

Environmental Noise Assessment

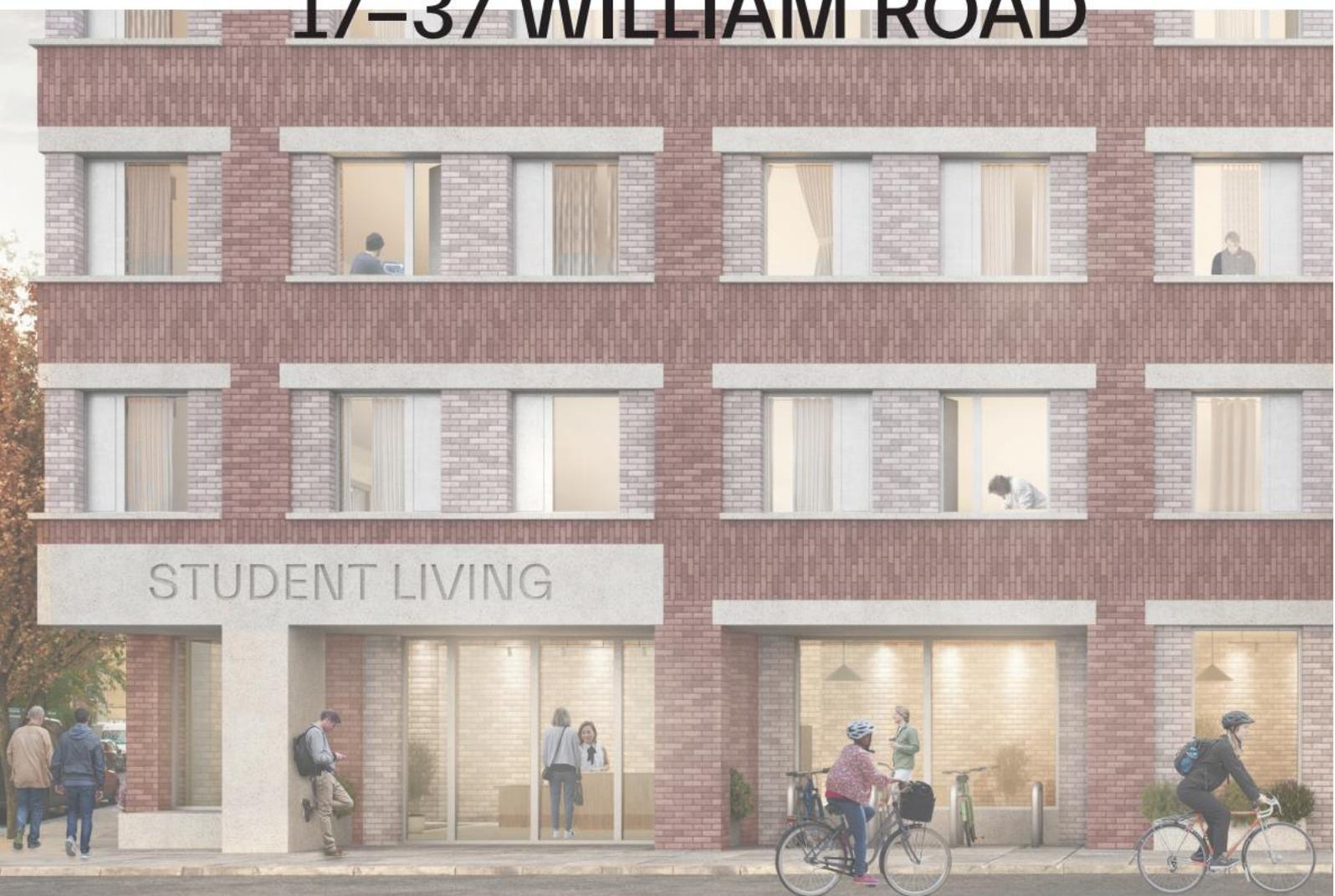
November 2020

Hann Tucker Associates



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17-37 WILLIAM ROAD



STUDENT LIVING

**17-37 William Road
London, NW1 3ER**

**Environmental Noise Survey
Report**

28066/ENS1

30 October 2020

For:
Euston One Limited



Hann Tucker Associates

Consultants in Acoustics Noise & Vibration

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Environmental Noise Survey Report 28066/ENS1

