128 Albert Street
Camden
London

Environmental Noise Survey and Residential Noise Impact Assessment Report

30232/PNA1 (Rev 3)

5 July 2023

For:
Hollis Global
Battersea Studios
80-82 Silverthorne Road
London
SW8 3HE

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Document Control

Rev	Date	Comment	Prepared by	Authorised by
3	05/07/2023	Updated following manned site noise measurements		
			Sandy Wilson Consultant BSc(Hons)	Robin Honey Director BA(Hons), MIOA
2	16/11/2022	Updated with existing plant noise data	Sandy Wilson Consultant BSc(Hons)	Robin Honey Director BA(Hons), MIOA
1	08/11/2022	Updated following manned site noise measurements	Sandy Wilson Consultant BSc(Hons)	Robin Honey Director BA(Hons), MIOA
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Attachments

1.0 Introduction

New items of building services plant have been installed on the roof terrace of 128 Albert Street in Camden, London. We understand our client is seeking retrospective planning consent.

Hann Tucker Associates have therefore been commissioned to undertake an environmental noise survey and plant noise assessment with reference to the requirements of the Local Authority.

The report presents the methodology and findings of our environmental noise survey and plant noise assessment.

2.0 Objectives

To inspect the site to familiarise ourselves with its layout and surroundings in order to identify suitable accessible locations for environmental noise measurements.

To establish by means of an unmanned 24-hour survey the existing $L_{Amax,}$ L_{Aeq} and L_{A90} environmental road, rail and air traffic noise levels at 1No. secure and accessible on-site position, using fully computerised noise monitoring equipment.

The survey will enable noise emission limits from the development to be identified with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 and to minimise the possibility of noise nuisance to neighbours.

To assess the noise emissions from the installed plant, based upon manned measurements on-site and data with which we are provided, and comment upon the acceptability.

To advise on noise control measures if required with reference to the requirements of the Local Authority.

3.0 Site Description

3.1 Location

The site is located at 28 Albert Street in Camden, London. The location is shown in the Location Map below.

Location Map (Map data ©2022 Google.)

The site falls within the jurisdiction of the London Borough of Camden.

3.2 Description

The site is located at 128 Albert Street which is a one-way residential street. The site is bound by Albert Street to the west, Delancy Street to the south, Arlington Street to the east and Parkway to the north. It is next door to Fitness First gym, and opposite the office is the Spread Eagle public house. The residential building on the street are 3 storey high terrace houses.

The site is shown on the following Site Plan.

Site Plan (Imagery 2022 © Bluesky, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The Geoinformation, Map Data © 2022 Google)Acoustic Terminology

4.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

5.0 Acoustic Standards and Guidelines

5.1 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published in March 2010 (i.e. before the NPPF). The NPSE is the overarching statement of noise policy for England and applies to all forms of noise other than occupational noise, setting out the long term vision of Government noise policy which is to:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life."*

The Explanatory Note to the NPSE has three concepts for the assessment of noise in this country:

NOEL – No Observed Effect Level
This is the level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.

LOAEL – Lowest Observable Adverse Effect Level
This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level
This is the level above which significant adverse effects on health and quality of life occur.

None of these three levels are defined numerically and for the SOAEL the NPSE makes it clear that the noise level is likely to vary depending upon the noise source, the receptor and the time

of day/day of the week, etc. The need for more research to investigate what may represent an SOAEL for noise is acknowledged in the NPSE and the NPSE asserts that not stating specific SOAEL levels provides policy flexibility in the period until there is further evidence and guidance.

The NPSE concludes by explaining in a little more detail how the LOAEL and SOAEL relate to the three NPSE noise policy aims listed above. It starts with the aim of avoiding significant adverse effects on health and quality of life, then addresses the situation where the noise impact falls between the LOAEL and the SOAEL when *"all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development."* The final aim envisages pro-active management of noise to improve health and quality of life, again taking into account the guiding principles of sustainable development which include the need to minimise travel distance between housing and employment uses in an area.

5.2 National Planning Policy Framework (NPPF)

The following paragraphs are from the NPPF (published July 2021):

185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

187. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

Paragraph 185 also references the Noise Policy Statement for England (NPSE). This document does not refer to specific noise levels but instead sets out three aims:

- "Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.
- Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development."

