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1 WHYMARK AVENUE, CROUCH END, LONDON

NOISE IMPACT ASSESSMENT

Report **18109-NIA-01**

Prepared on 09 January 2023

Issued For:
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Executive Summary

This noise impact assessment has been undertaken in order to assess proposed bar / restaurant use at the first floor level of 1 Whymark Avenue, Crouch End, London

Proposals will include customer seating and standing areas, where it is understood amplified and live music will be played at background level.

A background noise survey has been undertaken as detailed in the report, in order to determine an appropriate noise emission criterion, in accordance with the requirements of The London Borough of Haringey.

Calculations were undertaken for the nearest identified receiver, identified as York house. It should be noted that if there are closer receivers that Clement Acoustics is not aware of, a reassessment will be necessary, and this should therefore be confirmed by the Client.

It has been demonstrated that compliance with the established criterion is feasible, dependant on the proposed mitigation measures set out in this report. If there is any deviation from these measures, Clement Acoustics must be informed, in order to establish whether a reassessment is necessary.

Clement Acoustics has used all reasonable skill and professional judgement when preparing this report. The report relies on the information as provided to us at the time of writing and the assumptions as made in our assessment.

This report is designed to be suitable to discharge typical plant noise planning conditions, as per our original scope of work.

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18109-SP1 – SP2	Indicative Site Plans
18109-TH1	Environmental Noise Time History
Appendix A	Glossary of Acoustic Terminology
Appendix B	Acoustic Calculations

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Issue	Comment
0	First issue

1.0 INTRODUCTION

Clement Acoustics has been commissioned by Mr Sadar Agha to measure existing background noise levels at 1 Whymark Avenue, Crouch End, London. Measured noise levels have been used to determine noise emissions criteria for a proposed bar / restaurant in agreement with the planning requirements of the London Borough of Haringey Council.

This report presents the results of the environmental survey followed by noise impact calculations and outlines any necessary mitigation measures.

An acoustic terminology glossary is provided in Appendix A.

2.0 SITE DESCRIPTION

The site is a first floor unit within 26 High Road, Wood Green bound by Bury Road to the northeast, Whymark Avenue to the southeast, commercial premises on High Road to the southwest and further units within 26 High Road to the northwest. The surrounding area is mixed commercial and residential in nature.

Proposals are to redevelop a first floor unit for use as a bar / restaurant. Proposals will include customer seating areas, where it is anticipated music will be played for the majority of the time. It is understood there are no proposals for live music, and amplified music is not anticipated to be played at an 'entertainment' level.

As part of the redevelopment, it is understood that ventilation and air conditioning plant is to be installed. Due to the early stage of the design process, full plant details are not currently available.

Northwest facing windows on the adjacent residential building York House have been identified as the nearest affected residential receivers. These nearest noise sensitive receivers were identified through observations on-site. If there are any receivers closer than those identified within this report then a further assessment will need to be carried out. Therefore, the closest noise sensitive receiver should be confirmed by the client before the plant is installed or any noise mitigation measures are implemented.

3.0 ENVIRONMENTAL NOISE SURVEY

3.1 Unattended Noise Survey Procedure

Measurements were undertaken at one position as shown on indicative site drawing 18109-SP1. The choice of this position was based both on accessibility and on collecting representative noise data in relation to the nearest affected receiver.

The surroundings and position used for the monitoring location are described in Table 3.1.

Position No.	Description
1	The microphone was mounted on a 2 nd storey flat roof at the front of the building. The microphone was positioned > 3.5 m in front any vertical reflective surface. ^[1]

Table 3.1: Description of unattended monitoring locations

Note [1]: The position was considered to be free-field according to guidance found in BS 4142: 2014, and a correction for reflections has therefore not been applied.

Continuous automated monitoring was undertaken for the duration of the survey between 17:30 on 15 December 2022 and 12:00 on 19 December 2022.

The measurement procedure generally complied with BS 7445: 1991: '*Description and measurement of environmental noise, Part 2- Acquisition of data pertinent to land use*'.

3.2 Weather Conditions

At the time of set-up and collection of the monitoring equipment and during the attended measurements, the weather conditions were dry with light winds. It is understood that the weather conditions during the unattended survey were generally dry with average wind speeds below 5 m/s.

