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CURZON CINEMA, HAWLEY WHARF, CAMDEN

Plant Noise Assessment

Reference: 10048.RP03.PNA.0
Prepared: 14 October 2020
Revision Number: 0

Curzon Cinemas

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Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	14 October 2020	Andrew Heath	Helen Sheldon

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1.0 INTRODUCTION

It is proposed to locate new items of plant at the proposed Curzon Cinema development at Hawley Wharf, Camden. As part of the planning application, the London Borough of Camden requires consideration be given to atmospheric noise emissions from the proposed equipment at the nearest noise-sensitive properties.

RBA Acoustics have been commissioned to undertake measurements of the prevailing noise conditions at the site and to determine the atmospheric noise emissions in accordance with the Local Authority's requirements.

Detailed plant information is not known at this stage so this report is intended to present the results of the noise measurements, set the associated criteria and to provide noise limits for use in future plant noise assessment.

2.0 ENVIRONMENTAL NOISE SURVEY

2.1 General

In accordance with the requirements of the Local Authority, monitoring of the prevailing background noise was undertaken over the following periods:

Friday 9 October 2020 to Monday 12 October 2020.

During the survey periods the weather conditions were generally appropriate for the noise measurement exercise, it being dry with light winds.

Measurements were made of the L_{A90}, L_{Amax} and L_{Aeq} noise levels over sample periods of 15 minutes duration.

2.2 Measurement Locations

Position 1

Measurements were undertaken at Position 1 with the microphone positioned on a gate overlooking the rear garden of 22 Castlehaven Road behind Arch N13. The microphone was positioned on a tripod at a height of approximately 2.5m. This measurement position was considered as being representative of the noise climate as experienced at the closest residential receptors to the proposed plant to the western end of the site. The prevailing noise climate was noted to be due to traffic noise on Castlehaven Road as well as regular train and freight movements on the railway viaduct above.

This measurement position is considered to be in free-field conditions.

Position 2

Measurements were undertaken at Position 2 with the microphone positioned on a pole out of the rear window of Arch N9 approximately 0.3m from the rear facade. This measurement position was considered as being representative of the noise climate as experienced at the residential flats to the rear of the property. The prevailing noise climate was noted to be due to regular train and freight movements on the railway viaduct, more distant road traffic from Castlehaven Road and Hawley Road and noise and activity associated with Hawley Primary School during the day.

This measurement position is considered to be affected by façade reflection effects.

The measurement positions are illustrated on the site plan in Figure 1 and the Photographs in Figure 2 of Appendix C.

2.3 Instrumentation

Details of the instrumentation used to undertake the survey are provided in Appendix B.

The sound level meters were calibrated both prior to and on completion of the survey with no calibration drifts observed.

3.0 RESULTS

The noise levels at the measurement positions are shown as time-histories on the attached Graphs 1 to 4.

The cinema will typically operate between 10am and 12 midnight, 7 days a week so 'Day-time' hours have been assumed to be from 10am to midnight and 'night-time' hours between 12 midnight and 10am.

In line with the guidance in BS 4142:2014 typical lowest background L_{A90} noise levels measured have been used in our analyses. Histograms of the measured L_{90} levels used are attached in Figures 5 & 6. The typical lowest L_{A90} and the period averaged L_{Aeq} dB noise levels measured are summarised below.

The L_{eq} measurements presented in Table 1 at position 2 have been corrected to account for façade reflection effects.

Table 1 – Measured Levels

Measurement Period	Position 1		Position 2	
	L_{90} (dBA)	L_{eq} (dBA)	L_{90} (dBA)	L_{eq} (dBA)
Daytime (10:00 – 00:00)	45	60	47	57
Night-time (00:00 – 10:00)	41	58	44	54

4.0 CRITERIA

The following is applicable Condition 53 of the Hawley Wharf Masterplan consent (2012/4628/P):

> *Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A).*

In line with the above requirements we would propose items of mechanical services be designed so that noise emissions from the plant do not exceed the following levels when assessed at the nearest noise sensitive locations:

	Position 1	Position 2
▪ 'Daytime' 10am to 12 midnight	40 dB	42 dB
▪ Night-time' 12 Midnight to 10am	36 dB	39 dB

In line with BS 4142: 2014 and the requirements of Condition 53, should the proposed plant be identified as having intermittent or tonal characteristics, a further 5dB penalty should be subtracted from any of the above proposed noise emission limits.