Document Control

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Environmental Noise Survey Report 28066/ENS1

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1.0 Introduction

It is proposed to replace the current building at 17-33, 35-37 William Road, Euston with a PBSA building (Purpose Build Student Accommodation). The project comprises the redevelopment of no. 35-37 to provide a 15 storey building with basement level for use as student accommodation, with affordable workspace at ground floor level of no. 17-37 and improvements to ground floor façade of no. 17-33, together with public realm improvements, servicing, cycle storage and facilities, refuse storage and other ancillary and associated works.

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 week long survey the existing L_{Amax} , L_{Aeq} and L_{A90} environmental road, rail and air traffic noise levels at up to 4No. secure and accessible on-site positions, using fully computerised noise monitoring equipment.

To undertake manned measurements, to establish the prevailing environmental noise levels on site.

Measurement procedures shall be in general accordance with British Standard BS 7445 "Description and measurement of environmental noise".

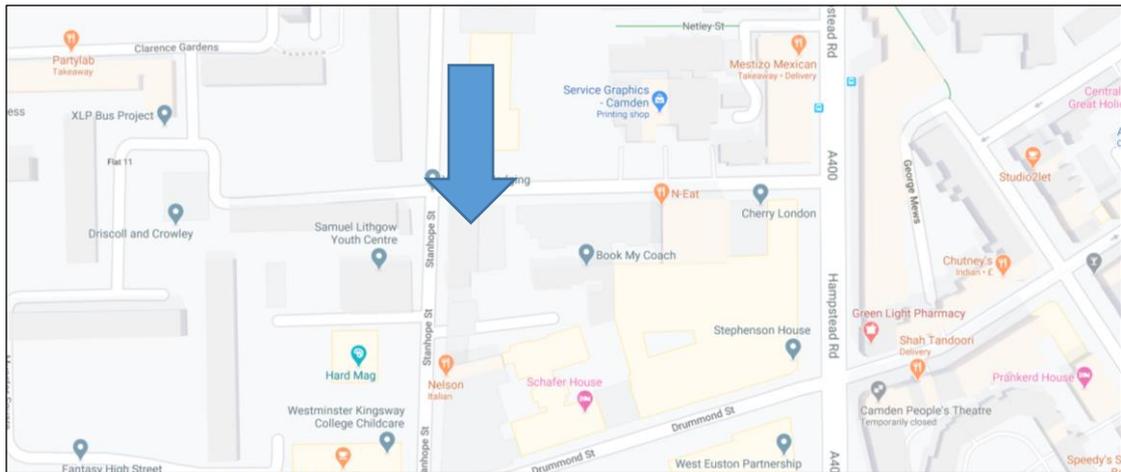
The survey will enable noise emission limits from the development to be identified with reference to the requirements of the Local Authority and/or the application of BS 4142: 2014 and to minimise the possibility of noise nuisance to neighbours.

The survey shall produce data to enable the sound insulation requirements of the building external facades to be determined at a later date.

3.0 Site Description

3.1 Location

The site is located at 17-37 William Road, Euston, London. The location is shown in the Location Map below.



Location Map (Imagery © 2020 Bluesky, DigitalGlobe, Getmapping plc, Infoterra Ltd & Bluesky, Map Data © 2020 Google.)

