



EUSTON TOWER

Noise Impact Assessment Report

December 2023



Euston Tower Regents Place London

Noise Impact Assessment Report

29605/NIA1

5 December 2023

For:
British Land Property Management Limited
c/o Gardiner & Theobald
10 South Crescent
Bloomsbury
London
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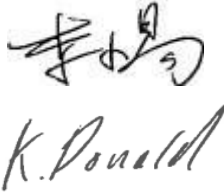

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Document Control

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Environmental Noise Survey Report 29605/NIA1

Contents		Page
1.0	Introduction	1
2.0	Objectives	1
3.0	Site Description	2
4.0	Acoustic Terminology	4
5.0	Acoustic Standards and Guidelines	4
6.0	Survey Methodology	13
7.0	Noise Survey Results	18
8.0	Discussion Of Noise Climate	19
9.0	Noise Sensitive Receptors	19
10.0	Plant Noise Emission Criteria	20
11.0	Proposed Plant Equipment	22
12.0	Noise Generated by Commercial Units	22
13.0	Noise Arising from Servicing	23
14.0	Deconstruction and Construction Noise	24
15.0	Conclusions	25

Attachments

Appendix A – Acoustic Terminology

Time History Noise Graphs 29605/TH1 – 29605/TH5



1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by British Land Property Management Limited to undertake a noise impact assessment for a site on Euston Road in the London Borough of Camden, hereby referred to as 'the Site'.

The proposals are for redevelopment of Euston Tower, including the partial retention (retention of existing core, foundations and basement), disassembly, reuse and extension of the existing building, to provide a 32-storey building for use as offices and research and development floorspace (Class E(g)) and office, retail, café and restaurant space (Class E) and learning and community space (Class F) at ground, first and second floors, and associated external terraces.

Baseline noise conditions have been established by means of a detailed noise survey, presented herein. The findings have subsequently been used to assess the suitability of the site for commercial use and to set noise emission limits from the development with reference to relevant national & local planning requirements, design standards and good practice guides (Listed in Section 5.0) and the application of British Standard BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' to minimise the possibility of noise nuisance to neighbours.

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 unattended noise survey the existing L_{Amax} , L_{Aeq} and L_{A90} environmental noise levels at up to 5No. secure and accessible on-site positions, using fully computerised noise monitoring equipment.

To establish by means of attended critical period noise measurements the existing daytime L_{Amax} , L_{Aeq} and L_{A90} environmental noise levels, along with relevant octave band sound spectra, at suitable street level locations around the site.

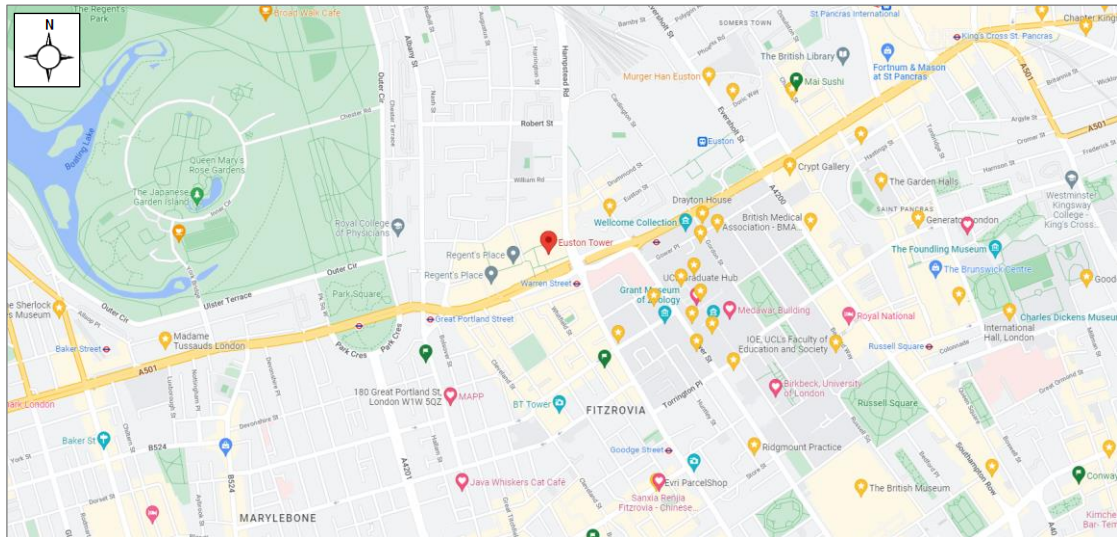
To set noise emission limits from the Proposed Development with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 and to minimise the possibility of noise nuisance to neighbours.



3.0 Site Description

3.1 Location

The site is located at 286 Euston Road, London NW1 3DP. The location is shown in the Location Map below and falls within the jurisdiction of London Borough of Camden ('LBC').



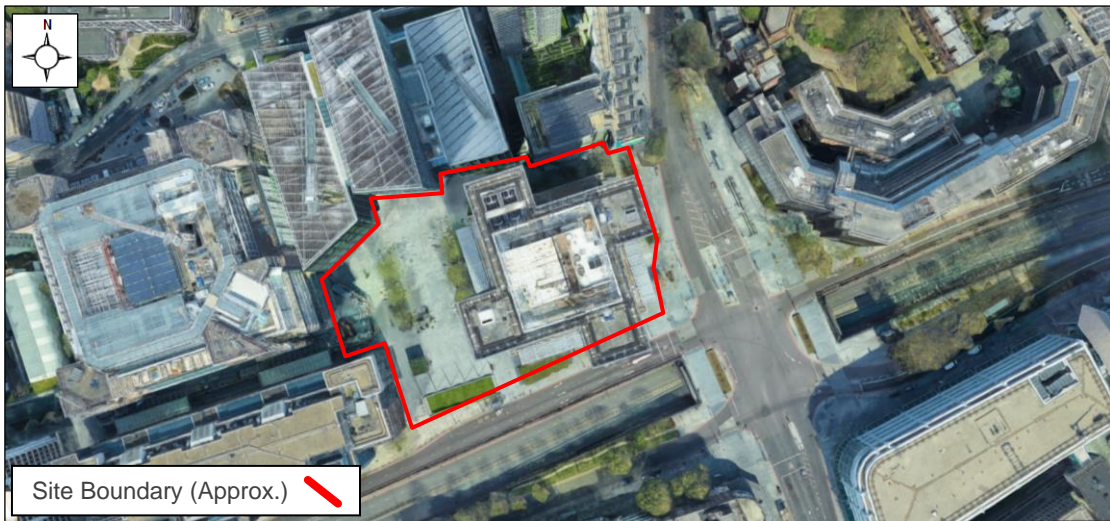
Location Map (Map Data ©2022 Google)

