Fox Court
London
WC1X 8HA

Environmental Noise Survey and Noise Impact Assessment Report

October 2023

Client: Clare Real Estate (14 Gray's Inn Road) Ltd

c/o
MTT Limited
9 Kingsway
London
WC2B 6XF

22004/ENS1

Document Control

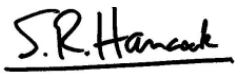
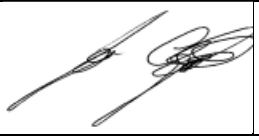
Document Information

Information	Description
Reference	QA22004ENS1

Document History

Version	Issue Date	Changes
0	30/11/2022	
1	02/10/2022	Consultant comments

Document Approvals

Role	Name	Signature	Date
Approved	Eur Ing **Simon Hancock** Managing Director BEng(Hons), CEng, FIOA, MIMechE, MCIBSE		02/10/2023
Preparation	**John Gibbs** Director MIOA		02/10/2023

Contents

1.0 INTRODUCTION 4
2.0 SITE DESCRIPTION 5
3.0 ENVIRONMENTAL NOISE SURVEY 6
4.0 RESULTS 7
5.0 RELEVANT PLANNING POLICIES AND NOISE ASSESSMENT GUIDANCE 8
6.0 PLANT NOISE EMISSION CRITERIA 12
7.0 CONCLUSIONS 13

1.0 INTRODUCTION

This report has been prepared by Quantum Acoustics Ltd on behalf of Clare Real Estate (14 Gray's Inn Road) Ltd ("the Applicant") in support of a planning application submitted to the London Borough of Camden ("LBC") for the development of Fox Court, 14 Grays Inn Road, London WC1X 8HN ("the Site").

The planning application seeks planning permission for the following description of development:

'Demolition of existing facades, retaining existing reinforced concrete frame and basement structures; refurbishment and reconfiguration of the existing office (Use Class E) building for continued office use including extensions with new facades to the west elevation fronting Grays Inn Road (9 storeys), to the northern courtyard elevation facing Brookes Court (9 storeys), to the existing 5 storey north-east wing fronting Brook Street (3 storeys) and to the south elevation (8 storeys); external alterations, provision of rooftop amenity terraces, landscaping and associated works'

The proposed development falls within one red line area and specifically comprises of the following components:

- Retrofit and extension of the existing office building to provide additional office accommodation, with an uplift of 8,579sqm GIA (9,652sqm GEA).
- Existing reinforced concrete frame to be retained, along with ground floor slab and basement structure.
- Extensions to west, north and south sides of the building with new facades.
- Provision of a central atrium space between the existing structure and the northern extension for internal circulation and rooftop amenity spaces for tenants, including urban greening.
- Provision of cycle parking and servicing at basement level, provision of plant space at roof and basement levels.

The proposed development has evolved through pre-application and wider stakeholder consultation process, which has included collaborative discussions with the Council and a number of other key stakeholders. The proposed development provides the opportunity to regenerate this important site through the sustainable retrofitting of the existing poor-quality office building to provide a highly sustainable and modern office building which reflects commercial demand in the area and seeks to support LBC's aspirations to provide a range of business premises within the Borough.

Quantum Acoustics Ltd have been appointed to undertake an environmental noise survey and subsequently establish environmental plant noise emission limits, in line with the LBC requirements and relevant guidance and planning policies.

2.0 SITE DESCRIPTION

Fox Court is located within the Holborn & Covent Garden Ward within the London Borough of Camden (LBC). It is a 9 storey purpose built office building (14,287 sqm GIA of Class E office floorspace), in a U-shape with an external courtyard space to the north of the building. The building is finished predominantly in red brick with glazing and cladding to the Grays Inn Road frontage. It is of no architectural merit.

To the south is the recently completed 150 High Holborn office and residential development. To the west, beyond Grays Inn Road, is an 8 storey building with retail at ground floor and residential above that turns the corner onto High Holborn and the office buildings surrounding Grays Inn South Square. To the north is a predominantly residential area comprising 6 storey buildings fronting Grays Inn Road, a 4 storey building facing Brookes Market and 2 storey buildings in Brookes Court, which also includes the Holborn Mosque. To the east, on the other side of Brook Street, is the Waterhouse Square office complex.