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

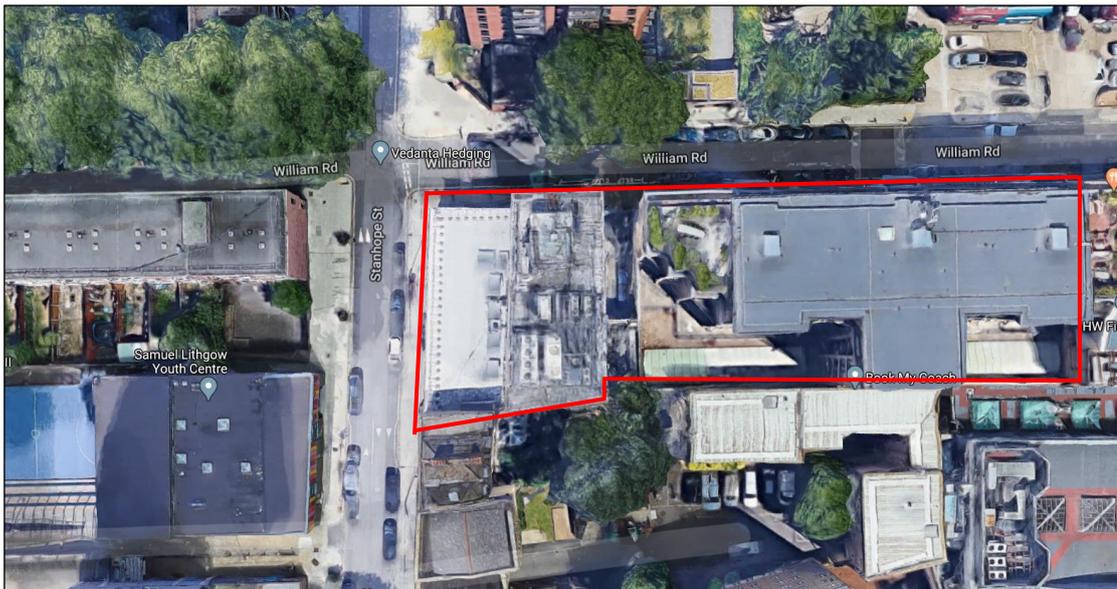
3.2 Description

The Site comprises two adjoining buildings situated to the south of William Road:

- No. 35-37 ('Plot A') comprises a dated part two-storey, part six-storey office building with basement level, situated on the corner of William Road and Stanhope Street;
- No. 17-33 ('Plot B') comprises a seven-storey building with ancillary office accommodation at ground floor level and residential units above.

Neighbouring properties are mostly of residential use. These generally vary in height from 3No. to 8No. storeys however there is also a 21No storey residential tower located further down Stanhope Street which overlooks the site.

The site is shown in the Site Plan below.



Site Plan (Imagery © 2016 Bluesky, DigitalGlobe, Getmapping plc, Infoterra Ltd & Bluesky, Map Data © 2016 Google)

4.0 Acoustic Terminology

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

5.0 Methodology

The survey was undertaken by Daniel Stuart BSc(Hons) AMIOA and assisted by James Hardacre, Technical Assistant.

5.1 Procedure

Fully automated environmental noise monitoring was undertaken from approximately 15:00 hours on 15 July 2020 to 12:30 hours on 21 July 2020.

During the periods we were on site the wind conditions were calm. The sky was generally clear. We understand that generally throughout the survey period the weather conditions were similar. 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.