3.2 Description

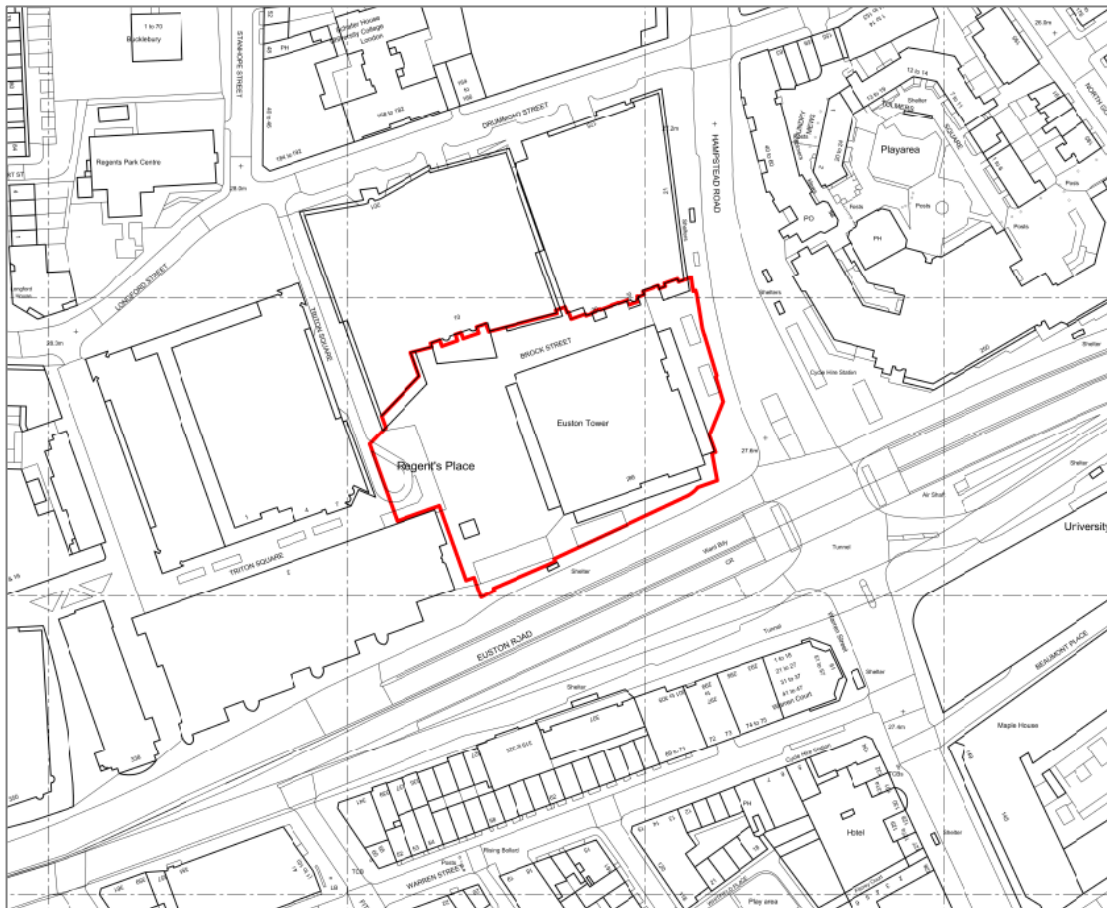
The Site is situated within the London Borough of Camden ('LBC'), and the ward of Regent's Park. The Site is bounded by Euston Road (south), Hampstead Road (east), Brock Street (north) and Regent's Place (west). There are several bus routes that serve the site along Euston Road (south) and Hampstead Road (east).

The land surrounding the Site consists of a range of uses that includes, residential dwellings, commercial offices, retail outlets and hospital.

The Site and immediate surrounding area are shown on the Site Plans overleaf.



Site Plan (Map Data © 2022 Google)



Site Location Plan (Drawing Ref ET-DR-A-1003)



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 National Planning Policy Framework (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 September 2023):

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; and
- c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

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 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,	Significant Observed Adverse Effect	Avoid



Perception	Examples of Outcomes	Increasing effect level	Action
	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.		
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 The London Plan (2021)

The London Plan was published March 2021.

Policy D14 Noise states:

A. *"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*
- 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.*



- B. *Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations.*
- 3.14.1 *The **management of noise** is about encouraging the right acoustic environment, both internal and external, in the right place at the right time. This is important to promote good health and a good quality of life within the wider context of achieving sustainable development. The management of noise should be an integral part of development proposals and considered as early as possible. Managing noise includes improving and enhancing the acoustic environment and promoting appropriate soundscapes. This can mean allowing some places or certain times to become noisier within reason, whilst others become quieter. Consideration of existing noise sensitivity within an area is important to minimise potential conflicts of uses or activities, for example in relation to internationally important nature conservation sites which contain noise sensitive wildlife species, or parks and green spaces affected by traffic noise and pollution. Boroughs, developers, businesses and other stakeholders should work collaboratively to identify the existing noise climate and other noise issues to ensure effective management and mitigation measures are achieved in new development proposals.*
- 3.14.2 *The **Agent of Change Principle** places the responsibility for mitigating impacts from existing noise-generating activities or uses on the new development. Through the application of this principle existing land uses should not be unduly affected by the introduction of new noise sensitive uses. Regard should be given to noise-generating uses to avoid prejudicing their potential for intensification or expansion.*
- 3.14.3 *The management of noise also includes promoting **good acoustic design of the inside of buildings**. Section 5 of BS 8223:2014 provides guidance on how best to achieve this. The Institute of Acoustics has produced advice Pro:PG Planning and Noise (May 2017) that may assist with the implementation of residential developments. BS4214 provides guidance on monitoring noise issues in mixed residential/industrial areas.*



5.5 London Borough of Camden Requirements

The Site lies within the jurisdiction of London Borough of Camden. The 'Camden Local Plan' (adopted in July 2017) includes the following policy in relation to noise vibration.

"Policy A4 Noise and vibration

The Council will seek to ensure that noise and vibration is controlled and managed.

Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3).

We will not grant planning permission for:

- a. development likely to generate unacceptable noise and vibration impacts; or*
- b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.*

We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development."

Appendix 3 of Camden Local Plan describes their requirements for industrial and commercial noise emissions. See below extraction from the Camden Local Plan.

"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 57dBL _{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 88dBL _{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.”



Section 6.100 of the Camden Local Plan (2017) also sets out requirements for controlling plant noise emissions from emergency building services plant as follows:

“Emergency equipment such as generators which are only to be used for short periods of time will be required to meet the noise criteria of no more than 10dB above the background level (L90 15 minutes). During standby periods, emergency equipment will be required to meet the usual criteria for plant and machinery. Conditions to this effect may be imposed in instances where emergency equipment forms part of the application.”

5.6 BS 4142:2014 + A1:2019

When setting plant noise emission criteria reference is commonly made to of British Standard 4142:2014+A1:2019 ‘Methods for rating and assessing industrial and commercial sound’.

The procedure contained in BS 4142:2014 provides an assessment of the likely effects of sound on people when comparing the specific noise levels from the source with representative background noise levels. Where the noise contains “a tone, impulse or other characteristic” then various corrections can be added to the specific (source) noise level to obtain the “rating level”.