In terms of planning designations, the site lies within the Central Activities Zone (CAZ), the London View Management Framework (LVMF) protected vista from Primrose Hill to St Paul's Cathedral and the background areas of the views from Blackheath Point and Greenwich Park.

In terms of heritage assets, the site lies between two conservation areas, Bloomsbury Conservation Area on the west side of Grays Inn Road and Hatton Garden Conservation Area to the east of Brook Street. Waterhouse Square (The Prudential Insurance Building) is Grade II* listed and Church of St Alban the Martyr (Grade II*) and its associated Clergy and Railings (Grade II) to the north of the site are listed. Within the Grays Inn complex to the west are a number of listed buildings including The Hall (Grade I), The Chapel (Grade II) and Statue of Francis Bacon (Grade II), all set within the Grade II* Grays Inn Registered Park and Garden.

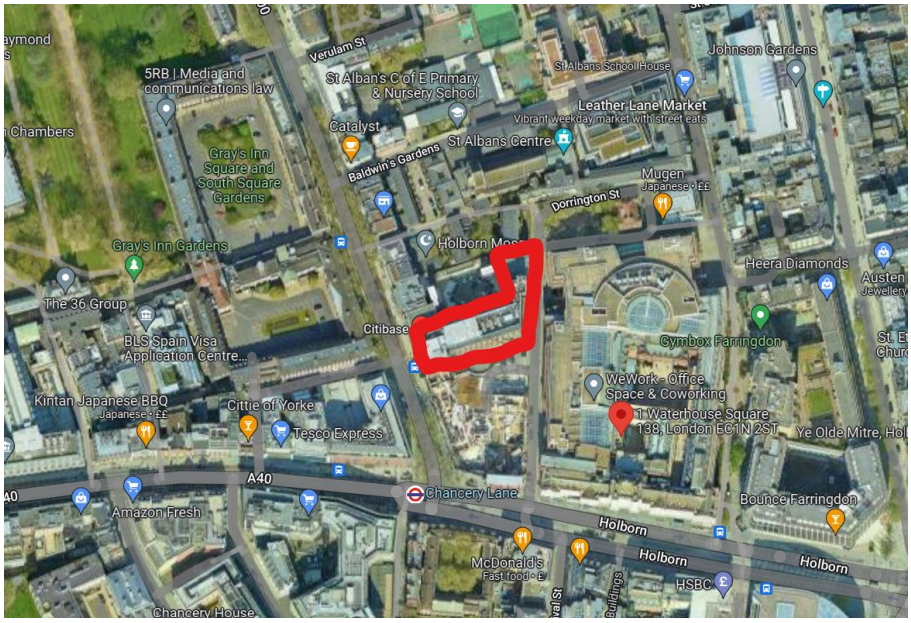


Figure 1. Site Plan (Google Imagery 2022, The GeoInformation Group)

3.0 ENVIRONMENTAL NOISE SURVEY

An unmanned fully automated environmental noise survey was undertaken from 10 November 2022 to 11 November 2022.

Weather conditions for most of the survey were dry with light winds and therefore deemed suitable for the measurement of environmental noise.

3.1 Measurement Positions

The sound level meters were located at 2 roof level positions, approximately 1m above roof level, as shown in the following site plan:

Figure 2. Site Measurement Position (Google Imagery 2022, The GeoInformation Group)

3.2 Equipment

The details of the equipment used for the survey are presented in the following table.

Description	Manufacturer	Type	Serial Number
Type 1 Sound Level Meters	Svantek	971A	124647 121136
Acoustic Calibrator	Svantek	SV 33B	125699

The sound level meters were located within an environmental case. The microphones were connected to the sound level meters with a microphone extension cable and fitted with a windshield.

The sound level meters, including the extension cables were calibrated prior to and on completion of the survey. No significant calibration drift was found to have occurred.

4.0 RESULTS

The results of the noise survey have been plotted on Time History Graphs 22004.TH1 and TH2 enclosed, presenting the 15-minute A-weighted L_{90}, L_{eq} and L_{max} noise levels throughout the duration of the survey.