5.2 Measurement Positions

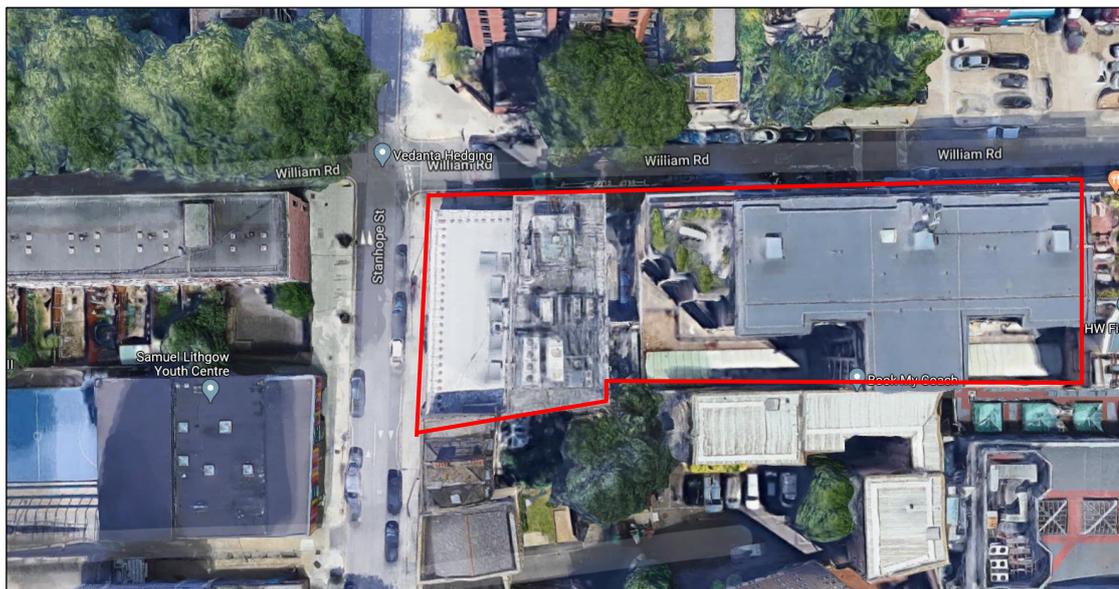
The noise level measurements were undertaken at 3No. positions as described in the table



below.

Position No	Description
1	The sound level meter was placed on the 5 th floor roof of existing building with a microphone attached to a pole facing rear of the building. The position is considered to be representative of free field noise levels.
2	The sound level meter was placed on the 3 th floor roof of existing building with a microphone attached to a pole facing William Road. The position is considered to be representative of free field noise levels.
3	The sound level meter was placed on the 3 th floor roof of existing building with a microphone attached to a pole facing Stanhope Street. The position is considered to be representative of free field noise levels.

The positions are shown on the plan below.



Plan Showing Unmanned Measurement Positions (Imagery © 2016 Bluesky, DigitalGlobe, Getmapping plc, Infoterra Ltd & Bluesky, Map Data © 2016 Google)

6.0 Instrumentation

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



Description	Manufacturer	Type	Serial Number	Calibration
Type 1 ½" Condenser Microphone	PCB	377B02	122885	Calibration on 09/10/2019
Preamp	Larson Davis	PRM902	3692	Calibration on 09/10/2019
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3444	Calibration on 09/10/2019
Type 1 ½" Condenser Microphone	PCB	377B02	139312	Calibration on 09/10/2019
Preamp	Larson Davis	PRM902	5161	Calibration on 09/10/2019
Type 1 Data Logging Sound Level Meter	Larson Davis	824	3443	Calibration on 09/10/2019
Type 1 ½" Condenser Microphone	ACO Pacific	7052E	67976	Calibration on 09/08/2019
Preamp	Svantek	SV18	71473	Calibration on 09/08/2019
Type 1 Data Logging Sound Level Meter	Svantek	971	80232	Calibration on 09/08/2019
Type 1 Calibrator	Bruel & Kjaer	4231	2610161	Calibration on 19/09/2019

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred.

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.

7.0 Results

The results have been plotted on Time History Graphs 28066/TH1 to 28066/TH3 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 x 10 ⁻⁵ Pa)			
	Weekday (Mon-Fri)		Weekend (Sat –Sun)	
	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours
1	45	42	43	41
2	42	39	40	38
3	44	42	43	42

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

Position	Modal L _{A90} Background Noise Level (dB re 2 x 10 ⁻⁵ Pa)			
	Weekday (Mon-Fri)		Weekend (Sat –Sun)	
	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours
1	46	44	46	43
2	49	39	46	39
3	52	44	47	43

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

Position	*Measured L _{Aeq,T} Noise Level (dB re 2 x 10 ⁻⁵ Pa)			
	Weekday (Mon-Fri)		Weekend (Sat –Sun)	
	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours
1	57	48	56	48
2	58	52	56	50
3	58	53	57	50

*Note: There was some construction noise to the south of the site during the weekdays of the survey. As the survey is to be used to assist the building design, these periods have been discounted in the presented data.



