



THE LAMB, 94 LAMB'S
CONDUIT STREET,
LONDON WC1N 3LZ

Plant Noise Assessment

Reference: 11274.RP01.PNA.0
Prepared: 14 September 2021
Revision Number: 0

[John Steele Ltd](#)

Norway House
Wrotham Road
Gravesend
DA13 0AU

Plant Noise Assessment



THE LAMB, 94 LAMB'S CONDUIT STREET, LONDON WC1N 3LZ

Reference: 11274.RP01.PNA.0

Prepared: 14 September 2021

Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	14 September 2021	Robert Harris Marshall	Robert Barlow

Terms of contract:

RBA Acoustics Ltd shall not be responsible for any use of the report or its contents for any purpose other than that for which it was provided. Should the Client require the distribution of the report to other parties for information, the full report should be copied. No professional liability or warranty shall be extended to other parties by RBA Acoustics Ltd without written agreement from RBA Acoustics Ltd.

The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting-out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and will need to be developed into full working drawings by the lead designer to incorporate all other design disciplines.



LONDON
44 Borough Road
London SE1 0AJ
T. +44 (0) 20 7620 1950

MANCHESTER
Bloc, 17 Marble Street
Manchester, M2 3AW
T. +44 (0) 161 661 4504

Contents

1. INTRODUCTION..... 1

2. SITE DESCRIPTION 1

3. ENVIRONMENTAL NOISE SURVEY 1

4. PLANT NOISE CRITERIA..... 2

5. PLANT NOISE ASSESSMENT..... 3

6. VIBRATION CONTROL..... 4

7. CONCLUSION 4

APPENDIX A – ACOUSTIC TERMINOLOGY

APPENDIX B – INSTRUMENTATION

APPENDIX C – PLANT CALCULATIONS

APPENDIX D – CDM CONSIDERATIONS

APPENDIX E – GRAPHS AND SITE PLANS

1. INTRODUCTION

It is proposed to locate new items of refrigeration plant at roof level of the building housing The Lamb public house, located at 94 Lamb's Conduit Street, London WC1. As part of the planning application, the London Borough of Camden requires consideration be given to atmospheric noise emissions from the proposed equipment to the nearest noise-sensitive receptors.

RBA Acoustics have been commissioned to undertake measurements of the prevailing noise conditions at the site and to determine the atmospheric noise emission limits in accordance with London Borough of Camden's requirements.

This report presents the results of the noise measurements, associated criteria and provides the required assessment.

2. SITE DESCRIPTION

The Lamb is located between two predominantly residential buildings (with a restaurant at Ground Floor of 86-90 Lamb's Conduit Street). The public areas of the pub are spread over Ground and First Floor levels of the building with staff accommodation and back of house areas located on the upper floors.

The buildings opposite the site on Lamb's Conduit Street house the UCL Institute of Child Health and the Camelia Botnar Laboratories. Both of these buildings have significant plant installed at roof level of the buildings.

The site is shown in relation to its surroundings in the site plan in Figure 1 (Appendix E).

3. ENVIRONMENTAL NOISE SURVEY

3.1 Survey Methodology

Monitoring of the prevailing background noise was undertaken over the following 24-hour period:

11:00 hours Thursday 25 August to 11:00 hours Friday 26 August 2021

As the survey was unattended it is not possible to comment with certainty regarding meteorological conditions throughout the entire survey period. However, based on observations during the site visits and weather reports for the area, conditions were generally considered suitable for obtaining representative noise measurements, being predominantly dry with little wind.

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

3.2 Measurement Location

To determine the existing noise climate at the site, measurements were undertaken at roof level of the 94 Lamb's Conduit Street building. The microphone was located to the rear of the roof so as to be representative of noise levels experienced at the nearest residential windows; those being the upper floors of Rokeby House, 86-90 Lamb's Conduit Street.

The measurement position(s) is (are) also illustrated on the site plan attached in Figure 1 and photos in Figure 2 (Appendix E).

3.3 Instrumentation

For information regarding the equipment used for the measurements please refer to Appendix B.