5.0 FUTURE ASSESSMENT

The London Borough of Camden requires the following information to be addressed when specifying new items of plant at a site:

- The location of the nearest noise sensitive premises to the proposed locations of the plant and the distance from the plant location to the nearest noise sensitive window.
- The proposed operational hours of the plant, plant type, number of plant and location of plant.
- Manufacturer's specifications of plant and/or proposed noise levels of internal activity in octave or 1/3 octave band format.
- Calculations for the predicted noise level 1 metre from the window of the nearest sensitive property including distance, directionality and screening effects.
- The report should demonstrate that the predicted noise level outside the most affected window will comply with the limits stated in the standard condition.
- Details of any proposed attenuation measures and details of noise reductions achieved (including manufacturer's guidance on acoustic performance of any acoustic louvers, enclosure, screens etc).

It is proposed to locate air cooled condensers at high level behind louvres to the rear of each auditoria and in the bar area. Air handling plant is proposed to supply and discharge at high level towards the fronts of the auditoria.

At the time of writing, more details regarding the specific plant items, their precise locations, noise levels and operating hours required for mechanically servicing the property are not available, as final plant is yet to be selected. Therefore, predictions cannot currently be undertaken to satisfy the above requirements.

However, noise emissions can be controlled by the requirement to achieve the plant noise emission criteria detailed in Section 4.0 being stated as part of the planning conditions for the development.

Methods for appropriately controlling plant noise emissions will include louvres, attenuators and anti-vibration mounts.

An update to the report detailing plant selections and predicted noise levels will be prepared once such details are available.

6.0 CONCLUSION

Measurements of the existing background noise levels at the proposed Curzon Cinema development at Hawley Wharf, Camden have been undertaken. The results of the measurements have been used in order to determine the required criteria for atmospheric noise emissions from the future plant installations.

This report details the plant noise emission limits and refers to the further assessment required to ensure full compliance with the requirements of the London Borough of Camden.

Appendix A - Acoustic Terminology

dB	Decibel - Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level. Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is just perceptible.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (1 hour).
L_{Aeq}	The level of notional steady sound which, over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measured over that period.
L_{An} (e.g L_{A10}, L_{A90})	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, such as for example sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the general level of, say, traffic noise, but because of their very short duration, maybe only a very small fraction of a second, may not have any effect on the L_{eq} value.

Appendix B - Instrumentation

The following equipment was used for the measurements

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1403226	30806	30 January 2021
Norsonic Pre Amplifier	1209A	12066	30818	31 January 2021
Norsonic ½" Microphone	1225	168180		
Norsonic Sound Calibrator	1251	31988	30804	30 January 2021
Norsonic Type 1 Sound Level Meter	Nor140	1403127	30803	30 January 2021
Norsonic Pre Amplifier	1209A	12071	30816	31 January 2021
Norsonic ½" Microphone	1225	41473		
Norsonic Sound Calibrator	1251	31986	30801	30 January 2021