7.1 Results of Manned Survey

Manned Measurements were also undertaken at ground level on 10 July 2020 in order to determine the difference between noise levels at ground floor street level and roof level, where the unmanned surveys were located.

The table below summarises the manned measurements at street level in comparison with the unmanned measurements over the same interval at roof level.

Time	Measured $L_{Aeq,15mins}$ Noise Level (dB re 2×10^{-5} Pa)			
	Manned		Unmanned	
	Position	L_{Aeq} (dB)	Position	L_{Aeq} (dB)
14:45	Held at street level at Stanhope Street	61	3 (3 rd storey roof)	59
15:00	Held at street level at William Road	58	2 (3 rd storey roof)	56

Based on the results of the survey by comparing the measurements at street and 3rd storey level, a +2dB correction can be applied to determine the worst case incident noise levels at ground level.

8.0 Plant Noise Emission Criteria

Building services plant external noise emission levels will need to comply with Local Authority requirements.

We understand that the requirements/planning condition imposed by the London Borough of Camden states as follows:

“The significance of noise impact varies dependent on the different noise sources, receptors and times of operation presented for consideration within a planning application. Therefore, Camden’s thresholds for noise and vibration evaluate noise impact in terms of various ‘effect levels’ described in the National Planning Policy Framework and Planning Practice Guidance:

- *NOEL – No Observed Effect Level*
- *LOAEL – Lowest Observed Adverse Effect Level*



- SOAEL – Significant Observed Adverse Effect Level

Three basic design criteria have been set for proposed developments, these being aimed at guiding applicants as to the degree of detailed consideration needed to be given to noise in any planning application. The design criteria outlined below are defined in the corresponding noise tables. The values will vary depending on the context, type of noise and sensitivity of the receptor:

- Green – where noise is considered to be at an acceptable level.
- Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merit of the development.
- Red – where noise is observed to have a significant adverse effect.

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	Day	‘Rating level’ 10dB* below background	‘Rating level’ between 9dB below and 5dB above background	‘Rating level’ greater than 5dB above background



	<i>bedroom window (façade)</i>				
<i>Dwellings**</i>	<i>Outside bedroom window (façade)</i>	<i>Night</i>	<i>'Rating level' 10dB* below background and no events exceeding 57dBLAmax</i>	<i>'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB LAmax</i>	<i>'Rating level' greater than 5dB above background and/or events exceeding 88dBLAmax</i>

**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.”

A background level to be used with the Local Authority criteria has been selected based on the guidance outlined from Section 8.1.4 (below) in BS4142:2014,

“NOTE 1 To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value.”

On the basis of the above 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 window to achieve Camden’s “green” noise level criteria. These can be relaxed up to 5dBA to achieve “amber” noise levels - if the development is considered applicable by the local authority.

Position	Plant Noise Emission Criteria (dBA) At 1m from nearest noise sensitive residential window.			
	Weekday (Mon-Fri)		Weekend (Sat –Sun)	
	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours	Daytime (07:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours
1	36	34	36	33
2	39	29*	36	29*
3	42	34	37	33

*It is not generally appropriate to set plant noise criteria less than 30dBA at 1m from a noise sensitive residential window. Therefore we propose an appropriate target noise level is 30dBA.

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

It should be noted that the above are subject to the final approval of the Local Authority.



9.0 Discussion Of Noise Climate

During the periods we were on site the dominant noise source was noted to be traffic from the surrounding road network. There was also some construction on sites to the south which were noticeable at Position 1.

10.0 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.

Plant noise emission criteria have been proposed based on the requirements of the local authority.