The sound level meter was calibrated both prior to and on completion of the survey with no significant calibration drift observed.

3.4 Results

The noise levels measured are shown as time-histories on the attached Graphs 1-2 (Appendix E). The lowest L_{A90} and the period averaged L_{Aeq} noise levels measured are summarised in Table 1.

Table 1 – Measured Levels

Measurement Period	Measurement Position	
	Lowest $L_{A90,Xmin}$ (dB)	L_{Aeq} (dB)
Daytime (07:00 – 23:00)	47	57
Night-time (23:00 – 07:00)	45	50

Noise levels at the roof top measurement location were noted to be primarily affected by existing building services plant associated with other nearby buildings, most notably the medical buildings opposite.

4. PLANT NOISE CRITERIA

The requirements of Camden Council Environmental Health Department regarding new building services plant are outlined in the Camden Local Plan as follows:

"[...] 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)."

Based on the measured noise levels provided in Section 3.0 the following noise limits are therefore proposed at the nearest noise-sensitive receptors to the proposed plant:

Daytime (07:00 to 23:00)	37 dBA
Night-time (23:00 to 07:00)	35 dBA

In line with the Camden Local Plan, 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. PLANT NOISE ASSESSMENT

This assessment has been based on the information provided to RBA by John Steele Ltd and is described in the following sections.

5.1 Proposed Plant Items

The following plant is proposed for the scheme:

Table 2 – Plant Types

Ref.	Manufacturer/Model/Duty	Plant Type
CU1	Wolseley WINAE4450Z-FZ	Outdoor Condenser Unit
CU2	Wolseley WINAJ2446Z-FZ	Outdoor Condenser Unit

5.2 Plant Locations

The condenser units are to be located at roof level of the building, screened from the residential receptors to the rear by a 1.2m high acoustic screen. The equipment positions are indicated on the site plan in Figure 3 in Appendix E.

5.3 Plant Noise Levels

Information regarding the noise levels of the proposed plant has been provided by the manufacturer of the unit. The associated plant noise levels are detailed as follows:

Table 3 – Plant Noise Levels

Unit	Parameter	Sound Pressure Level at 10m (dB)
Wolseley WINAE4450Z-FZ	Lp at 10m	31
Wolesley WINAJ2446Z-FZ	Lp at 10m	32

Please note, frequency specific octave band noise data was unavailable for the proposed units.

5.4 Location of the Nearest Noise-Sensitive Receptors

Based on observations made on site we understand the nearest noise-sensitive receptors to the proposed plant to be the fourth floor of Rokeby House, the building adjacent the site at 86-90 Lamb's Conduit Street.

Please note that compliance at the above receptor will also result in compliance at 6 Guildford Place, which is considered less likely to be affected to noise emissions from the proposed plant installations.

The worst affected receptors are located to the rear of the site at a distance of approximately 12m and completely screened from the proposed plant.

The receptors are shown in the site plan in Figure 1 and photographs in Figure 2, included in Appendix E.

5.5 Calculation of Noise Levels at Nearest Noise-Sensitive Receptors

Our calculation method for predicting noise levels from the proposed plant at the nearest noise-sensitive receptors, based on the information above, is summarised below.

- Source Term SPL
- Distance Attenuation
- Screening (basic line of sight adopted)

Calculation sheets are attached for further information in Appendix C.

The results of the calculations indicate a cumulative noise level of 28dB at the nearest affected residential window.

Noise from the proposed plant (with the screening measures incorporated as indicated) is therefore within the Local Authority criteria.

6. VIBRATION CONTROL

In addition to the control of airborne noise transfer, it is also important to consider the transfer of noise as vibration to adjacent properties (as well as to any sensitive areas of the same building).

We would typically advise that condensing units be isolated from the supporting structure by means of either steel spring isolators or rubber footings. For particularly sensitive locations, or when on lightweight structures the mounts should ideally be caged and be of the restrained type.

It is important the isolation is not “short-circuited” by associated pipework or conduits. To this end, any conduits should be looped and flexible connectors should be introduced between the condenser and any associated pipework. Pipework should be supported by brackets containing neoprene inserts.