It is understood that the weather conditions during the unattended survey were generally dry with wind speeds below 5 m/s and brief light showers on the afternoon of 16 and 18 December 2022.

It is considered that the weather conditions were suitable for the measurement of environmental noise.

3.3 Equipment

The equipment calibration was verified, by means of a field verification check, before and after use and no abnormalities were observed.

The equipment used was as follows.

- 1 No. Svantek Type 971 Class 1 Sound Level Meter
- Rion Type NC-74 Class 1 Calibrator

4.0 RESULTS

4.1 Unattended Noise Survey Results

The $L_{Aeq}: 5min$, $L_{Amax}: 5min$, $L_{A10}: 5min$ and $L_{A90}: 5min$ acoustic parameters were measured at the location shown in site drawing 18109-SP1.

Measured noise levels are shown as a time history in Figure 18109-TH1, with average ambient and typical background noise levels summarised in Table 4.1.

It should be noted that the guidance of the latest revision of British Standard 4142: 2014 +A1 2019 'Methods for rating and assessing industrial and commercial sound', as detailed in Section 8.1 of the standard is as follows:

'The objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.'

Therefore, the typical background noise level will be used for the purpose of this assessment.

Time Period	Average ambient noise level $L_{eq}: T$	Typical background noise level $L_{90}: 5min$
Daytime (07:00 - 23:00)	57 dB(A)	50 dB(A)
Night-time (23:00 - 07:00)	52 dB(A)	44 dB(A)
Proposed Operating Hours (12:00 - 00:00)	57 dB(A)	50 dB(A)

Table 4.1: Average ambient and minimum background noise levels

5.0 NOISE CRITERIA

5.1 Relevant Local Policy

The assessment and recommendations in this report have been undertaken in accordance with Policies D13 and D14 of the London Plan 2021, which contain the following relevant sections:

“D13 - Agent of change

(C) New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.’

D14 - Noise. In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:

(1) avoiding significant adverse noise impacts on health and quality of life;

(2) reflecting the Agent of Change principle as set out in Policy D13 Agent of Change [see above] ...”

5.2 Local Authority Requirements

A planning condition that was issued by the same Local Authority to a similar commercial unit in close proximity to the restaurant is as follows:

The system shall be mounted on anti vibration mounts and when measured as a 15 mins LAeq value 1m from the facade of the nearest residential premises the installation shall not increase the existing background noise level (measured as the 15 min LA90 value) 1m from the facade of the nearest residential premises at any time. Reasons: In order to ensure that the proposal does not prejudice the enjoyment of neighbouring occupiers of their properties.

Therefore it has been assumed this is the typical noise emissions criteria the London Borough of Haringey requires for any noise from new plant installations. For a noise source to not increase the background noise level (15 min L_{A90}) it should be at least 10 dB below the minimum measured background noise level. Though this criterion specifically relates to plant noise, it is expected to be suitable for restaurant breakout noise based on similar criteria of other local authorities.

Furthermore, this is a typical criterion used by the majority of London boroughs in order to avoid 'creeping background noise' when new commercial and industrial noise emitting sources are built and/or installed.

Based on the results of the environmental noise survey and requirements of Haringey London Borough Council, Table 5.1 presents the proposed plant noise emission criteria.

Period	Plant Noise Emission Limit $L_{eq,T}$
Daytime (07:00 - 23:00)	40 dB(A)
Night-time (23:00 - 07:00)	34 dB(A)
Proposed Operating Hours (12:00 - 00:00)	40 dB(A)

Table 5.1: Plant noise emission limits

6.0 RESTAURANT NOISE IMPACT ASSESSMENT

6.1 Proposed Activities

As the building is not currently in use as a bar, attended measurements were taken of similar sized venue, with patrons present and music played back at a level considered to be an entertainment level. In this way, an assessment will be provided for the worst-case scenario of loudest noise levels.

The measured noise levels that will be used in calculations are as shown in Table 6.1.

Source Description	Sound Pressure Level (dB) in each Frequency Band, at source								dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
Busy Bar with Background Music	75	76	77	83	82	77	71	62	86

Table 6.1: Measured Noise Levels

These levels will be used to calculate the current noise breakout to nearby noise sensitive receivers.