Appendix A

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

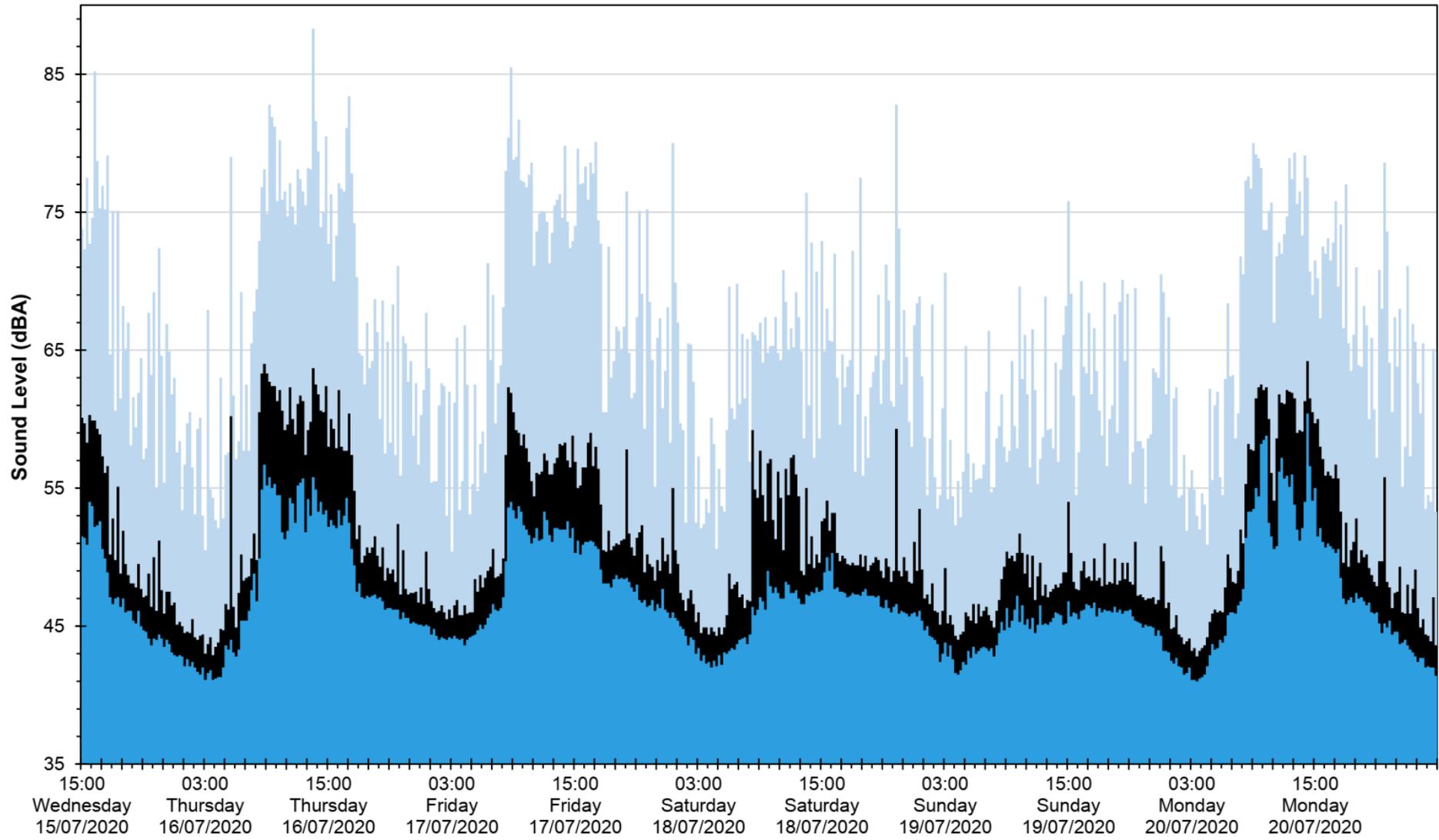
dB	Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB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

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Position 1

L_{eq} , L_{max} and L_{90} Noise Levels
Wednesday 15 July 2020 to Tuesday 21 July 2020