BS 4142 states that: *“The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs”. An estimation of the impact of the specific noise can be obtained by the difference of the rating noise level and the background noise level and considering the following:*

- *“Typically, the greater this difference, the greater the magnitude of the impact.”*
- *“A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.”*
- *“A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.”*
- *“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.”*



The determination of the “rating level” and the “background level” are both open to interpretation, depending on the context.

In summary it is not possible to set plant noise emission criteria purely on the basis of BS 4142:2014+A1:2019. It is reasonable to infer from the above, however, that a difference of around -5dB corresponds to “No Observed Effect Level” as defined in the Noise Policy Statement for England. It is also reasonable to infer from the above that if the plant noise rating level does not exceed the existing background noise level outside any noise sensitive residential window then the plant noise is of “low impact”.

5.7 World Health Organisation Guidelines on Community Noise

British Standard 8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’ is based upon the current World Health Organisation (WHO) guidance “*Guidelines on Community Noise*”. A summary of the noise guidelines relevant to the proposed scheme is presented in the table below.

Residential Environment	Critical Health Effect(s)	L _{Aeq}	L _{AFmax}	Time Base
Outdoor living area	Serious annoyance, daytime and evening	55	-	07:00-23:00
	Moderate annoyance, daytime and evening	50	-	07:00-23:00
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	-	07:00-23:00
Inside bedrooms	Sleep disturbance, night-time	30	45	23:00-07:00
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	60	23:00-07:00

These WHO guidelines are based, in almost all cases, on the lower threshold below which the occurrence rates of any particular effect can be assumed to be negligible.

5.8 British Standard BS8233: 2014

British Standard 8233: 2014 “Guidance on sound insulation and noise reduction for buildings” provides guidance for the control of noise in and around buildings.



BS8233:2014 Section 7.7.2 titled “Internal ambient noise levels for dwellings” states

“In general for steady external noise sources, it is desirable that internal ambient noise levels do not exceed the following guideline values:

Activity	Location	Desirable Internal Ambient Criteria	
		07:00 - 23:00	23:00 - 07:00
Resting	Living Rooms	35 dB $L_{Aeq,16hour}$	-
Dining	Dining Room/Area	40 dB $L_{Aeq,16hour}$	-
Sleeping (Daytime Resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

5.9 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 Xiaoyi Li MSc BA(Hons) AMIOA, Bo Ding PhD, MSc, MIOA and assisted by Stavros Tagios MSc.

6.1 Unattended Survey

6.1.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 11:00 hours on 8th November 2022 for a period of 5-8 days. It is assumed that the noise climate at and around the site has not changed significantly since the environmental noise survey was undertaken.

Due to the nature of the survey (i.e unattended) it is impossible to comment on the conditions throughout the survey. While we were on site the wind conditions were breezy. The sky was generally cloudy. There was moderate rainfall. We understand that throughout the survey period the conditions were similar or calmer/clearer. These conditions are considered suitable to obtain representative results.



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

6.1.2 Instrumentation

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

Pos	Description	Manufacturer	Type	Serial Number	Calibration
1	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3839	Calibration on 05/07/2022
	Type 1 ½" Condenser Microphone	PCB	377B02	106753	Calibration on 05/07/2022
	Preamp	Larson Davis	PRM902	880	Calibration on 05/07/2022
2	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3053	Calibration on 09/08/2022
	Preamp	Larson Davis	PRM902	4157	Calibration on 09/08/2022
	Type 1 ½" Condenser Microphone	PCB	377B07	107417	Calibration on 09/08/2022
3	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3155	Calibration on 12/08/2022
	Type 1 ½" Condenser Microphone	PCB	377B02	107427	Calibration on 12/08/2022
	Preamp	Larson Davis	PRM902	4154	Calibration on 12/08/2022
4	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3700	Calibration on 07/07/2022
	Type 1 ½" Condenser Microphone	PCB	377B02	135744	Calibration on 07/07/2022
	Preamp	PCB	PRM902	4812	Calibration on 07/07/2022
5	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
-	Type 1 Calibrator	Bruel & Kjaer	4230	1558535	Calibration on 25/07/2022



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

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. Each microphone was fitted with a windshield.

6.1.3 Measurement Positions

The unattended noise level measurements were undertaken at 5No. positions. These positions were selected to be representative of the Proposed Development and surrounding noise sensitive receptors and were as described below.

Position No	Description
1	The sound level meter was placed on the podium roof. The microphone was attached to a pole fixed along the podium roof edge overlooking Euston Road (A501), approximately 15m from roadside and 8m above ground level.
2	The sound level meter was placed on the podium roof. The microphone was attached to a pole fixed along the podium roof edge overlooking the road junction, approximately 14m from Euston Road, 16m from Hampstead Road and 8m above ground level.
3	The sound level meter was placed on the podium roof. The microphone was attached to a pole fixed along the podium roof edge overlooking Regent's Plaza and Brock Street (pedestrians only/no motor vehicles), approximately 63m from Euston Road, 70m from Hampstead Road and 8m above ground level.
4	The sound level meter was placed on the tower roof. The microphone was attached to a pole fixed along the tower roof edge overlooking nearby road network, approximately 120m above ground level and 1.5m above the roof.
5	The sound level meter was placed on Level 11 East Staircase. The microphone was attached to a pole extruding a window overlooking nearby road network, approximately 40m above ground level and 1m from façade.

The positions are shown on the plan overleaf.



Site Plan Showing Unattended Measurement Positions (Map Data © 2022 Google)

6.2 Attended Survey

6.2.1 Procedure

Fully unattended environmental noise monitoring was undertaken from approximately 13:00 hours to 15:00 hours on Tuesday 8th November 2022.

During the survey period the wind conditions were breezy. The sky was generally cloudy. There was light rainfall between approximately 13:00 hours and 15:00 hours during the survey. Road surfaces were wet throughout the majority of the survey period.

Measurements were taken of the A-weighted (dBA) L_{90} , L_{eq} and L_{max} sound pressure levels over periods of not less than 10-15 minutes in each hour. Atypical noises were excluded as far as reasonably possible. The noise levels measured are therefore assumed to be representative of the noise climate during the hour in which the measurements were taken.

In addition, at each position typical L_{90} , L_{eq} and L_{max} octave band spectra (from 63Hz to 8kHz) were taken for a daytime period in order to gain a more detailed description of the prevailing noise climate.