5.3 Planning Practice Guidance on Noise

Planning Practice Guidance (PPG) under the NPPF has been published by the Government as a web based resource at http://planningguidance.planningportal.gov.uk/blog/guidance/. This includes specific guidance on Noise although, like the NPPF and NPSE the PPG does not provide any quantitative advice. It seeks to illustrate a range of effect levels in terms of examples of outcomes as set out in the following table:

Perception	Examples of Outcomes	Increasing effect level	Action
Not noticeable	No effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and	Significant Observed Adverse Effect	Avoid

Perception	Examples of Outcomes	Increasing effect level	Action
	difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.		
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable hard, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

5.4 Local Authority Requirements

The site lies within the jurisdiction of the London Borough of Camden. We understand the London Borough of Camden's advice relating to noise emissions from air conditioning plant is as follows:

"Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A) when all plant/equipment are in operation. Where it is anticipated that any plant/equipment will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps) special attention should be given to reducing the noise levels from that piece of plant/equipment at any sensitive façade to at least 10dB(A) below the L_{A90}, expressed in dB(A)".

5.5 Statutory Noise Nuisance

There is no quantitative definition of statutory noise nuisance. It is generally accepted however, that if the plant noise level is at least 5dB (or 10dB if tonal) below the minimum background $L_{90(15minutes)}$ at 1m from the nearest noise sensitive residential window, then the risk of a statutory noise nuisance is avoided. By adopting this as a design criterion the guidance contained in BS 4142:2014 should also be complied with.

6.0 Survey Methodology

The survey was undertaken by Sandy Wilson BSc(Hons), assisted by Greg Moore BA(Hons).

6.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 13:00 hours on 5 October 2022 to 11:00 hours on 7 October 2022.

During the periods we were on site the wind conditions were light and the sky was clear. We understand that generally throughout the survey period the weather conditions were calm. These conditions are considered suitable for obtaining representative measurement results.

Measurements were taken continuously of the A-weighted (dBA) L_{90}, L_{eq} and L_{max} sound pressure levels over 15 minute periods.

6.2 Measurement Position

The microphone was attached to a pole approximately 1 metre above roof level and placed on a railing overlooking the rear of the property.

The measurement position is shown on the following Plan:

Plan Showing Measurement Position (Imagery 2022 © Bluesky, Getmapping plc, Infoterra Ltd & Bluesky, Maxar Technologies, The Geoinformation, Map Data © 2022 Google).

6.3 Instrumentation

The instrumentation used during the survey is presented in the table below:

Description	Manufacturer	Type	Serial Number	Calibration
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3541	Calibration on 05/11/2021
Type 1 ½" Condenser Microphone	PCB	377B02	107842	Calibration on 05/11/2021
Preamp	Larson Davis	PRM902	4199	Calibration on 05/11/2021

The sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant change was found to have occurred (no more than 0.1dB).

The sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable.

The microphone was fitted with a windshield.

7.0 Results

The results have been plotted on Time History Graph 30232/TH1 enclosed, presenting the 15-minute A-weighted (dBA) L_{90} and L_{eq} noise levels at each measurement position throughout the duration of the survey.

The lowest $L_{A90\ (15\text{-}min)}$ measurements recorded during the survey are presented in the table below:

Lowest Measured $L_{A90(15min)}$ Background Noise Level (dB re 2 x 10^{-5} Pa)		
Daytime (07:00 – 23:00) Hours	**Night-Time (23:00 – 07:00) Hours**	**24 Hours**
47dBA	46dBA	46dBA

8.0 Discussion Of Noise Climate

During the periods we were on site the dominant noise source was noted to be existing plant noise from several neighbouring commercial buildings in the area. It is reasonable to assume that the above results described within Section 7.0 have been artificially elevated by neighbouring plant noise.

9.0 Plant Noise Emission Criteria

Building services plant external noise emission levels will need to comply with local authority requirements and statutory noise nuisance legislation.

With reference to the criteria within Section 5.4, noise emissions from the proposed plant should not exceed a level of 5dB below the lowest measured $L_{A90(15min)}$. Therefore, based on the results of the noise survey and the advice above, we recommend the following plant noise emission levels to be achieved with all plant running simultaneously at 1m external to the nearest noise sensitive façade.

Noise Emission Limit (dBA)		
Daytime (07:00 – 23:00) Hours	**Night-Time (23:00 – 07:00) Hours**	**24 Hours**
42dB	41dB	41dB

The above criteria are to be achieved with all of the proposed plant operating simultaneously.

As described in Section 9.0 we suspect noise levels during our survey were artificially elevated due to noise from existing neighbouring plant. The above criteria may therefore not be reflective of 5dB below “true background”. However, the proposed criteria of 42dBA daytime and 41dBA night-time may be acceptable to the Local Authority when considering typically noise levels in this area.

In any case, due to the quantity of neighbouring noisy plant in this vicinity and complaints received (which could be due to neighbouring items of plant) we suggest the above criteria should be agreed with the Local Authority prior to any mitigation works.