■ L_{max} ■ L_{eq}
■ L_{90}



Date and Time

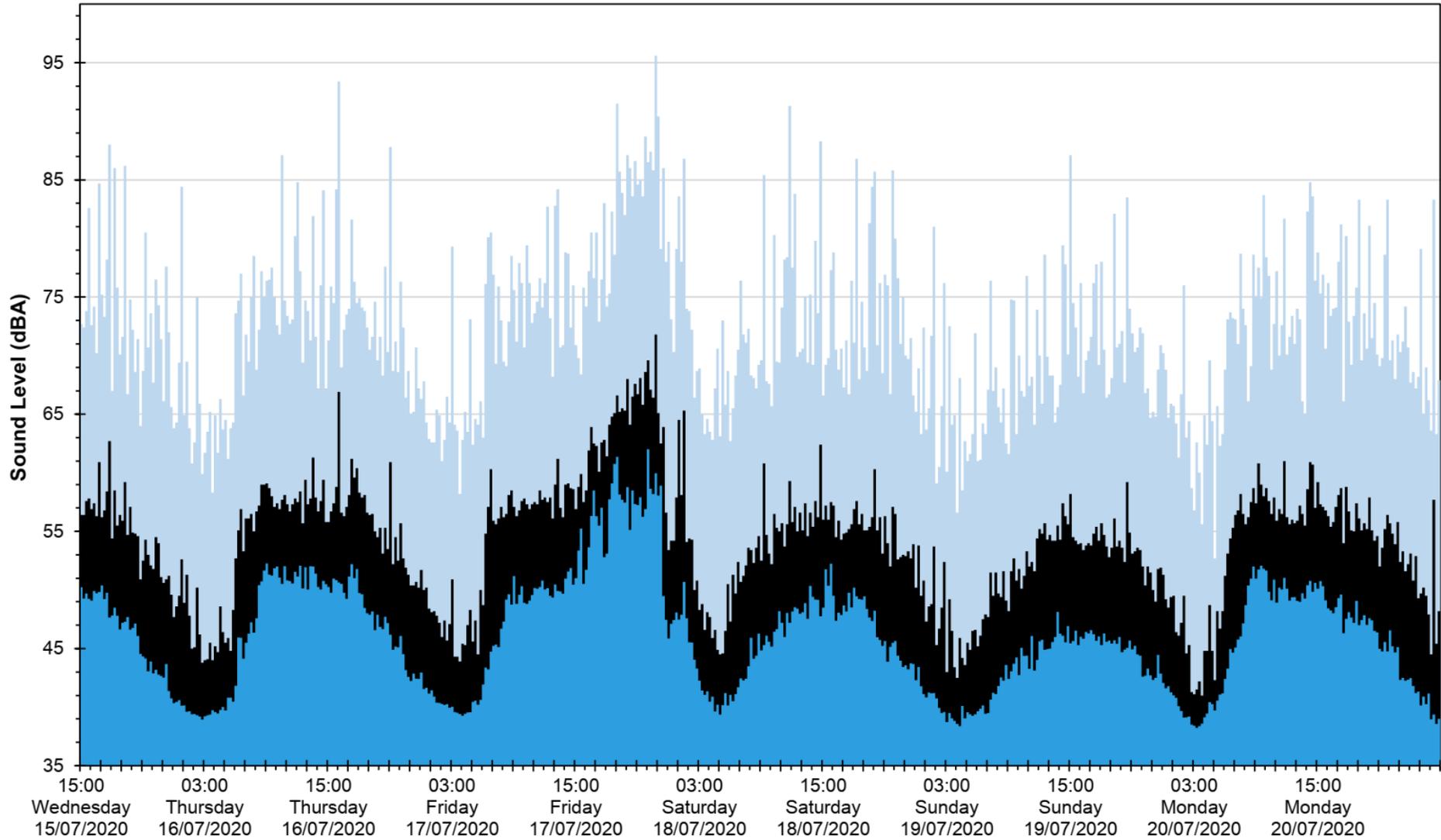
28066/TH1

Euston One

Position 2

L_{eq} , L_{max} and L_{90} Noise Levels
Wednesday 15 July 2020 to Tuesday 21 July 2020