7. CONCLUSION

RBA Acoustics have undertaken noise monitoring at The Lamb Public House, Lambs Conduit Street, London WC1. The measured noise levels are presented within this report. The resultant noise levels have been used to determine the required criteria for atmospheric noise emissions from the proposed plant installations.

The results of the assessment indicate atmospheric noise emissions from the proposed plant are within the criteria required by the London Borough of Camden. As such, the proposed plant installations should be considered acceptable in terms of noise.

Appendix A – Acoustic Terminology

A-weighting (e.g. dB(A))	A correction applied across the frequency bands to take into account the response of the human ear, and therefore considered to be more representative of the sound levels people hear.
DeciBel (dB)	Unit used for many different acoustic parameters. It is the logarithmic ratio of the level being assessed to a standard reference level.
L_{eq}	The level of a notional steady sound which, over a stated period of time, T , would have the same acoustic energy as the fluctuating noise measured over that period. Typically used to represent the average or ambient noise level.
$L_{Aeq,T}$	The A-weighted level of a notional steady sound which, over a stated period of time, T , would have the same acoustic energy as the fluctuating noise measured over that period. Typically used to represent the average or ambient noise level.
L_{An} (e.g. L_{A10} , L_{A90})	The sound level exceeded for n% of the time. E.g. L_{A10} is the A-weighted level exceeded for 10% of the time and as such can be used to represent a typical maximum level. Similarly, L_{A90} is the level exceeded for 90% of the measurement period, and is often used to describe the underlying background noise.
NR	Noise Rating – A single figure term to describe a measured noise level which considers the frequency content of the noise, generally used for internal noise level measurements (particularly mechanical services plant).

Appendix B – Instrumentation

The following equipment was used for the measurements.

Table B1– Equipment Calibration Details

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Expiry Date
Norsonic Type 1 Sound Level Meter	Nor140	1407476	473910533	10 October 2021
Norsonic Pre Amplifier	1209	22340		
Norsonic ½" Microphone	1225	358242		
Norsonic Sound Calibrator	1255	125525265	Cal 022-2019-11502	27 September 2021

Appendix C – Plant Calculations

Table C1 – Summary Calculation

Detail	Noise Level
CU1	32
CU2	31
<i>Combined</i>	<i>35</i>
Distance Loss (12m)	-2
Line of Sight Screening	-5
<u>Total at Receptor</u>	<u>28</u>

Appendix D – CDM Considerations

The likelihood the harm will occur can be assessed by applying an indicative score (from 1 to 5) as follows:

- 1 – Remote (almost never)
- 2 – Unlikely (occurs rarely)
- 3 – Possible (could occur, but uncommon)
- 4 – Likely (recurrent but not frequent)
- 5 – Very likely (occurs frequently)

The severity of harm can be assessed by applying an indicative score (from 1 to 5) as follows:

- 1 – Trivial (e.g. discomfort, slight bruising, self-help recovery)
- 2 – Minor (e.g. small cut, abrasion, basic first aid need)
- 3 – Moderate (e.g. strain, sprain, incapacitation for more than 3 days)
- 4 – Serious (e.g. fracture, hospitalisation for more than 24 hours, incapacitation for more than 4 weeks)
- 5 – Fatal (single or multiple)

The rating value is obtained by multiplying the two scores and is then used to determine the course of action.

Table D1 – Risk Ratings

Rating Bands (Severity x Likelihood)		
Low Risk (1 – 8)	Medium Risk (9 -12)	High Risk (15 – 25)
May be ignored but ensure controls remain effective	Continue, but implement additional reasonable practicable controls where possible	Avoidance action is required; therefore alternative design solutions must be examined. Activity must not proceed until risks are reduced to a low or medium level

The following hazards pertinent to our design input have been identified and control measures suggested:

Table D2 – Risk Assessment

Hazard	Risk Of	At Risk	Rating			Control Measures	Controlled		
			L	S	R		L	S	R
Vibration Isolators	Injury to hands	Contractors	3	3	9	Care needs to be taken during adjustment. Follow manufacturers guidance	1	3	3