6.2.2 Measurement Positions

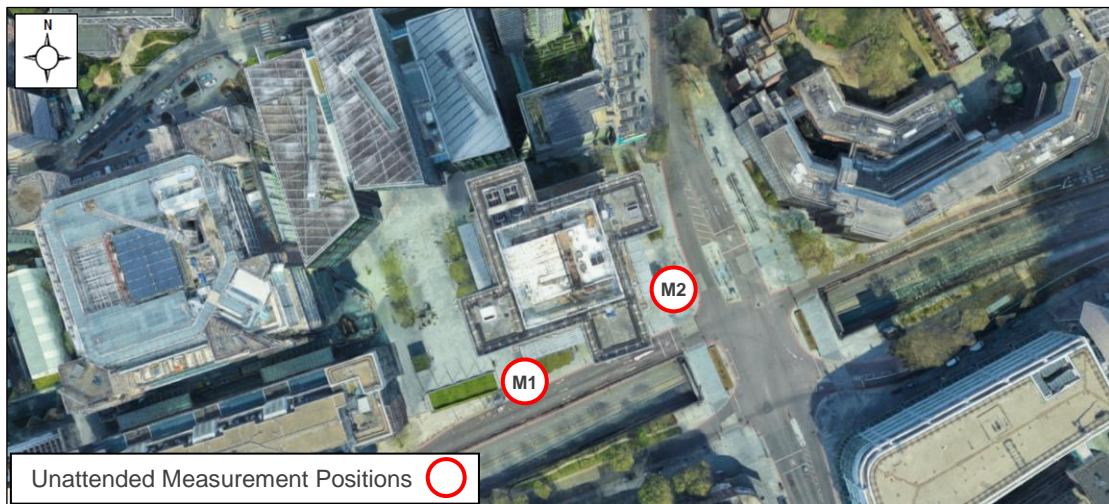
Unattended noise level measurements were undertaken at 2No. positions at ground level around the Proposed Development site at street level. These positions were selected to discern the difference in noise levels from Euston Road (A501) and Hampstead Road that bound the site and inform the difference in noise levels from the elevated unattended positions.



The measurement positions are described in the table below.

Position No	Description
M1	The sound level meter was hand-held. The microphone was positioned approximately 1.5m above ground level and 3m from Euston Road (A501).
M2	The sound level meter was hand-held. The microphone was positioned approximately 1.5m above ground level and 6m from Hampstead Road.

The unattended measurements positions are shown on the plan below.



Site Plan Showing Unattended Measurement Positions (Map Data © 2022 Google)

6.2.3 Instrumentation

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

Description	Manufacturer	Type	Serial Number	Calibration
Type 1 ½" Condenser Microphone	ACO Pacific	7052E	71752	Calibration on 08/08/2022
Type 1 Preamp	Bruel & Kjaer	ZC0032	27782	Calibration on 08/08/2022
Type 1 Data Logging Sound Level Meter	Bruel & Kjaer	2250	3025254	Calibration on 08/08/2022
SLM Calibrator	Bruel & Kjaer	4231	2308993	Calibration on 04/08/2022



The sound level meter was hand-held and was fitted with a Brüel and Kjær microphone windshield.

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

7.0 Noise Survey Results

7.1 Results of Unattended Survey

The results have been plotted on Time History Graphs 29605/TH1 to 29605/TH5 enclosed presenting the 15 minute A-weighted (dBA) L_{90} , L_{eq} and L_{max} levels at each measurement position throughout the duration of the survey.

The following table presents the lowest measured L_{A90} background noise levels during the survey:

Position	Lowest Measured L_{A90} Background Noise Level (dB re 2×10^{-5} Pa)		
	Daytime (07:00 – 23:00) Hours	Night-time (23:00 – 07:00) Hours	24 Hours
1	59	53	53
2	53	47	47
3	51	47	47
4	52	51	51
5	58	55	55

The following table presents the measured $L_{Aeq,T}$ noise levels during the survey:

Position	Measured $L_{Aeq,T}$ Noise Level (dB re 2×10^{-5} Pa)	
	Daytime (07:00 – 23:00) Hours, $L_{Aeq,16hr}$	Night-time (23:00 – 07:00) Hours, $L_{Aeq,8hr}$
1	68	67
2	66	63
3	62	57
4	60	57
5	70	67



7.2 Results of Attended Survey

The fully attended survey measurements A-weighted (dBA) L_{90} , L_{eq} and L_{max} sound levels are recorded below.

Position	Time	Sound Levels dBA		
		L_{90}	L_{eq}	L_{max}
M1	13:00 to 13:15 hours	63	69	81
M2	14:45 to 14:55 hours	66	71	85

8.0 Discussion Of Noise Climate

During the periods we were on site the dominant noise sources were noted to be continuous road traffic on Euston Road (A501) and Hampstead Road. This included regular buses and heavy goods vehicles (HGVs).

Regular acceleration of road vehicles was noted as they accelerated from the traffic lights on Euston Road (A501) and Hampstead Road.

Passing conversing pedestrians was also noted during the attended measurements at street level.

9.0 Noise Sensitive Receptors

A desk-based review of current maps, the Proposed Development proposals and a walkover survey of the Site and its surroundings has identified a number of sensitive receptors which could be affected by noise associated with the Proposed Development. The nearest and most affected are shown on the plan and described in the table overleaf.



Noise Sensitive Receptor Locations (Map Data © 2022 Google)

Ref	Type	Description
A	Existing Residential	The Triton Building, 26-storey residential tower
B	Existing Mixed-use	Commercial units with residential properties above on Hampstead Road
C	Existing Mixed-use	44 – 66 Hamstead Road, commercial and residential properties
D	Existing Commercial	250 Euston Road, university, and commercial office building
E	Existing Commercial	The Podium, 235 Euston Road, University College Hospital
F	Existing Mixed-use	Commercial and residential properties on Euston Road

10.0 Plant Noise Emission Criteria

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

On the basis of the aforementioned LBC’s requirements and the results of the environmental noise survey, we propose that the following plant noise emission criteria be achieved at 1 metre from the nearest noise sensitive windows.



Pos.	Noise Sensitive Receptors	BS 4142 Rating Level Limit (dBA)		
		Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	24 hours
A	The Triton Building, 26-storey residential tower	41	37	37
B	Residential properties on Hampstead Road	41	37	37
C	44 – 66 Hamstead Road	43	37	37
D	250 Euston Road	42	41	41
E	The Podium, 235 Euston Road, UCLH	42	41	41
F	Residential properties on Euston Road	42	41	41

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

If plant contains tonal or impulsive characteristics the external design criteria should be reduced by 5dBA.

It should be noted that the above are subject to the final approval of London Borough of Camden ('LBC').

10.1 Emergency Building Services Plant Noise Emission Criteria

On the basis of the aforementioned LBC's requirements and the results of the environmental noise survey, we propose that the following plant noise emission criteria for emergency plant items be achieved at 1 metre from the nearest noise sensitive windows.

Pos.	Noise Sensitive Receptors	BS 4142 Rating Level Limit (dBA)		
		Daytime (07:00 – 23:00 hours)	Night-time (23:00 – 07:00 hours)	24 hours
A	The Triton Building, 26-storey residential tower	61	57	57
B	Residential properties on Hampstead Road	61	57	57
C	44 – 66 Hamstead Road	63	57	57
D	250 Euston Road	62	61	61
E	The Podium, 235 Euston Road, UCLH	62	61	61
F	Residential properties on Euston Road	62	61	61



It should be noted that the above are subject to the final approval of the London Borough of Camden ('LBC').

11.0 Proposed Plant Equipment

The Proposed Development will incorporate numerous items of fixed plant (at roof level and within internal plant rooms) which would have the potential to generate noise that could influence the prevailing external background noise climate.

Specific details of the proposed plant equipment that has the potential to influence the prevailing background noise climate has not yet been finalised but such plant will be selected, located and attenuated such that LBC's atmospheric plant noise emission criteria (as presented in Section 10.0) are satisfied.