The daytime LAeq (16 hour) and nighttime LAeq (8 hour) measured noise levels are presented in the following table together with the lowest measured background noise levels (L90).

		Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
$L_{eq\ T}$	Position 1	60 dBA	47 dBA
	Position 2	60 dBA	55 dBA
Typical (Modal) Measured Background Noise Level (L_{90}) 15 mins	Position 1	54 dBA	47 dBA
	Position 2	55 dBA	55 dBA

		Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
Rating Level BS4142:2014	Position 1	37 dBA	35 dBA
	Position 2	45 dBA	45 dBA

During the periods we were present at site, the noise climate was by local road traffic and plant noise from surrounding buildings.

5.0 RELEVANT PLANNING POLICIES AND NOISE ASSESSMENT GUIDANCE

5.1 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published in March 2010. The NPSE is the primary statement of noise policy for England and applies to all forms of noise other than occupational noise. The NPSE sets 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 introduces guidance to assist in defining the adverse impacts:

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.

These categories are further discussed in the Planning Practice Guidance section below.

The NPSE acknowledges that it is not possible to have a single objective noise level based measure that is mandatory and applicable to all sources of noise in all situations.

5.2 Planning Practice Guidance

The government's Planning Practice Guidance is a web based resource and provide advice on various issues, including noise (https://www.gov.uk/guidance/noise--2). The advice (March 2014, latest update July 2019) states in the context of considering when noise is relevant to planning, "noise needs to be considered when new development may create additional noise,

or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced)."

The Planning Practice Guidance pages also include more explanation of the effect level categories noted above, providing an explanatory Noise Exposure Hierarchy Table, which explores how actions such as a requirement for noise mitigation, or prevention of a development, might be assessed with respect to whether noise levels are considered above the category thresholds.

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No effect	No Observed Effect	No specific measures required
Present 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			
Present 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			
Present 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 difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present 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 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was first published in 2012, replacing the existing Planning Policy Guidance Note 24 (PPG24) "Planning and Noise", and sets out the government's planning policies for England and how these are expected.

The latest revision of the NPPF (September 2023) states that planning system should contribute to, and enhance, the natural and local environment by (amongst others) "preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, water or noise pollution or land stability."

NPPF advises that planning policies and decisions should ensure:

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

"…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."

The NPPF makes reference to the Noise Policy for England.

5.5 London Plan 2021

The London Plan 2021 Policy D14 advises the following:

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

3) mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses

4) improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity

5) separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation

6) where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles

7) promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver.

5.5 London Borough of Camden Requirements/Guidance

The London Borough of Camden Local Plan 2017 Appendix 3 advises the following:

Industrial and Commercial Noise Sources

A relevant standard or guidance document should be referenced when determining values for LOAEL and SOAEL for non-anonymous noise. Where appropriate and within the scope of the document it is expected that British Standard 4142:2014 'Methods for rating and assessing industrial and commercial sound' (BS 4142) will be used. For such cases a 'Rating Level' of 10 dB below background (15dB if tonal components are present) should be considered as the design criterion).

Table C: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery)

Existing Noise sensitive receptor	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAL (Red)
Dwellings**	Garden used for main amenity (free field) and Outside living or dining or bedroom window (façade)	Day	'Rating level' 10dB* below background	'Rating level' between 9dB below and 5dB above background	'Rating level' greater than 5dB above background
Dwellings**	Outside bedroom window (façade)	Night	'Rating level' 10dB* below background and no events exceeding 57dB L_{Amax}	'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB L_{Amax}	'Rating level' greater than 5dB above background and/or events exceeding 88dB L_{Amax}

*10dB should be increased to 15dB if the noise contains audible tonal elements. (day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include, the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required. **levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises. The periods in Table C correspond to 0700 hours to 2300 hours for the day and 2300 hours to 0700 hours for the night. The Council will take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration. There are certain smaller pieces of equipment on commercial premises, such as extract ventilation, air conditioning units and condensers, where achievement of the

rating levels (ordinarily determined by a BS:4142 assessment) may not afford the necessary protection. In these cases, the Council will generally also require a NR curve specification of NR35 or below, dependant on the room (based upon measured or predicted Leq,5mins noise levels in octave bands) 1 metre from the façade of affected premises, where the noise sensitive premise is located in a quiet background area.