L: Likelihood S: Severity R: Rating

Appendix E – Graphs and Site Plans

The Lamb PH, 94 Lamb's Conduit Street, London WC1

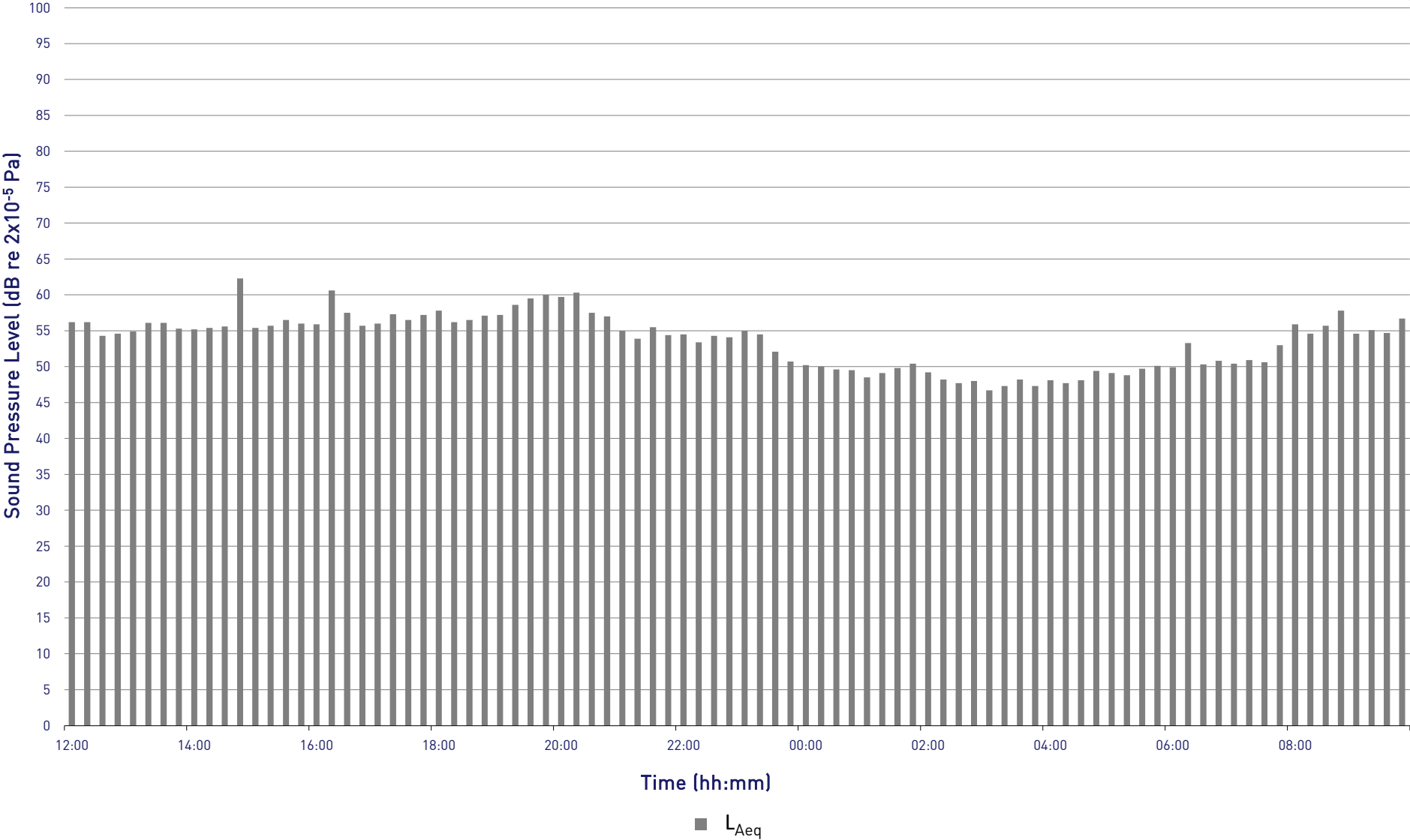