It is likely that the following noise control techniques would be implemented as part of the inherent design of the Proposed Development to meet these requirements:

- Enclosing noisy plant within the building envelope;
- Selecting suitably quiet 'low noise' plant;
- Positioning air intake/discharge louvres away from noise sensitive receptors;
- Orientating air intake/discharge louvres away from noise sensitive receptors;
- Attenuation of air intake/discharge louvres with duct-mounted attenuators and/or acoustic louvres;
- Sound insulating plant housings/enclosures/rooms; and
- Anti-vibration mounts to control structure-borne noise and vibration.

12.0 Noise Generated by Commercial Units

The Proposed Development is to include commercial Class E/F and Class E units at ground to second floors.

Measures would be implemented to ensure the protection of residential amenity from noise arising from commercial operations. Appropriate control measures would be implemented, including acoustic attenuation measures (such as sound insulation and self-closing doors) and good management practices (such as the control of music/loudspeaker systems and delivery hour restrictions). Tenants would be responsible for controlling noise by limiting their activities and/or providing additional attenuation where required.



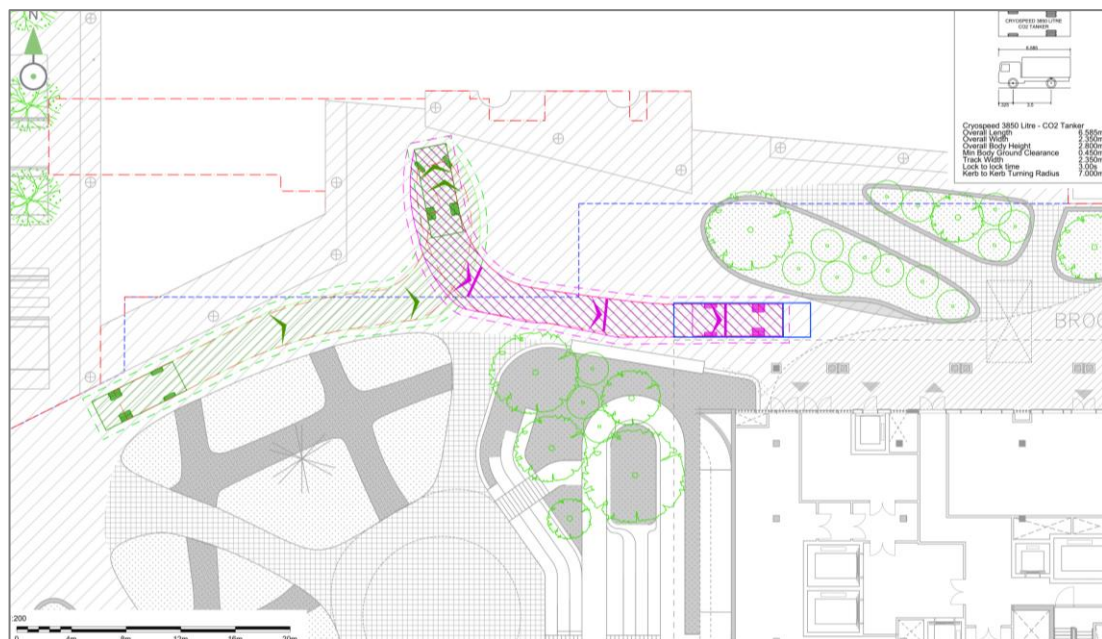
The above could be enforced by a combination of LBC planning and licensing through appropriately worded conditions and the Applicant’s lease agreements and tenants’ handbooks.

With the mitigation measures described above, the noise impact associated with commercial units within the Proposed development would be negligible for all nearby noise sensitive receptors.

13.0 Noise Arising from Servicing

During operation, the Proposed Development will be serviced by deliveries and collections. All deliveries, except supply of gases, will be offloaded via the basement loading area which is enclosed and therefore deliveries via this loading bay are not anticipated to impact surrounding noise sensitive receptors.

Gas deliveries (both bottled gases and liquid gases) will be located approximately as shown on the swept path analysis below which is directly outside the entrance of The Triton Building (Receptors A & B). It should be noted that no residential noise sensitive windows are in direct view of this route or offloading location. The surrounding windows of the immediate swept path and offloading area are all commercial offices with sealed façades and considered to have a low noise sensitivity.



Swept Path Analysis – Gas Tanker (Drawing Ref 22-181-SP-003)



The project transport consultants, 'Velocity Transport Planning', have communicated that 3 to 5 gas deliveries are expected per week as a worst case. Each delivery is anticipated to take approximately 15mins for bottled gas and 30 - 60 minutes for liquid gas deliveries.

Section 6.104 of LBC's Local Plan states:

"...to manage potential noise issues from deliveries, conditions will usually be applied to require deliveries, collections and the loading and unloading of goods and refuse take place between the hours of 08:00 to 20:00."

General deliveries, collections and the loading and unloading of goods and refuse should be appropriately managed to minimise the potential noise impact upon nearby noise sensitive receptors.

Common noise management techniques include use of electric vehicles and combining deliveries, where possible, and avoidance of idling engines.

Gas deliveries are expected to be outside the hours of 08:00 hours to 20:00 hours but should be encouraged to take place between the least noise sensitive hours, where possible.

Noise management techniques such as combining deliveries, where possible, and avoidance of idling engines should also be used to minimise any potential noise impact.

Through incorporation of the noise management techniques described above, and the most exposed nearby receptors being commercial offices with sealed façades, the noise impact from gas deliveries is anticipated to be negligible for all occupants of the surrounding nearby buildings.

14.0 Deconstruction and Construction Noise

A proposed deconstruction and construction programme is not available at the time of writing that describes, in detail, the equipment and working practices that will be used during works associated with construction of the Proposed Development. BS8233:2014 states that noise from construction related activities affecting residential areas should apply the methods outlined in BS 5228-1.

To minimise any potential noise and vibration impact, a Construction Management Plan (CMP) detailing measures to mitigate potential noise and vibration impacts on nearby noise sensitive premises will be defined and agreed with LBC.



In accordance with modern working practices, the principles of 'Best Practicable Means (BPM)', as defined in the Control of Pollution Act, 1974, should be used to reduce noise emissions throughout the deconstruction and construction works to a reasonable and practicable level and ensure the protection of nearby sensitive receptors.

A detailed assessment of potential effects associated with deconstruction and construction noise has been undertaken and presented in the Euston Tower Environmental Statement Chapter 9: Noise and Vibration.

15.0 Conclusions

A detailed environmental noise survey has been undertaken in order to establish the currently prevailing environmental noise climate around the site.

Results of the noise survey have been presented herein which have been used to inform atmospheric plant noise emission criteria for the protection of nearby noise sensitive receptors with reference to the requirements of London Borough of Camden ('LBC').

A discussion has been presented regarding the potential noise impact associated with commercial units within the Proposed Development. Methods for controlling noise egress from commercial units have been listed that, if implemented, should ensure the protection of nearby noise sensitive receptors.