5.6 BS 4142:2014

BS 4142:2014+A1:2019 "Methods for Rating and Assessing Industrial and Commercial Sound" addresses the likelihood of adverse impact from noise generated by plant equipment. A noise rating is determined and compared with the existing local background sound level, and several cumulative acoustic feature corrections to the noise rating are available to apply where appropriate. For example if the noise includes a distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristic.

BS 4142:2014 seeks to determine a "representative" background sound level, stating that "…the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods".

The assessment of the impact depends upon the margin by which the rating level of the specific sound source exceeds the background sound level but also promotes a consideration of the context in which the sound occurs when making an assessment. BS 4142:2014 states that an initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level, while considering the following points:

a) Typically, the greater this difference, the greater the magnitude of the impact.
b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

6.0 PLANT NOISE EMISSION CRITERIA

Based on the local authority requirements detailed in Section 5.5 and the noise survey results presented in Section 4.0, we propose that the following plant noise emission criteria be achieved at 1 metre from the nearest noise sensitive property:

		Daytime (07:00 – 23:00)	Night-time (23:00 – 07:00)
Rating Level BS4142:2014	Position 1	37 dBA	35 dBA
	Position 2	45 dBA	45 dBA

The above criteria apply to cumulative noise level of all plant operating simultaneously.

Individual plant noise emissions specifications can be produced following the design development for proposed plant items and location.

7.0 CONCLUSIONS

A fully automated environmental noise level survey has been undertaken.

Plant noise emission criteria have been recommended based on the results of the environmental noise survey and with reference to the requirements of The London Borough of Camden.

Compliance with these criteria will ensure the proposed scheme does not have any adverse noise impact the existing nearby residents.

Appendix A - Glossary of Acoustic Terminology

SOUND POWER LEVEL, or L_W (decibels, dB)
The total amount of sound energy per unit of time generated by a particular sound source. This corresponds to a reference sound power of 10 pW.

SOUND PRESSURE LEVEL, SPL or L_P (decibels, dB)
A measure of the instantaneous sound pressure at a point in space. The threshold of hearing occurs at approximately L_P=0 dB (which corresponds to a reference sound pressure of 20 µPa).

A-WEIGHTED SOUND PRESSURE LEVEL, L_A (dBA)
A-weighted sound pressure level values are frequency-weighted in a way that approximates the frequency response of the human ear and allows sound levels to be expressed as a single figure value.

EQUIVALENT CONTINUOUS A-WEIGHTED SPL, $L_{Aeq,T}$ (dBA)
Energy average of the A-weighted sound pressure level over a time period, T. The level of a notional continuous sound that would deliver the same A-weighted sound energy as the actual fluctuating sound over the course of the defined time period, T.