L_{Aeq} Time History

Thursday 26 August to Friday 28 August 2021



Project: 11274

Graph 1



The Lamb PH, 94 Lamb's Conduit Street, London WC1

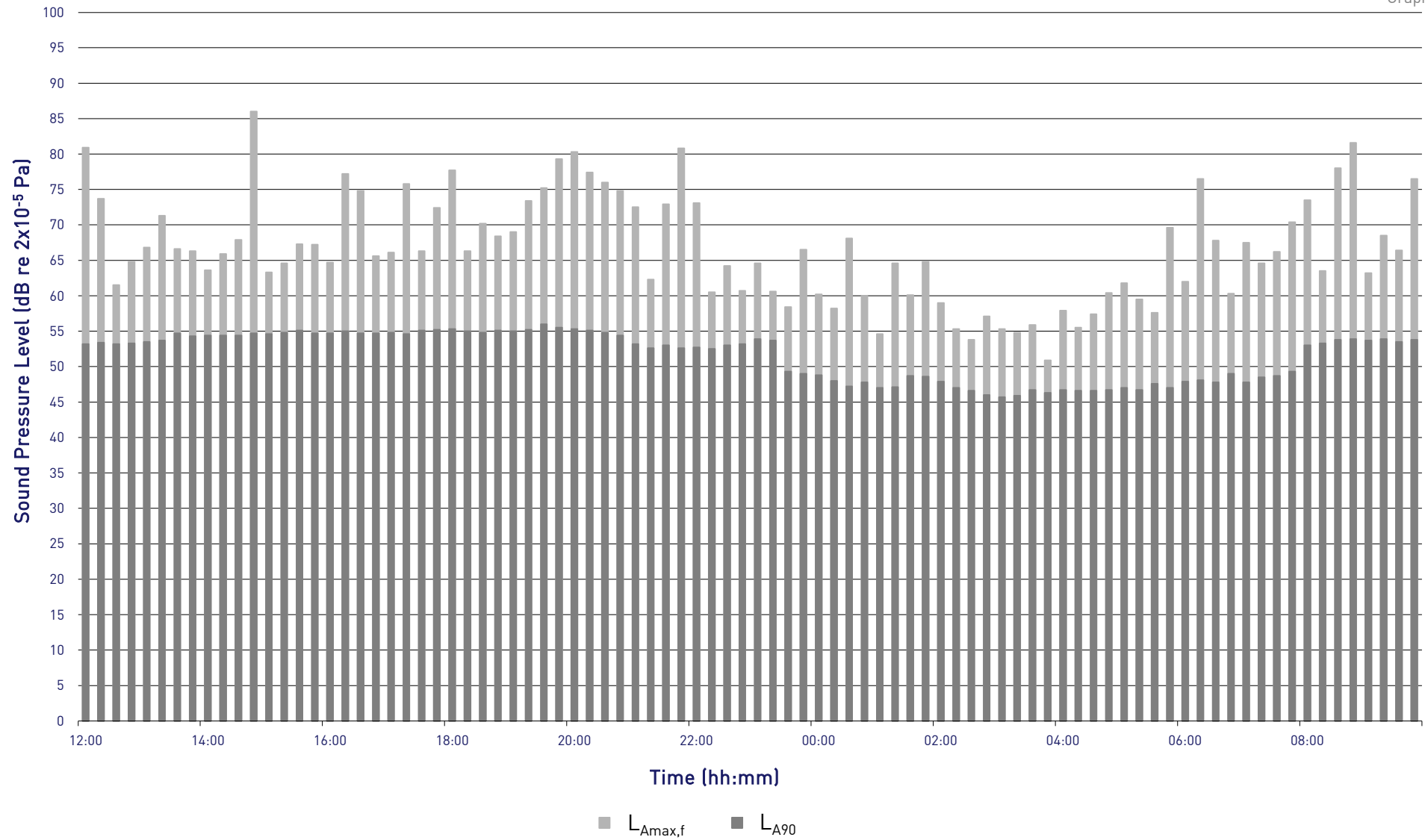
$L_{Amax,f}$ and L_{A90} Time History

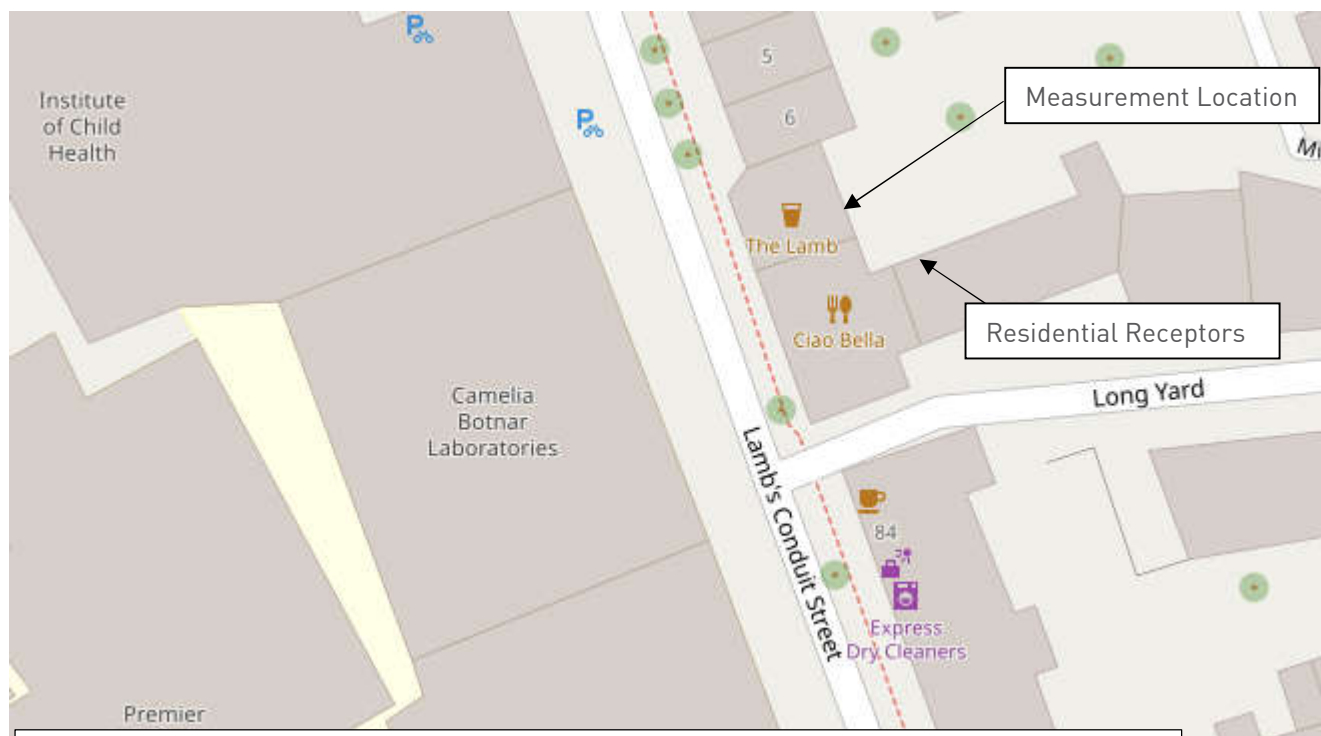
Thursday 26 August to Friday 28 August 2021