Appendix C – Graphs, Site Plans & Photos

Curzon Cinema, Hawley Wharf

L_{Aeq} Time History

Measurement Position 1 - Friday 9 October 2020 to Monday 12 October 2020

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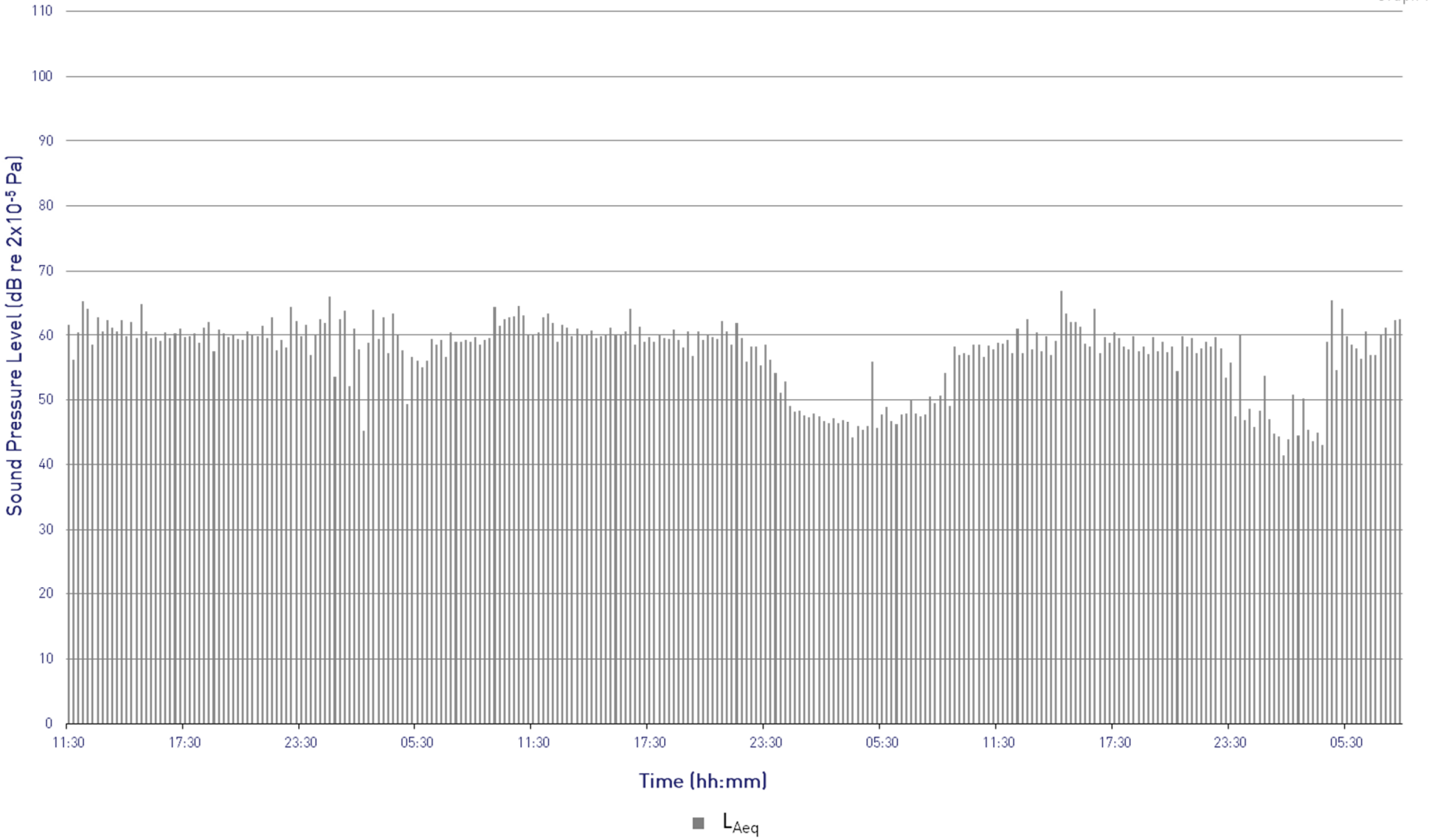
Graph 1



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$L_{Amax,f}$ and L_{A90} Time History