10.0 Plant Noise Impact Assessment

We understand the recently installed plant comprises 4no. condenser units to be located on the roof terrace of the property.

Plant Description	Location	Qty	Plant Make	Model Number
Condenser	Roof Terrace	4	Toshiba	MMY-MAP1406FT8P

10.1 Plant Noise Data

Manned noise measurements were undertaken of the plant as it is installed on-site currently. We understand that the condensers are split into a paired system (system 1 and 2) and 2no. units are controlled via each system. A measurement was undertaken with system 1 running independently. The BMS was set to 20°C which we are informed should represent worst case cooling conditions.

In this scenario a measurement of 67dB at 0.5m was recorded. This measurement was undertaken vertically directly above the units and approximately 1m away from the façade.

It should be noted that the technical data sheets for the recently installed plant suggest the new plant has quieter sound power data than the previously installed plant. 81dB L_w currently vs 82dB L_w previously. This does not necessarily correlate with on-site noise data under design duty, however it would be reasonable to assume the new modern plant is more efficient.

10.2 True Background

While on site a background measurement was undertaken which included noise levels of the nearby plant associated with a retail unit and local pub. All plant associated with Hollis Global and Fitness First had been turned off. In this scenario a noise level of 60dB was measured at 1m from the newly installed plant associated with Hollis Global. It should also be noted that due to the noisy neighbouring plant, the ‘true background’ is ambiguous. Therefore, it is difficult to determine which unit of plant is dominating the noise climate.

10.3 Plant Noise Impact Assessment

We understand that the recently installed units will be operational during daytime hours only.

The following table summarise our predictions of atmospheric noise emissions from the installed plant to the nearest noise sensitive residential window.

Description	Sound Pressure Level (dB re 2x10-5 Pa) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
2no. MMY MAP1406FT8P Sound Pressure Level at 0.5m	73	74	69	62	62	55	50	50	67
Correction for 2no Units	+3	+3	+3	+3	+3	+3	+3	+3	
Hemispherical Conformal Area Distance Loss (0.5 to 3.5m)	-11	-11	-11	-11	-11	-11	-11	-11	
Sound Pressure Level at 1 metre from the nearest noise sensitive receptor	**65**	**66**	**61**	**54**	**54**	**47**	**41**	**35**	**59**

The above indicates the proposed plant, as measured under the conditions stated in-situ, exceeds Local Authority daytime requirements by 17dBA.

However, we would repeat that ‘true background’ at this time is ambiguous.

Considering the economic and environmental factors involved in the installation of attenuation, it may be reasonable to consider its impact, until such time that ‘true background’ can be established and neighbouring plant is suitably attenuated. We would note that the BMS can be programmed to ensure the plant does not operate during sensitive night-time periods in the interim period.

We would therefore suggest that before attenuation packages are introduced, a line of correspondence with the Local Authority is opened in order to establish:

- An appropriate and realistic background noise level.
- Suitable attenuation (if required) for all plant contributing to the acoustic environment in the area (noting there are many tenants/occupiers/owners)
- Measurement of the plant associated with the retail unit and pub to determine which unit of plant is dominating the noise climate.

10.4 Mitigation Measures

In order to strictly comply with the daytime requirements of the Local Authority, our on-site measurements indicate at least 17dBA of attenuation would likely be required. In order to attenuate the plant by this amount (ie. to achieve 42dB at 1m from the residential window), the following options have been proposed:

- Acoustic Enclosure
- Screening
- Screening and Bolt-on Attenuators

10.4.1 Option 1 - Acoustic Enclosure

In order to achieve the requirements of the Local Authority, we recommend enclosing the condenser in an acoustic enclosure capable of providing no less than a 17 dBA reduction, and thus reducing the noise emissions to 42 dBA at the nearest noise sensitive window.

10.4.2 Option 2 - Screening

A barrier will need to be installed horizontally above the condenser. The barrier needs to be a solid screen extended from the façade to a minimum distance (horizontally) no less than 2m in any direction from the condenser units and achieve a minimum mass per unit area of 11kg/m^2. The solid screen should have no holes, gaps or penetrations.

10.4.3 Option 3 – Screening and Bolt-on Attenuators

Bolt on attenuators will need to be installed on the condensers to reduce the overall noise level by 7 dBA when all the units are running simultaneously.

The barrier needs to be a solid screen extended from the façade to a minimum distance (horizontally) no less than 1m in any direction from the condenser units and achieve a minimum mass per unit area of 11kg/m^2. The solid screen should have no holes, gaps or penetrations.

11.0 Conclusions

An environmental noise survey has been undertaken in order to establish the currently prevailing noise levels.

Plant noise emission criteria have been recommended based on the results of the noise survey and with reference to the Local Authority’s requirements.