6.2 Noise Breakout Measurements

During an on-site inspection, potential noise breakout paths were investigated. The identified breakout path is via the first floor windows shown in the attached site plan, 18109-SP2.

High volume “white” noise was generated from loudspeakers. A spatial average of the resulting one-third octave band noise levels between 50 Hz and 20 kHz was obtained by using a moving microphone technique over a minimum period of 15 seconds at each of two positions.

Measurements of 30-90 seconds were then conducted immediately outside the windows of the bar / restaurant, in order to investigate the level of breakout noise through each window.

The results of breakout measurements are shown below in Table 6.2. Measurement locations are shown on site plan 18109-SP1.

Element	Performance, dB
Window 1	D _w 30
Window 2	N/A ^[1]
Window 3	D _w 31
Window 4	D _w 32

Table 6.1: Measured Performance of Existing Windows

[1] measurements taken at Window 2 were deemed unrepresentative due to high background noise levels present at time of measurement.

6.3 Noise Breakout Assessment – Existing Façade Construction

Residential windows have been identified at the location shown in attached site plan 18109-SP1. The closest windows are located a minimum of 20 m from the façade of the proposed bar / restaurant.

The façade to the proposed restaurant is formed of existing masonry and glazing. In order to provide a robust assessment, the lowest measured window performance set out in Table 6.2 have been used in calculations. Laboratory data for masonry, and a calculated composite sound reduction index for the façade is shown in Table 6.2.

Construction	Stated Sound Reduction in Each Frequency Band							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
Measured Window 1 Performance	19	21	26	29	30	30	35	40
Masonry	39	41	43	48	50	55	55	55
Composite Facade	23	25	30	33	34	34	39	44

Table 6.2: Predicted sound reduction of café bar facade

With music played back at the level shown in Table 6.1, predicted noise emissions levels at nearest residential windows would be as shown in Table 6.3.

Levels have been calculated using the measured background music levels, the calculated sound reduction of the venue facade and the formula shown in Appendix B.

Receiver	Operation Hours Criterion	Rating Noise Level at Receiver (due to amplified music)
Closest Residential Receiver	40 dB(A)	44 dB(A)

Table 6.3: Noise levels and criteria at Residential Receiver

As shown in Table 6.3 and Appendix B, transmission of noise to the nearest sensitive windows due to the effects of the events and activities would exceed the set criteria, based on current proposals.

6.4 Proposed Mitigation Measures

To reduce noise emissions, it is recommended a noise limiter is fitted and set such that the music from the restaurant is not audible at the identified receivers. This is expected to be achievable with the noise limits shown below in Table 6.4. These limits should be met at 1 m from inside the restaurant windows.

Noise Source	Low Frequency Limits		Overall Limit
	63Hz	125Hz	
Amplified Music	74 dB	75 dB	83 dB(A)

Table 6.4: Music noise emission limits

Additional forms of noise limiting include managing patron noise with the following noise management plan:

- Behaviour of patrons should be monitored by regular patrols to ensure there is no unnecessary or excessive noise.
 - *The behaviour of patrons can be a significant factor in the levels of generated noise, particularly where the sale of alcohol is concerned. Regular patrols should be undertaken to identify and prevent any potential for unnecessary noise due to the behaviour of patrons.*
- All openable windows should remain closed at all times
 - As windows are the weakest façade element, it should be ensured that they are providing the maximum possible noise attenuation by remaining closed
- Entrance doors should remain closed when not in use, and monitored to ensure this
 - Open doors will also provide a path of low noise attenuation, ensuring they are closed when not in use will limit restaurant noise travelling to nearby noise sensitive receivers

6.5 Noise Breakout Assessment – With Limited Noise Levels

Taking into account all necessary acoustic corrections, including the limited noise levels set out in Section 6.4, the resulting noise level at the identified residential windows would be as shown in Table 6.5. Detailed calculations are shown in Appendix B.

Receiver	Operation Criterion	Noise Level at Receiver (due to proposed Restaurant)
Nearest Residential Property	40 dB(A)	40 dB(A)

Table 6.5: Noise levels and project criterion at noise sensitive receivers

As presented in Table 6.5 and Appendix B, the proposed restaurant operation would be expected to meet the requirements of the proposed criteria.