Measurement Position 1 - Friday 9 October 2020 to Monday 12 October 2020

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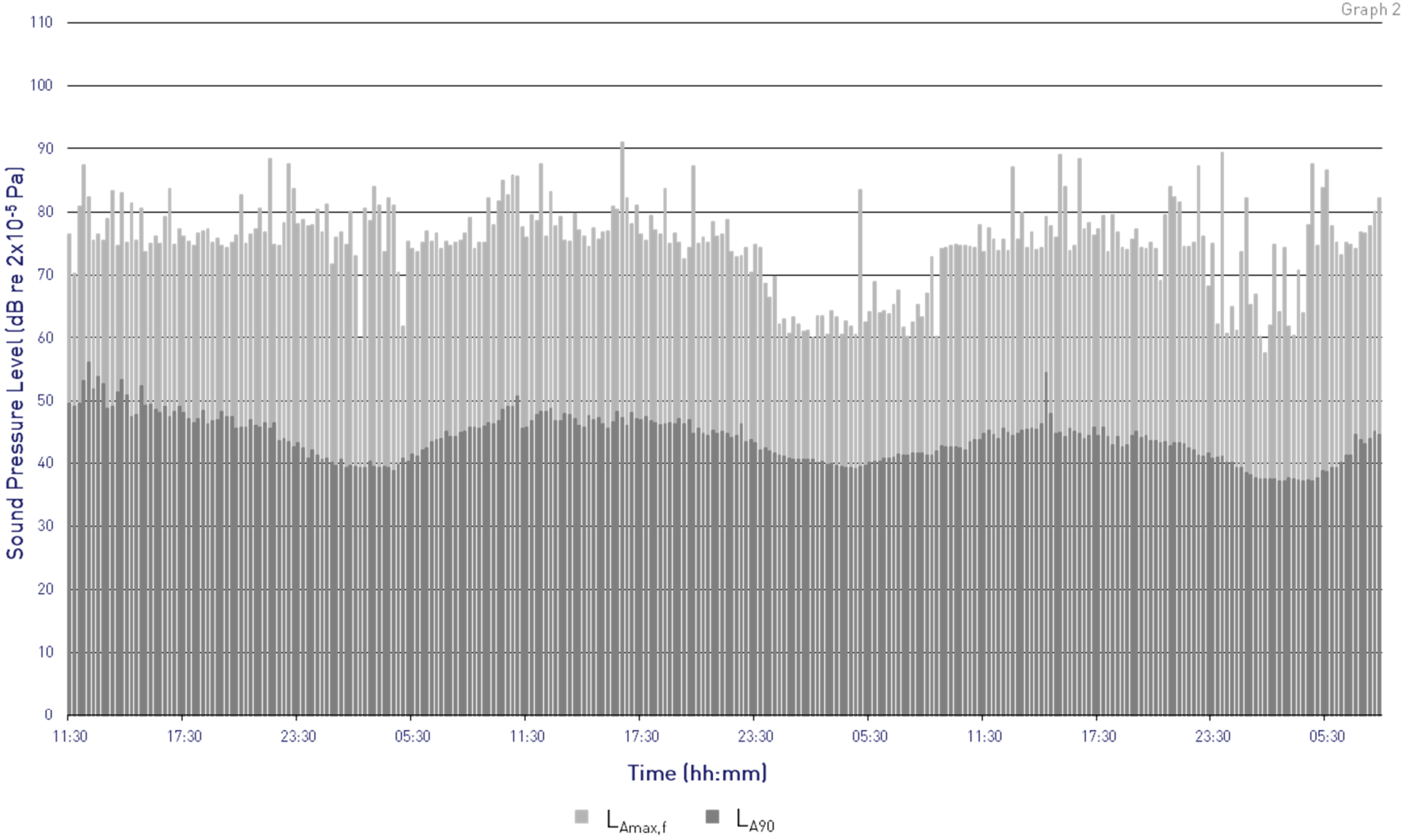
Graph 2



Curzon Cinema, Hawley Wharf

L_{Aeq} Time History

Measurement Position 2 - Friday 9 October 2020 to Monday 12 October 2020

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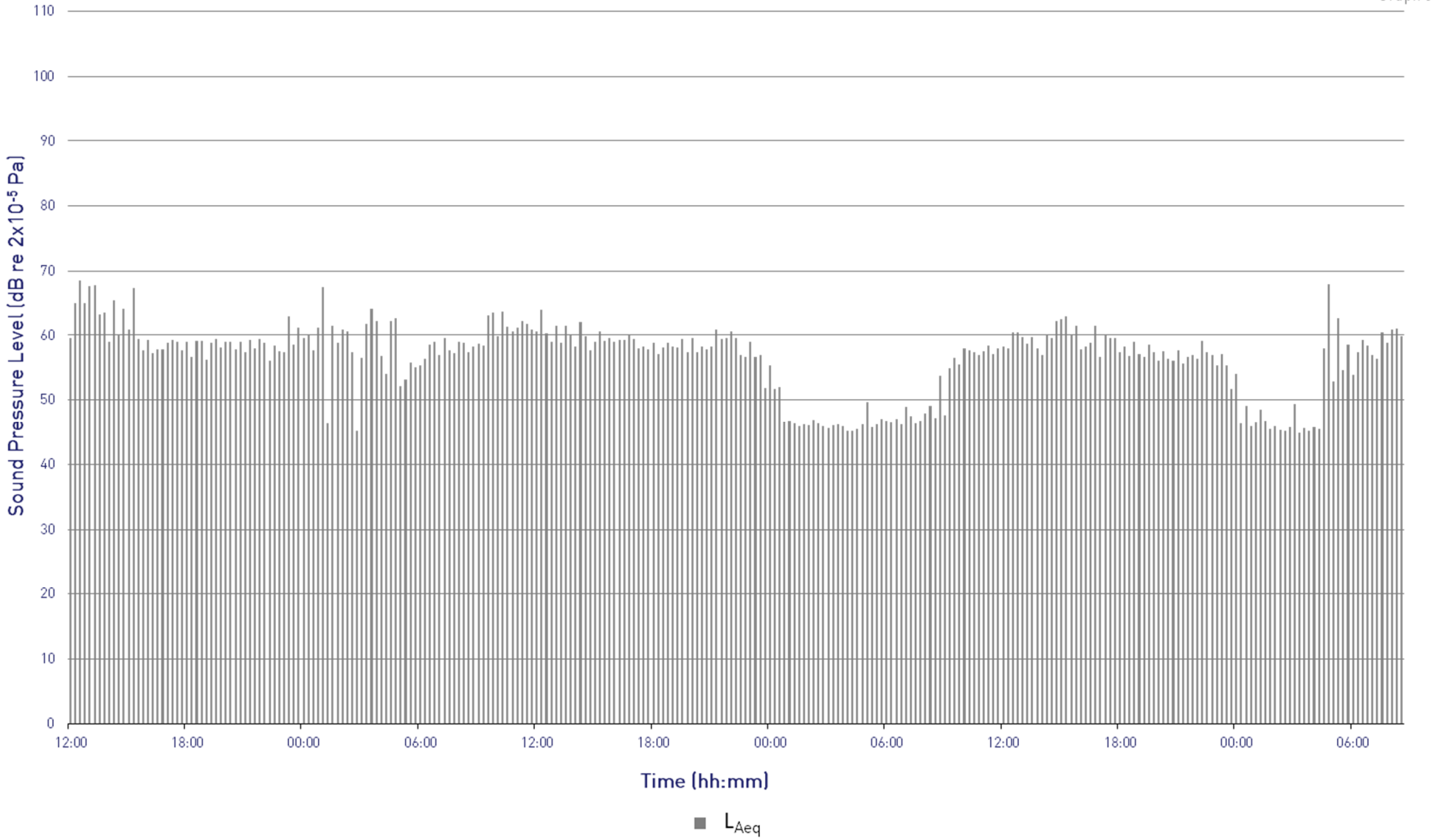
Graph 3