A discussion regarding the potential noise impact arising from servicing (deliveries and collections) has been presented recommending that appropriate management is incorporated to minimise the potential noise impact arising from these activities for the protection of nearby noise sensitive receptors.

A Construction Management Plan (CMP) detailing measures to mitigate potential noise and vibration impacts upon nearby noise sensitive premises will be defined and agreed with LBC. The principles of 'Best Practicable Means (BPM)', as defined in the Control of Pollution Act, 1974, should be used to ensure the protection of nearby sensitive receptors.

Appendix A – Acoustic Terminology

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	<p>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</p> <p>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.</p>
L _{90,T}	L ₉₀ is the noise level exceeded for 90% of the period <i>T</i> (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, <i>T</i> .
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.
L _p	Sound Pressure Level (SPL) 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).
L _w	Sound Power Level (SWL) 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).

Euston Tower

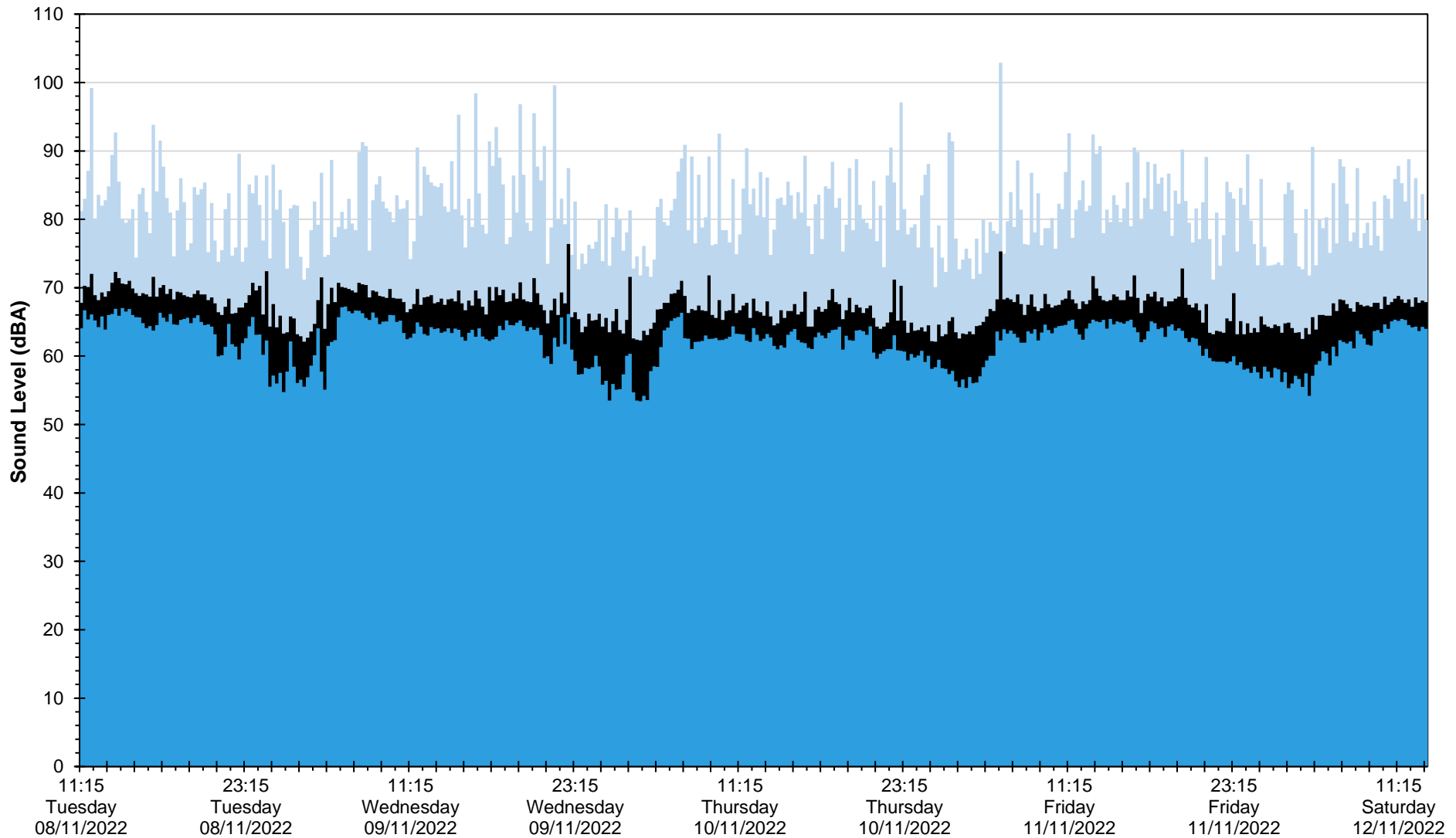
Position 1

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

Tuesday 8 November 2022 to Saturday 12 November 2022

■ L_{max} ■ L_{eq}

■ L_{90}



Date and Time

29605/TH1

Euston Tower

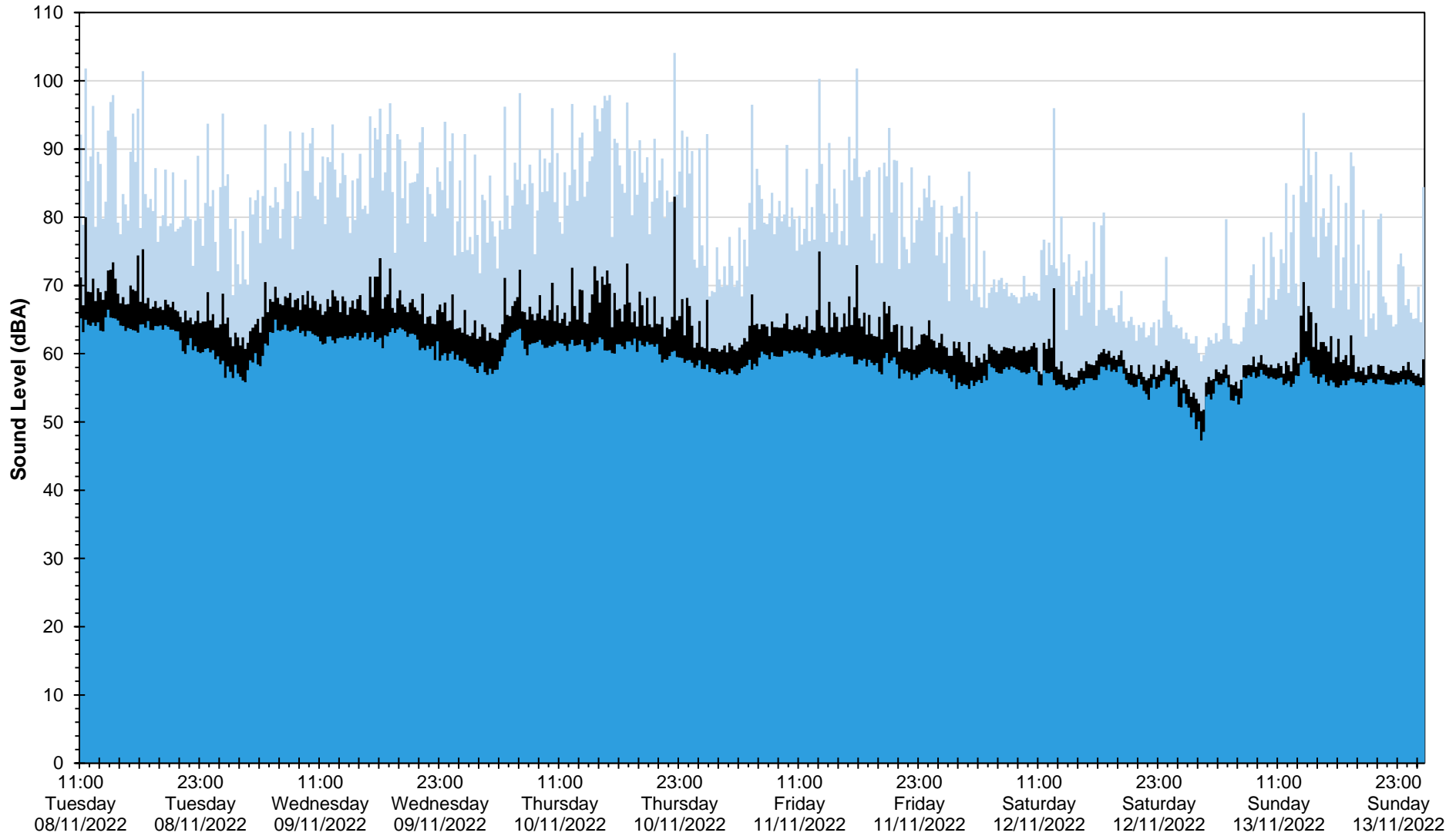
Position 2

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