6.6 British Standard Requirements

Further calculations have been undertaken to assess whether the noise emissions from the proposed operation of the restaurant would be expected to meet recognised British Standard recommendations, in order to further ensure the amenity of nearby noise sensitive receivers.

British Standard 8233: 2014 ‘*Guidance on sound insulation and noise reduction for buildings*’ gives recommendations for acceptable internal noise levels in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS 8233: 2014 recommends 30 dB(A) as being acceptable internal sleeping conditions during night-time.

With loudest external levels of 40 dB(A), acceptable internal conditions would be met by taking the attenuation of the window itself into consideration. According to BS 8233: 2014, a typical building facade with a partially open window offers 15 dB attenuation.

It can therefore be predicted that, in addition to meeting the requirements of the set criteria, the emissions from the proposed restaurant operation would be expected to meet the most stringent recommendations of the relevant British Standard, with neighbouring windows partially open. Predicted levels are shown in Table 6.6.

Receiver	Recommended Target – <i>For resting/sleeping conditions in a bedroom, in BS 8233: 2014</i>	Noise Level at Receiver (due to Restaurant Operation)
Inside Residential Window	30 dB(A)	25 dB(A)

Table 6.6: Noise levels and BS 8233: 2014 criteria inside nearest residential space

7.0 PLANT NOISE IMPACT ASSESSMENT

Full details of the proposed plant installation are not currently known, as the project is at an early stage, however it is understood that the full installation will consist of kitchen extract plant as well as possible air conditioning plant.

It is recommended that additional calculations are carried out once accurate plant noise emission data is available to ensure that the proposed installation complies with the plant noise limits shown in Table 5.1 above at the nearest noise sensitive receiver, which has been identified as York House.