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$L_{Amax,f}$ and L_{A90} Time History

Measurement Position 2 - Friday 9 October 2020 to Monday 12 October 2020

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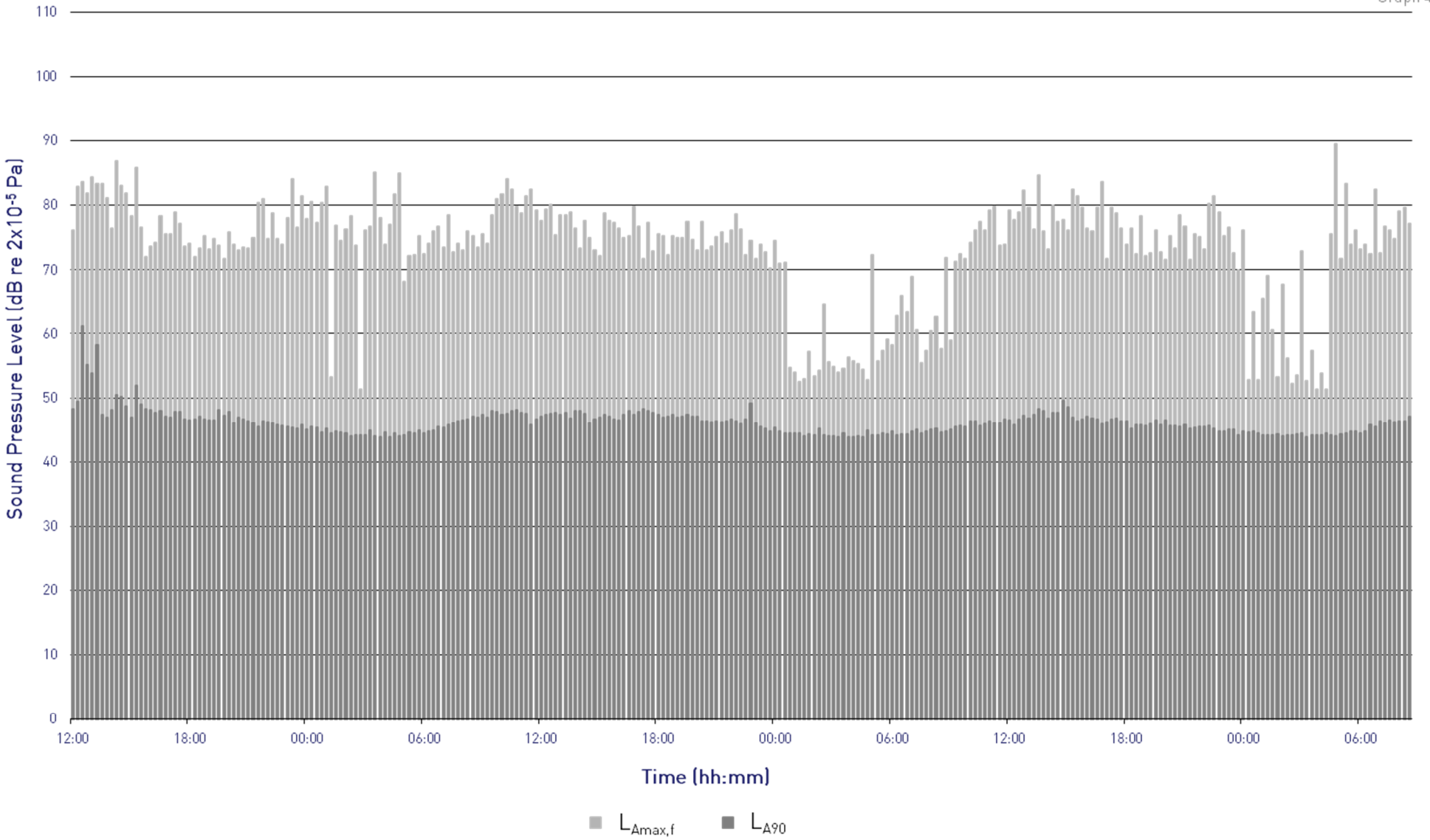
Graph 4