Tuesday 8 November 2022 to Monday 14 November 2022

■ L_{max} ■ L_{eq}

■ L_{90}



Date and Time

29605/TH2

Euston Tower

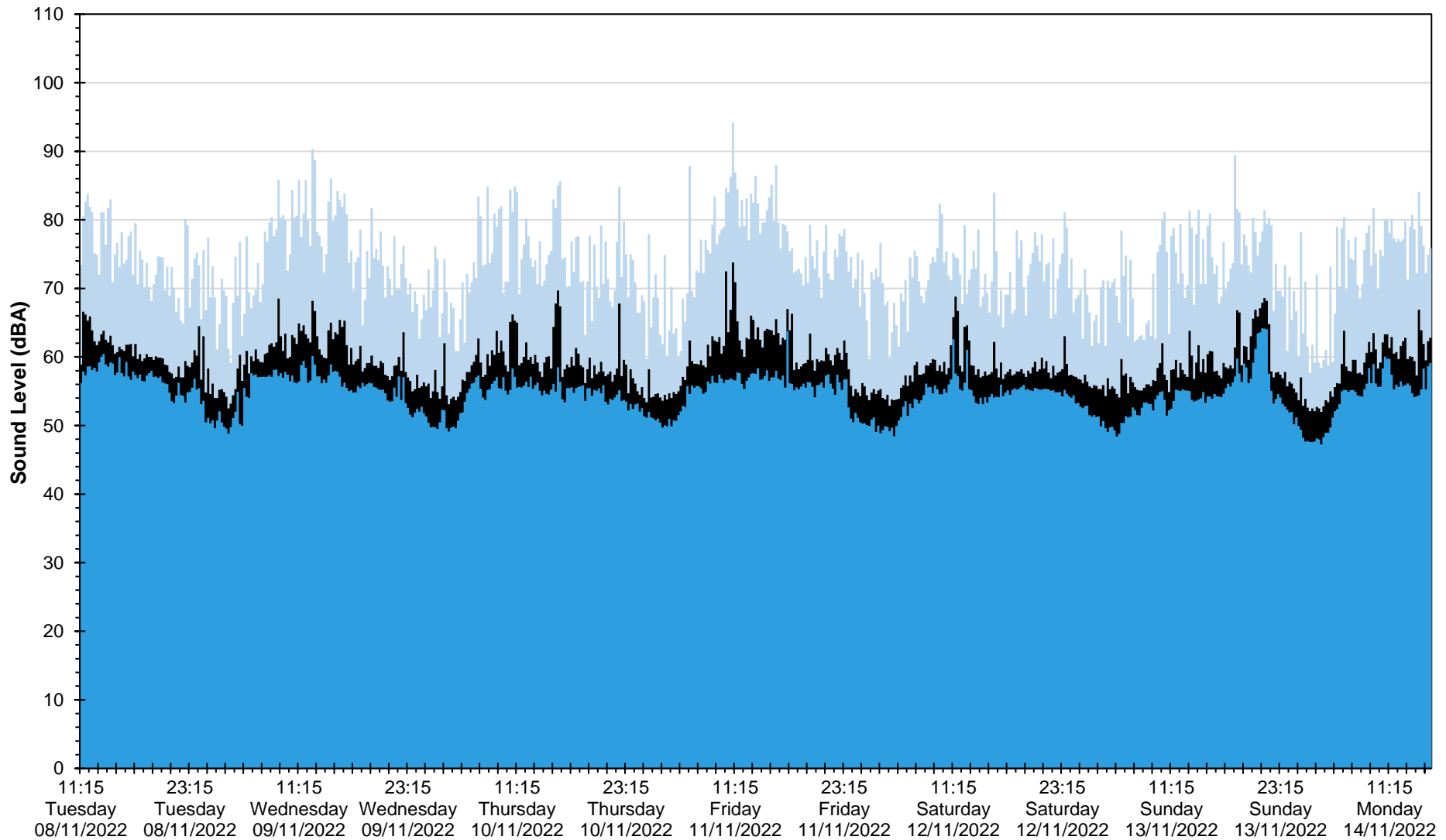
Position 3

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

Tuesday 8 November 2022 to Monday 14 November 2022

■ L_{max} ■ L_{eq}

■ L_{90}



Date and Time

29605/TH3

Euston Tower

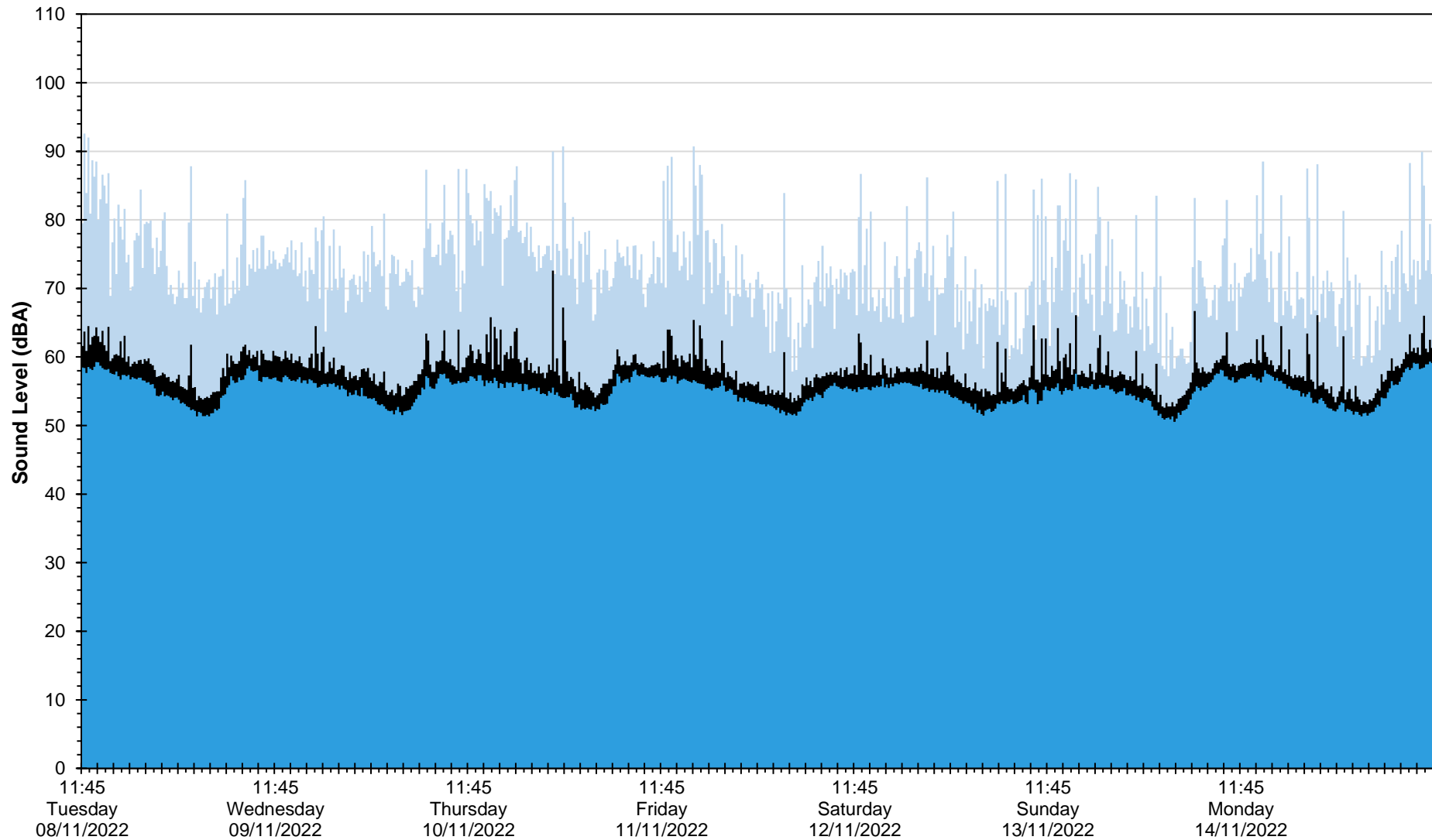
Position 4

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

Tuesday 8 November 2022 to Tuesday 15 November 2022

■ L_{max} ■ L_{eq}

■ L_{90}



Date and Time

29605/TH4

Euston Tower

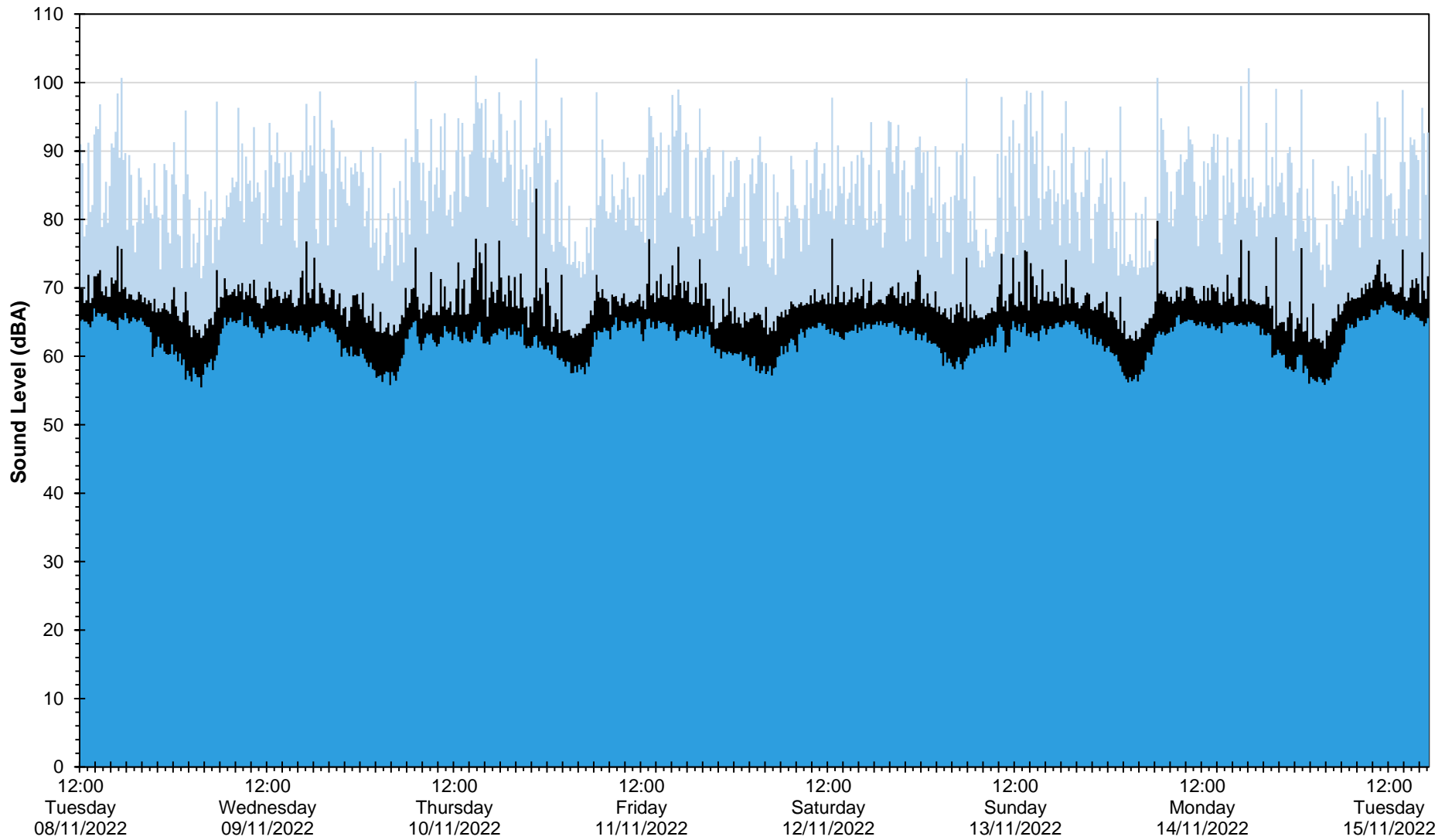
Position 5

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

Tuesday 8 November 2022 to Tuesday 15 November 2022

■ L_{max} ■ L_{eq}

■ L_{90}



Date and Time

29605/TH5