■ L_{max} ■ L_{eq}
■ L_{90}



Date and Time

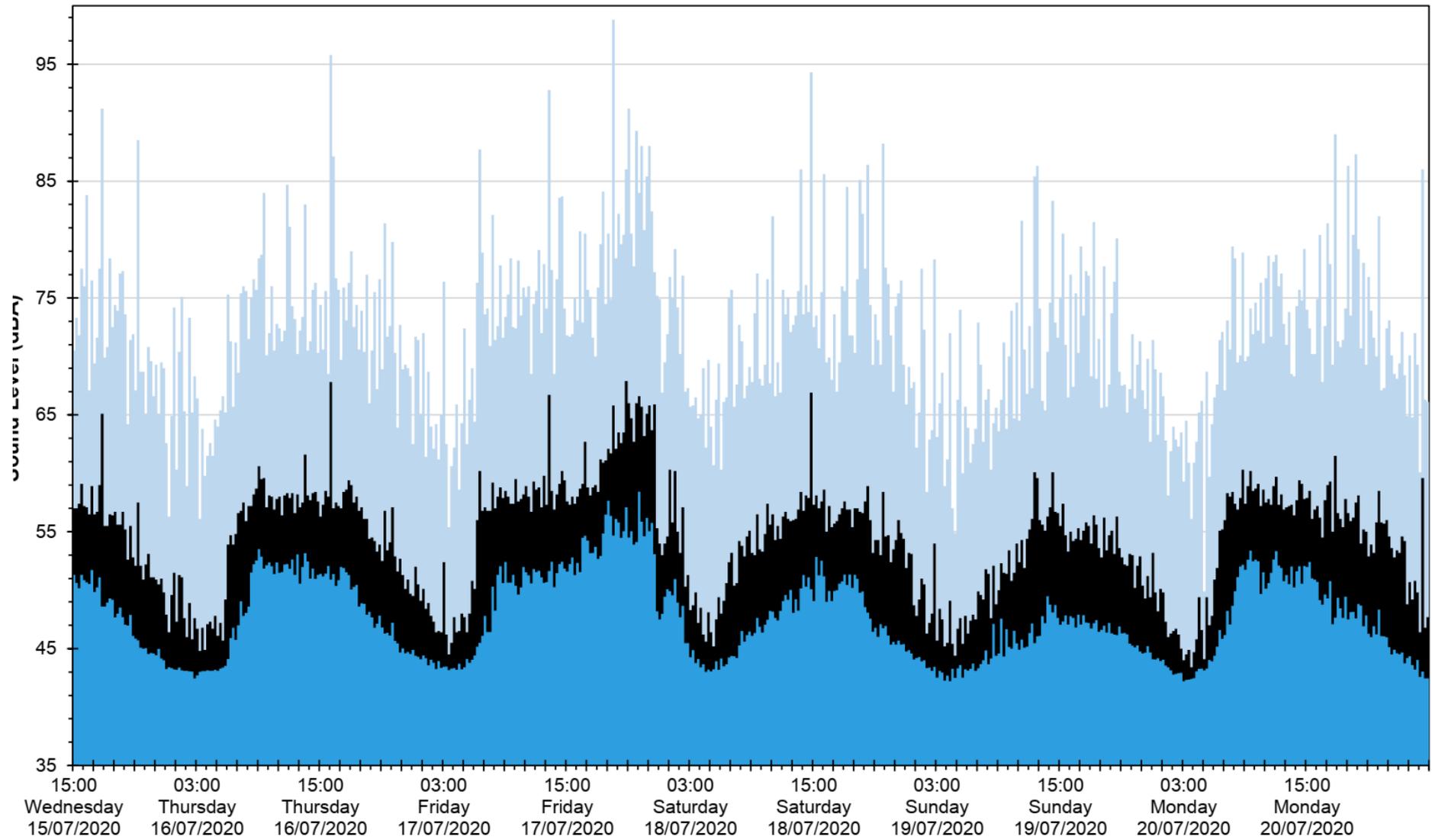
28066/TH2

Euston One

Position 3

L_{eq} , L_{max} and L_{90} Noise Levels
Wednesday 15 July 2020 to Tuesday 21 July 2020

■ L_{max} ■ L_{eq}
■ L_{90}



Date and Time

28066/TH3