An assessment of recently installed plant has been carried out to determine current noise emissions at the nearest noise sensitive window. As installed currently, the plant does not achieve Local Authority requirements at the nearest noise sensitive window.

It should, however, be noted that with the recently installed plant switched off, the change in noise level was negligible. This was due to significant contribution from other neighbouring plant.

In order to achieve Local Authority requirements, acoustic mitigation measures have been proposed. Considering other noisy neighbouring plant in the area, we have suggested the Local Authority are firstly contacted before costly attenuation measures are introduced.

Appendix A

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

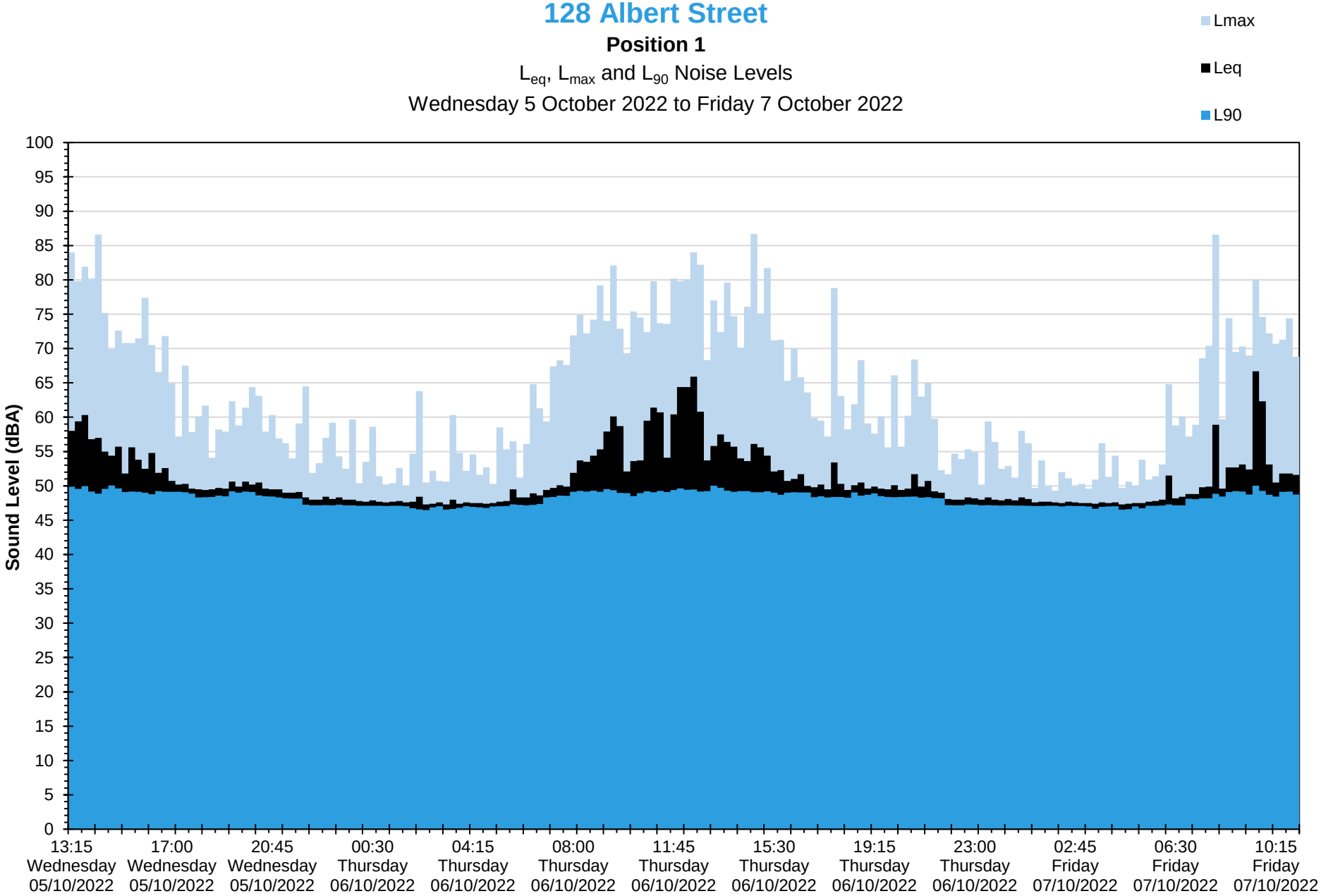
Sound Power Level (SWL or L_w) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

128 Albert Street

Position 1

L_{eq}, L_{max} and L_{90} Noise Levels

Wednesday 5 October 2022 to Friday 7 October 2022



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