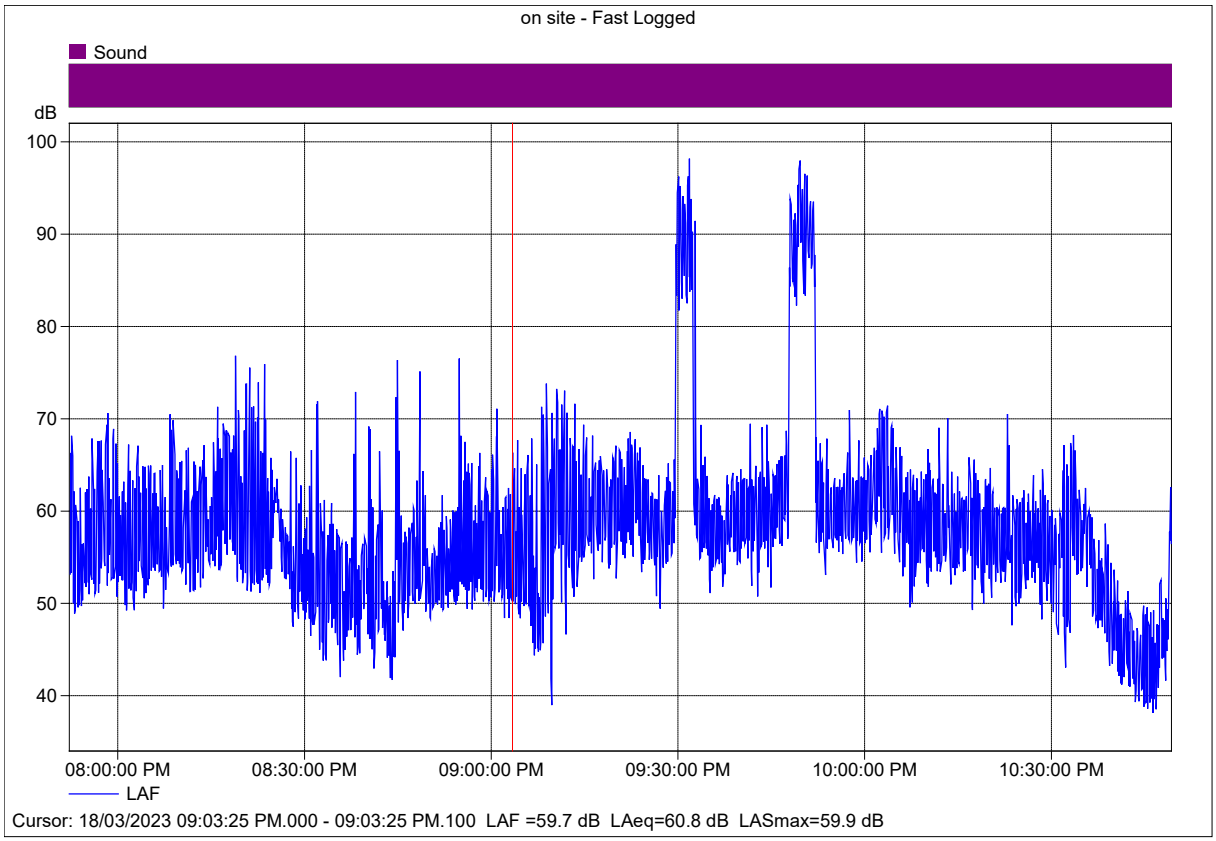



Complainant's balcony - sample 3 - Fast Logged
Annotation
Sound
dB
65
60
55
50
45
40
35
09:44:00 PM
09:46:00 PM
09:48:00 PM
09:50:00 PM
09:52:00 PM
09:54:00 PM
09:56:00 PM
09:58:00 PM
LAF
Cursor: 18/03/2023 09:49:03 PM.200 - 09:49:03 PM.300 LAF =37.8 dB LAeq=37.3 dB LASmax=37.8 dB


Bells wharf - Fast Logged
Annotation
Sound
dB
60
55
50
45
40
35
30
10:45:00 PM
10:50:00 PM
10:55:00 PM
11:00:00 PM
11:05:00 PM
LAF
Cursor: 18/03/2023 10:53:09 PM.800 - 10:53:09 PM.900 LAF =37.9 dB LAeq=38.5 dB LASmax=37.2 dB

Music	Parameter	dB(A)	A-weighted Octave Band Centre Frequency (Hz)								
			31	63	125	250	500	1k	2k	4k	8k
Scotland Island											
Complainant's balcony – sample 1	Patrons L10* door closed	40	-	-	30	-	35	34	27	-	-
	Ambient L_{10}	48	21	32	38	41	42	41	37	34	30
	Ambient L_{eq}	46	20	30	37	40	40	37	34	31	28
	Ambient L_{90}	39	18	28	28	30	32	31	26	25	25
Complainant's balcony – sample 2	Patrons L10* door closed	40	-	-	29	28	36	34	24	30	31
	Music L10* Door closed	38	-	-	30	32	36	32	26	29	-
	Patrons L10* door open	37	-	-	33	34	33	33	28	25	25
	Music L10* door open	39	-	-	-	34	35	35	24	-	-
	Ambient L_{10}	45	20	31	34	38	39	38	35	31	31
	Ambient L_{eq}	42	19	30	32	35	36	35	32	28	28
	Ambient L_{90}	37	18	28	27	28	30	29	24	24	24
Complainant's balcony – sample 3	Patrons L10* door closed	41	-	-	26	29	28	25	23	25	22
	Music L10* Door closed	39	-	-	32	33	34	30	24	24	20
	Patrons L10* door open	41	-	30	33	34	35	30	27	28	26
	Music L10* door open	41	21	33	34	31	37	33	28	25	28
	Ambient L_{10}	42	20	32	34	36	37	34	30	28	29
	Ambient L_{eq}	40	19	30	31	34	35	32	28	26	27
	Ambient L_{90}	37	18	28	26	27	29	27	23	23	24
Complainant's road boundary	Patrons L10*	-	-	-	-	-	-	27	27	23	35	-
	Ambient L_{10}	41	10	25	25	22	29	30	27	39	33
	Ambient L_{eq}	40	9	22	23	20	27	32	29	37	30
	Ambient L_{90}	37	7	18	20	18	24	23	21	35	27
Bells Wharf	Patrons L10*	38	-	-	24	29	31	34	26	25	15
	Ambient L_{10}	43	13	25	32	37	38	36	36	31	19
	Ambient L_{eq}	44	11	23	30	34	40	38	35	31	19
	Ambient L_{90}	33	8	19	21	23	26	25	21	22	14

APPENDIX C: Unattended Measurements at Venue



Music	Parameter	dB(A)	A-weighted Octave Band Centre Frequency (Hz)								
			31	63	125	250	500	1k	2k	4k	8k
DJ	Music L10*	92	43	63	67	74	84	90	86	78	51
Band	Music L10*	93	57	76	77	78	86	90	88	80	74
North Boundary (doors closed)	Music L_{10}	62	33	54	52	51	58	55	50	46	34
	Music L_{eq}	59	27	49	47	48	55	52	48	44	32
	Ambient L_{90}	50	15	28	34	38	45	43	40	35	25

APPENDIX D: Membrane Over Covered Area