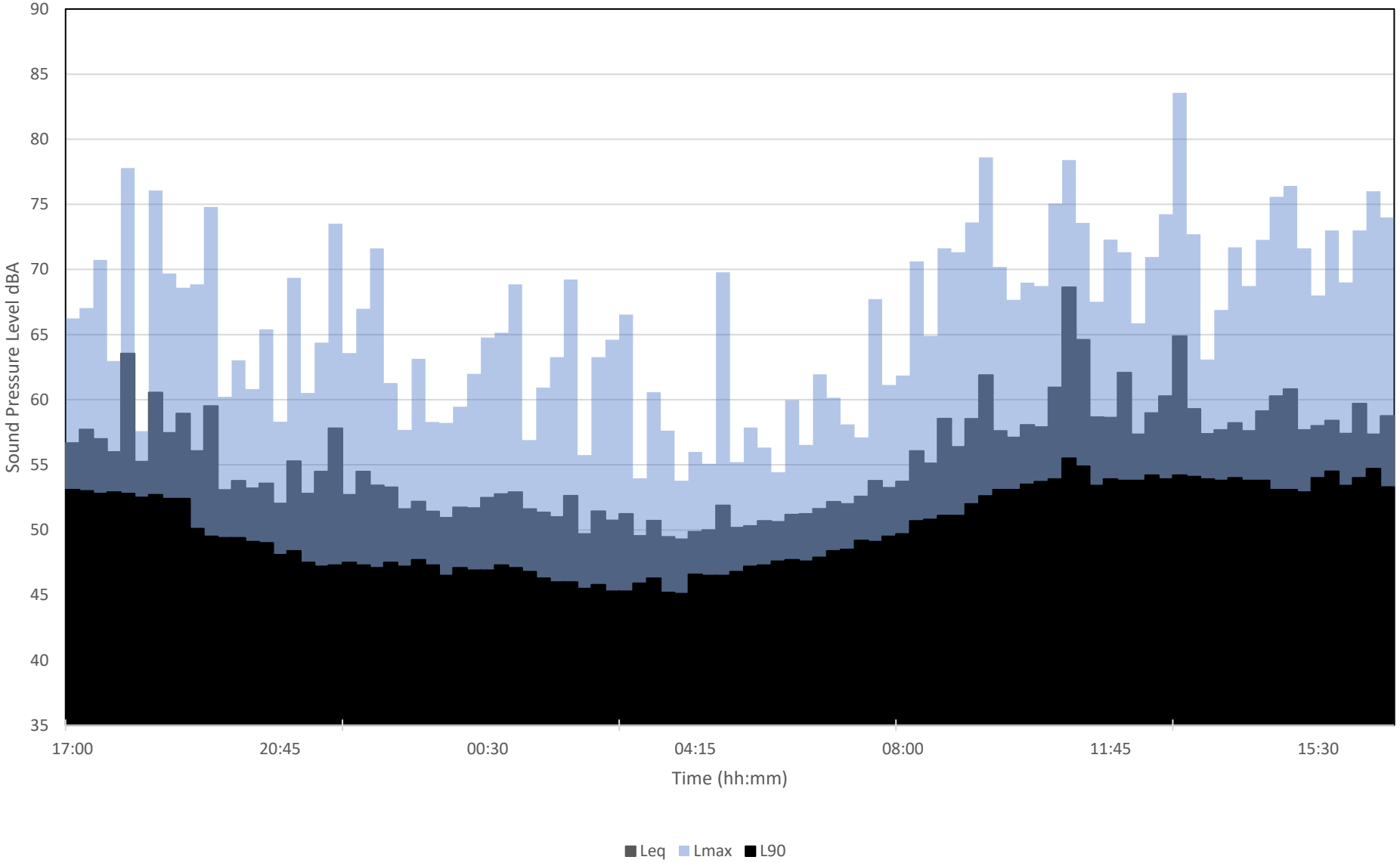
MAXIMUM A-WEIGHTED SPL, L_{AFmax} (dBA)
Maximum A-weighted sound pressure level measured with fast time weighting.

BACKGROUND SOUND LEVEL, $L_{A90,T}$ (dBA)
The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval ,T, measured using time weighting, and quoted to the nearest whole number of decibels.

NOISE RATING LEVEL, $L_{Ar,Tr}$ (dBA)
The A-weighted specific sound level plus any adjustment for characteristic features of the sound (for example if the sound features impulsive or tonal components). Used in BS 4142:2014 assessments.

SPECIFIC SOUND LEVEL, $L_s = L_{Aeq,Tr}$ (dBA)
The equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r.