Project: 11274

Graph 2





© OpenStreetMap contributors – Data is available under the Open Database License

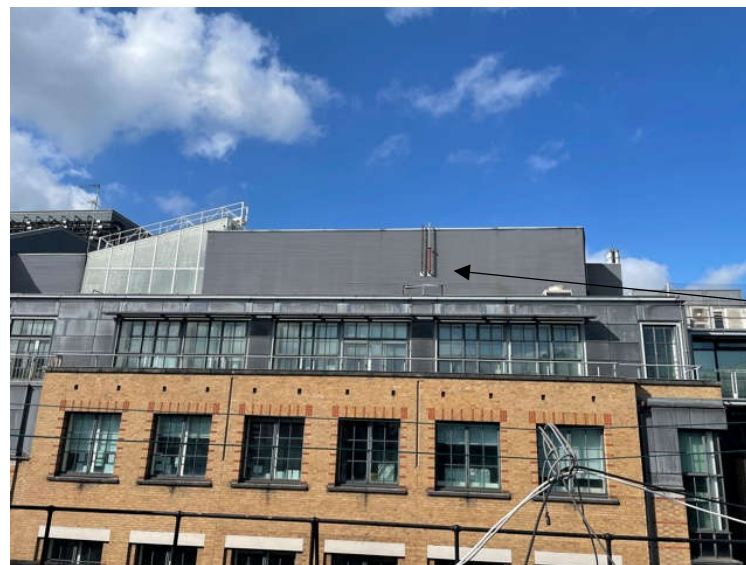
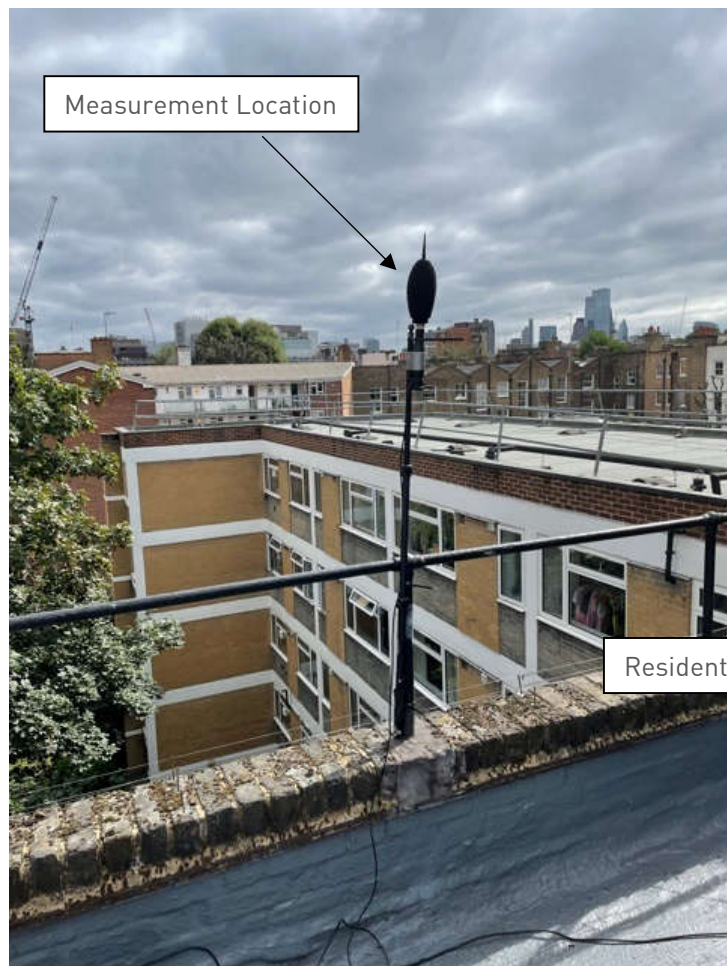
THE LAMB, 94 Lamb's Conduit Street, London WC1N 3LZ