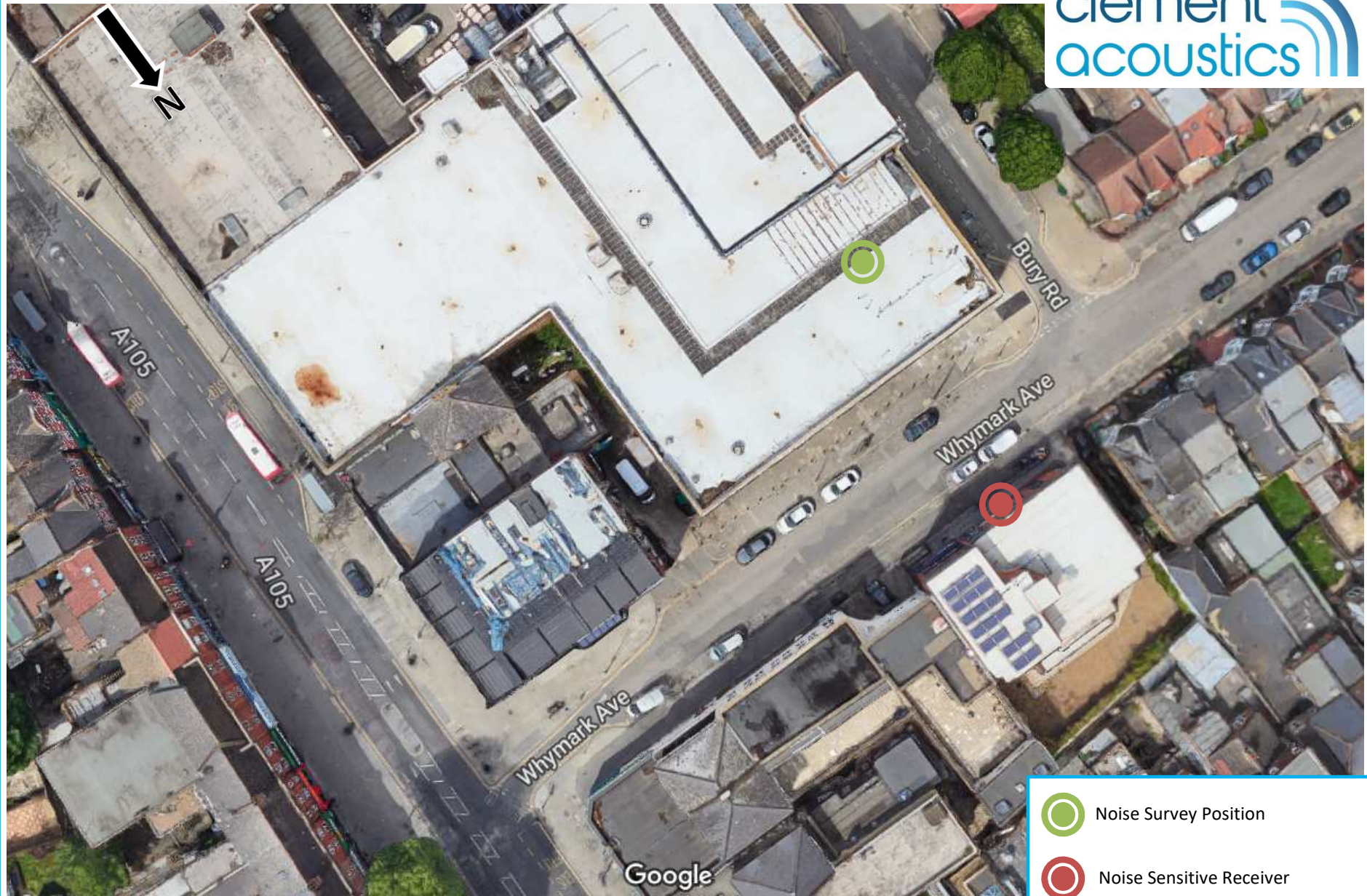
8.0 CONCLUSION

An environmental noise survey has been undertaken at 1 Whymark Avenue, Crouch End, London. The results of the survey have enabled criteria to be set for noise emissions from the proposed plant and operation noise in accordance with the requirements of the London Borough of Haringey.

A noise impact assessment has then been undertaken for restaurant operation noise using previously measured noise data to predict the noise levels, at the nearby noise sensitive receivers.

Calculations show that noise emissions from the proposed restaurant operations should meet the requirements of the London Borough of Haringey with the recommended mitigation installed as stated herein.

Further noise impact calculations of fixed plant will be undertaken once more plant details are available, to demonstrate that the requirements of the Local Authority can be met, with mitigation as required.