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$L_{A90,15\ minutes}$ Histogram

Measurement Position 1 - Friday 9 October 2020 to Monday 12 October 2020

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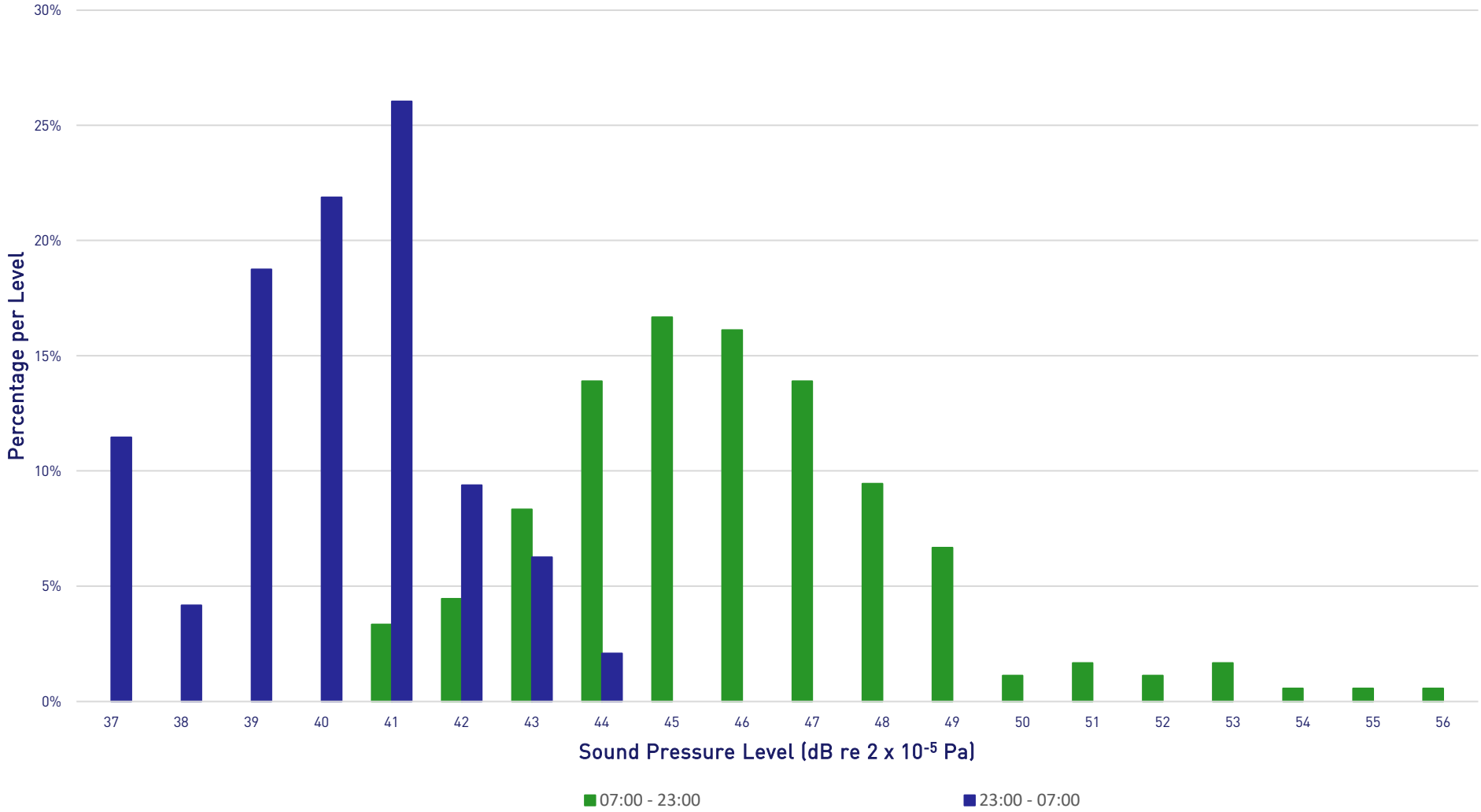
Graph 5