Site plan showing Measurement Position and Receptor Location

Figure 1

14 September
2021

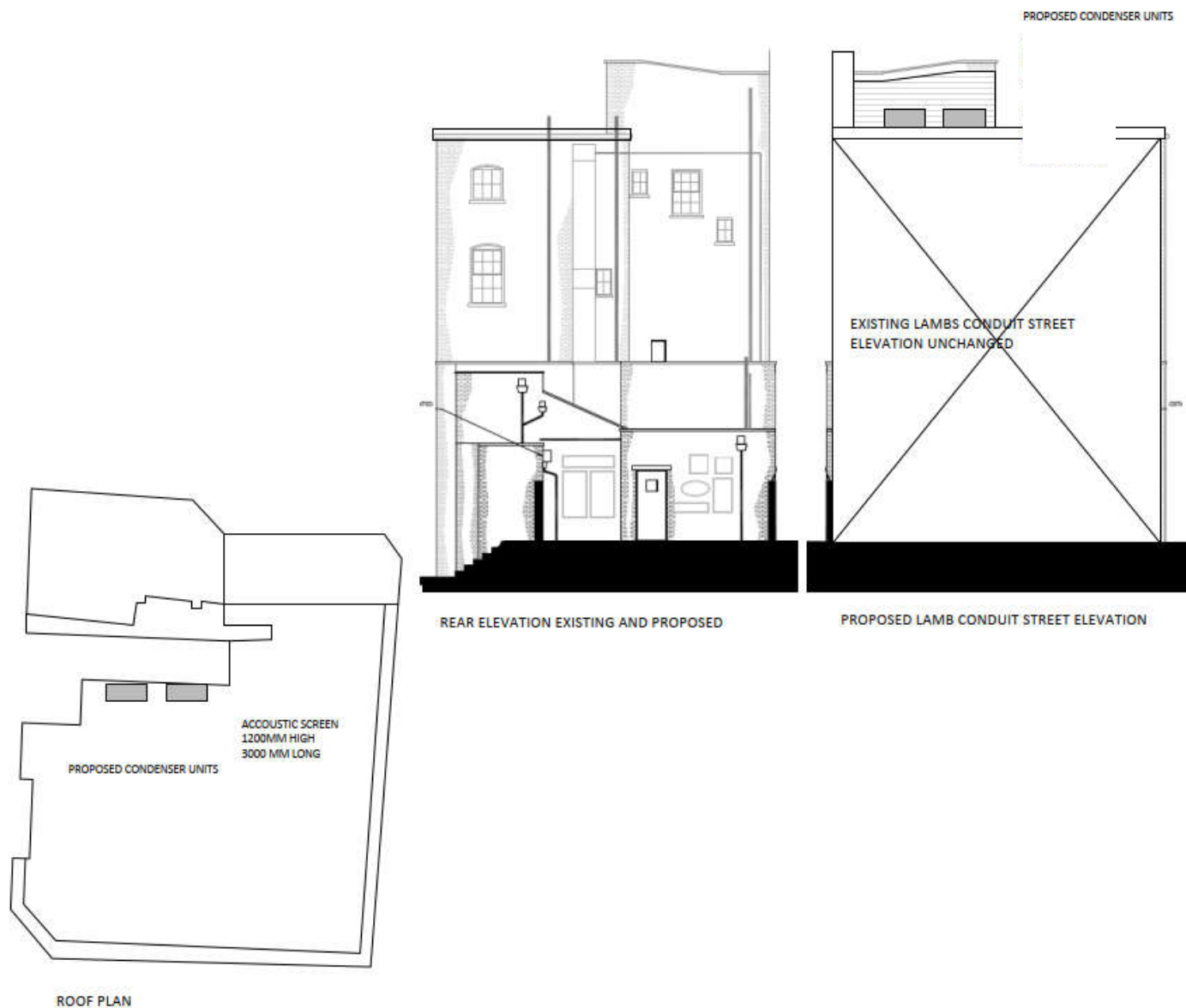




THE LAMB, 94 Lamb's Conduit Street, London WC1N 3LZ
 Photographs Showing Measurement Location and Surrounding Uses
 Project 11274

Figure 2
 14 September 2021
 Not to Scale





THE LAMB, 94 Lamb's Conduit Street, London WC1N 3LZ

Proposed Plant Locations

Project 11274

Figure 3

14 September 2021

Not to Scale



RBA ACOUSTICS

W. www.rba-acoustics.co.uk

E. info@rba-acoustics.co.uk

London:

44 Borough Road

London SE1 0AJ

T. +44 (0) 20 7620 1950

Manchester:

Bloc, 17 Marble Street

Manchester M2 3AW

T. +44 (0) 161 661 4504