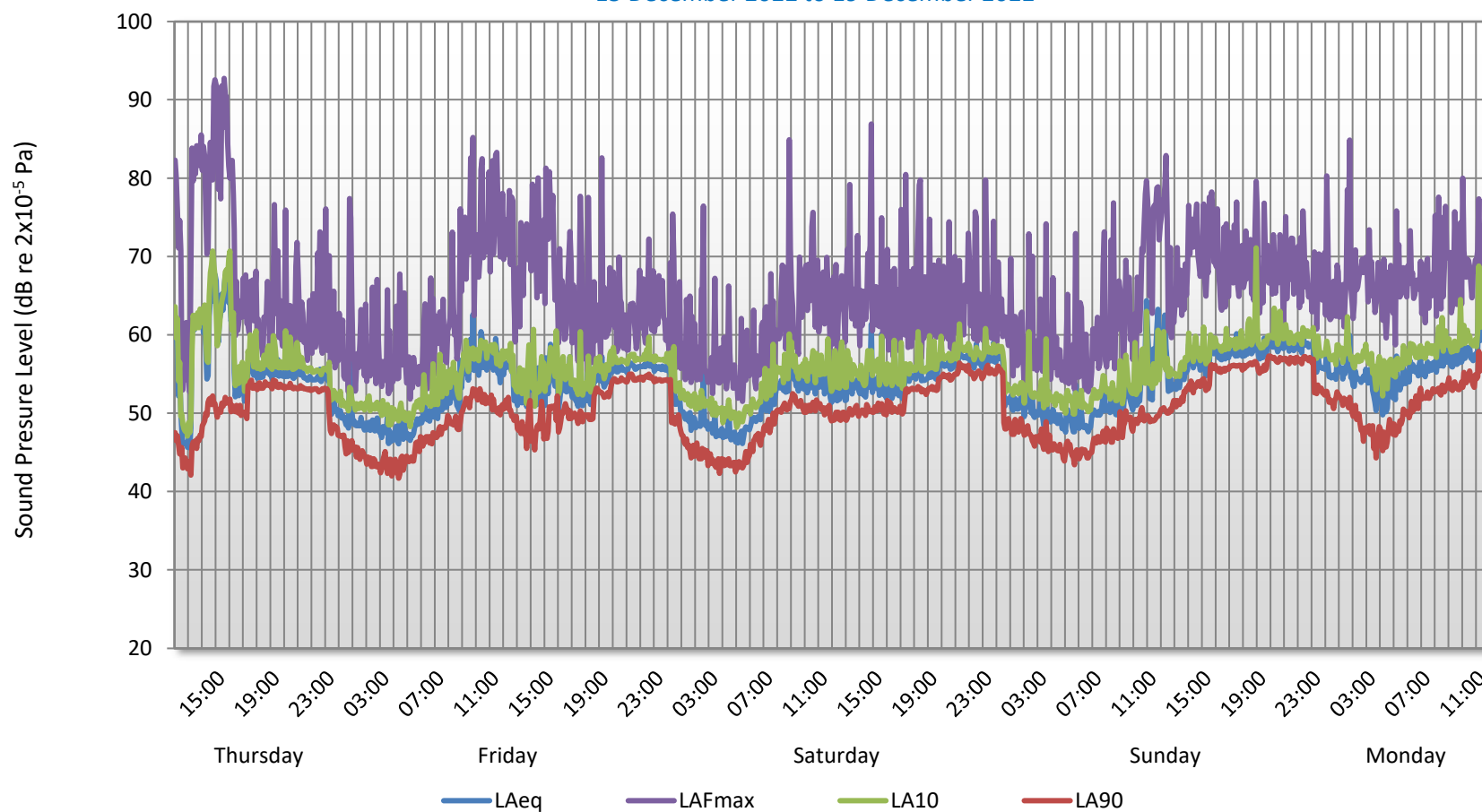


-  Noise Survey Position
-  Noise Sensitive Receiver



Position 1

Environmental Noise Time History
15 December 2022 to 19 December 2022



GLOSSARY OF ACOUSTIC TERMINOLOGY

dB(A)

The human ear is less sensitive to low (below 125Hz) and high (above 16kHz) frequency sounds. A sound level meter duplicates the ear's variable sensitivity to sound of different frequencies. This is achieved by building a filter into the instrument with a similar frequency response to that of the ear. This is called an A-weighting filter. Measurements of sound made with this filter are called A-weighted sound level measurements and the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq} . The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for not more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise

L_{90}

This is the level exceeded for not more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 10 such octave bands whose centre frequencies are defined in accordance with international standards.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than one alone and 10 sources produce a 10 dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3 dB for each doubling of distance.

Subjective impression of noise

Sound intensity is not perceived directly at the ear; rather it is transferred by the complex hearing mechanism to the brain where acoustic sensations can be interpreted as loudness. This makes hearing perception highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a reasonable guide to help explain increases or decreases in sound levels for many acoustic scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud
20	About 4 times as loud

Barriers

Outdoor barriers can be used to reduce environmental noises, such as traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and its construction.

Reverberation control

When sound falls on the surfaces of a room, part of its energy is absorbed and part is reflected back into the room. The amount of reflected sound defines the reverberation of a room, a characteristic that is critical for spaces of different uses as it can affect the quality of audio signals such as speech or music. Excess reverberation in a room can be controlled by the effective use of sound-absorbing treatment on the surfaces, such as fibrous ceiling boards, curtains and carpets.

Receiver 1: Identified Residential Window	Frequency, Hz								
Source: Restaurant Noise w/ Background Music	63	125	250	500	1k	2k	4k	8k	dB(A)
Internal Sound Pressure Level									
Limited Source Noise Level Within First Floor Restaurant	74	75	73	79	78	73	67	58	82
Calculated Sound Reduction of proposed facade, dB (SRI)	-23	-25	-30	-33	-34	-34	-39	-44	
Correction for total area of building facade (S = 96m ²)	20	20	20	20	20	20	20	20	
Correction for directivity (Q) and distance (r) (Q=2, r = 20m)	-21	-21	-21	-21	-21	-21	-21	-21	
Non reverberant correction	-6	-6	-6	-6	-6	-6	-6	-6	
Sound pressure level at receiver due to music play back	43	42	36	39	36	31	20	7	40
						Design Criterion			40