Fox Court, Grays Inn Road
Position 1
10/11/2022 to 11/11/2022

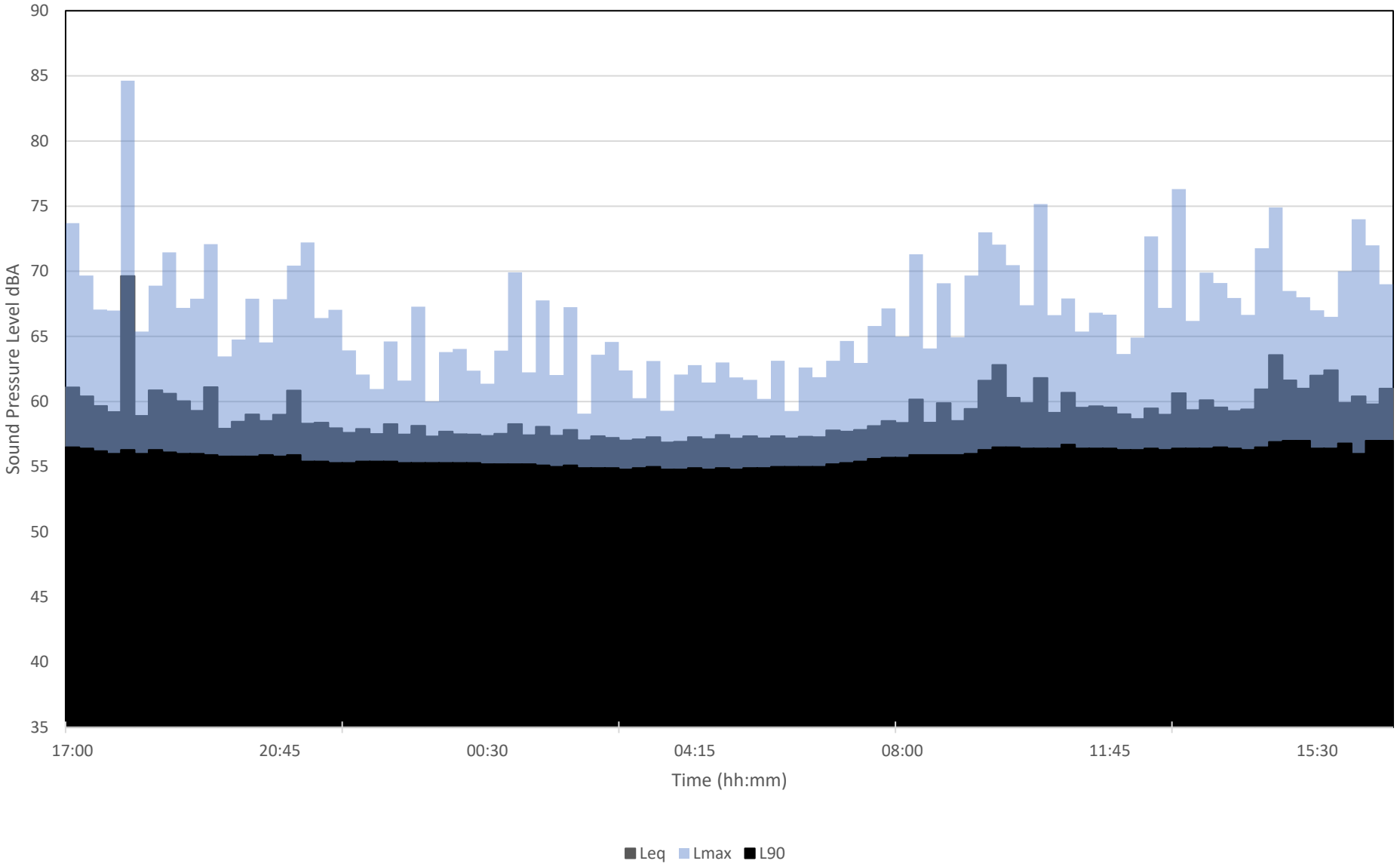


Time History Graph 22004/TH1

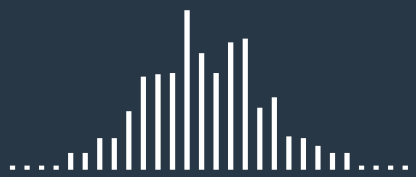
Fox Court, Grays Inn Road

Position 2

10/11/2022 to 12/11/2022



Time History Graph 22004/TH2



www.quantumacoustics.co.uk
+44 (0)203 376 7000
hello@quantumacoustics.co.uk

London office: 151 Wardour Street, London, WC1F 8WE
Surrey office: Ashford, Hookley Lane, Elstead, Godalming GU8 6JE