Curzon Cinema, Hawley Wharf

$L_{A90,15\ minutes}$ Histogram

Measurement Position 2 - Friday 9 October 2020 to Monday 12 October 2020

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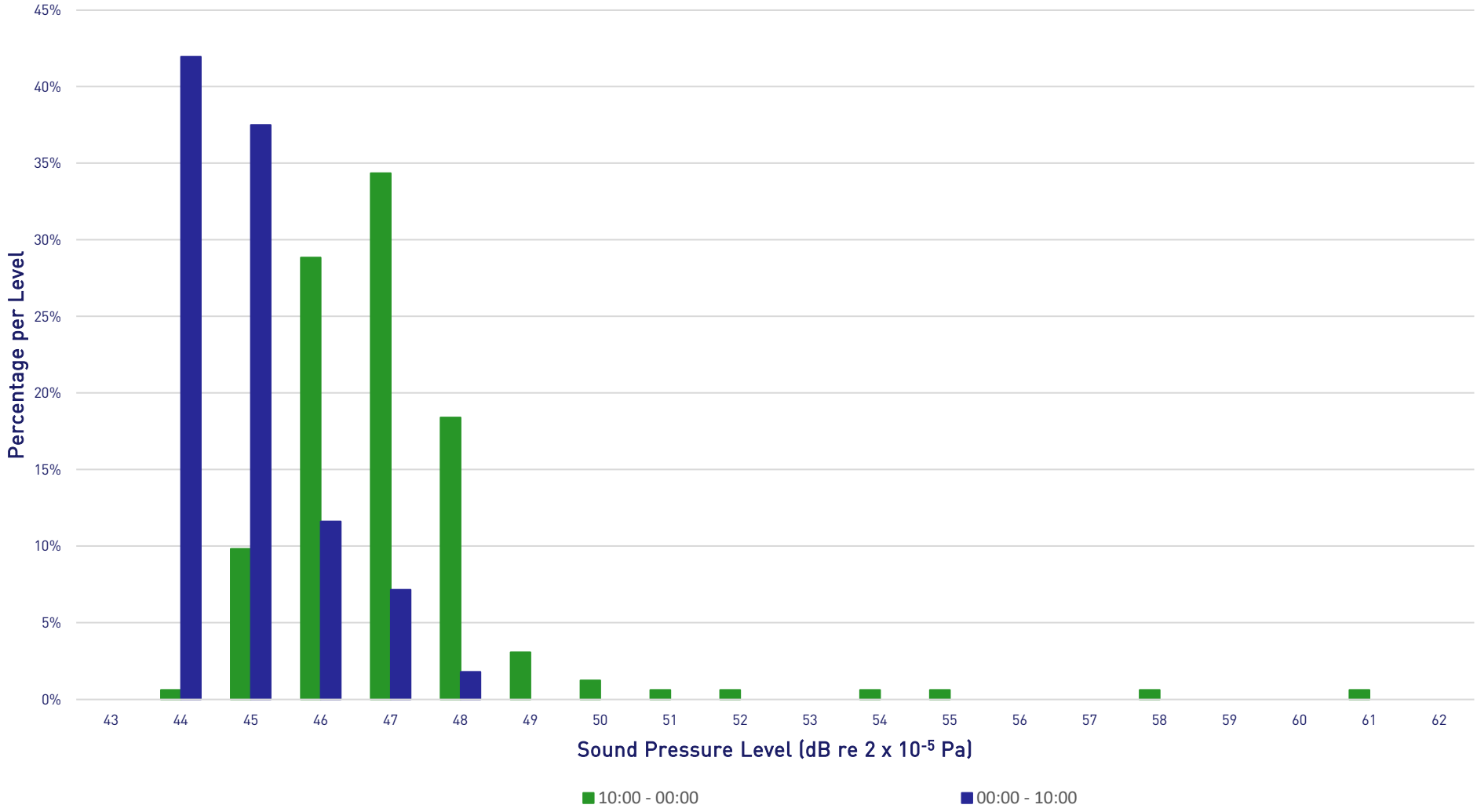
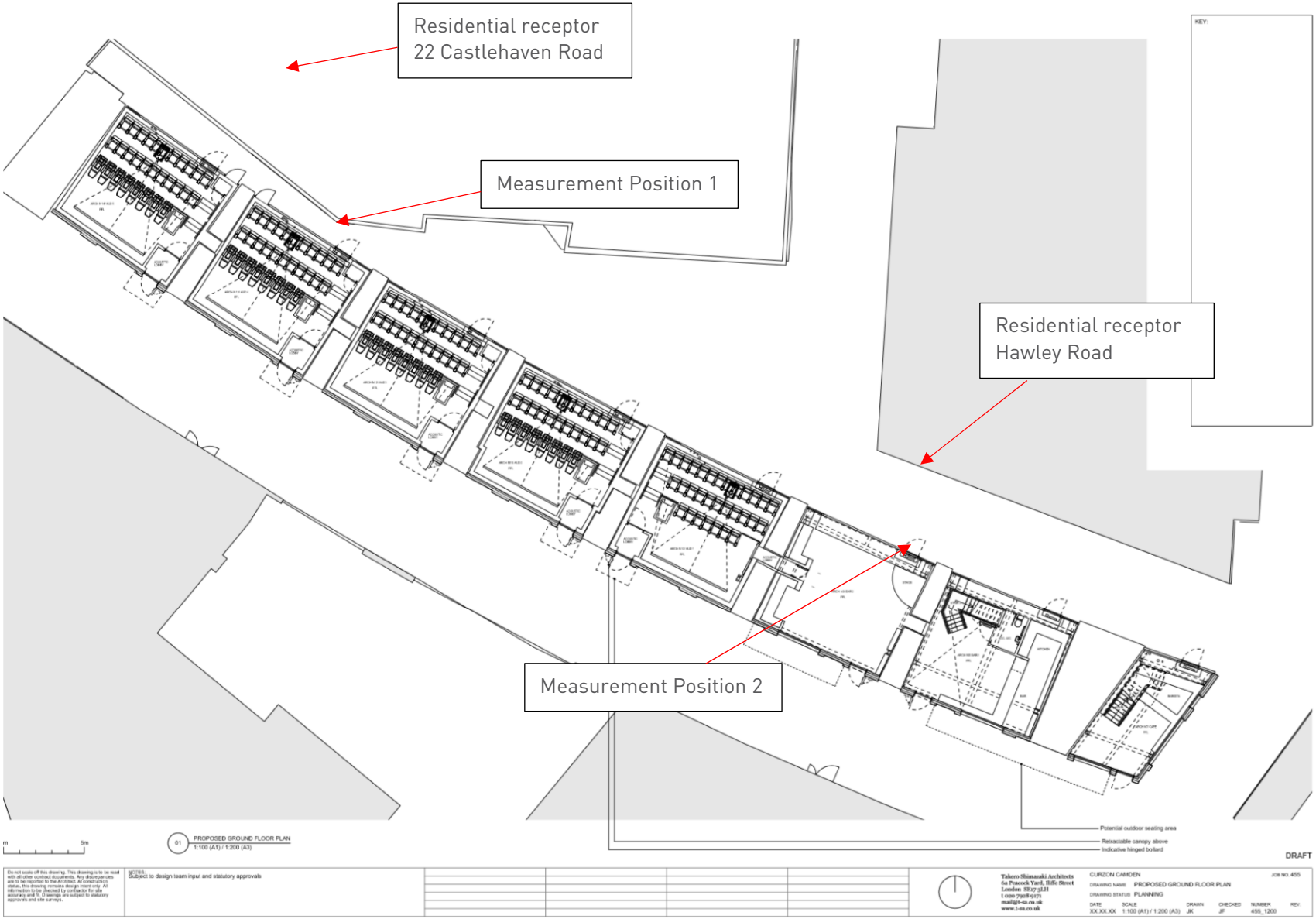
Graph 6





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Site Plan indicating measurement locations
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Figure 1
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Not to Scale

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CURZON CINEMA, HAWLEY WHARF, CAMDEN
Photographs of Measurement Locations & Receptors
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Figure 2
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