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239 CAMDEN HIGH STREET

LONDON

NOISE IMPACT ASSESSMENT

Technical Report: R9757-1 Rev 0

Date: 31st October 2022

For: Barack Holdings & Group of Companies
283 High Road Leyton
London
E10 5QN

24 Acoustics Document Control Sheet

Project Title: 239 Camden High Street, London – Noise Impact Assessment

Report Ref: R9757-1 Rev 0

Date: 31st October 2022

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For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

Revision	Description	Prepared By	Reviewed By	Approved By
0	Approved for issue	Kiel Edwards	Chris McConnell	Stephen Gosling

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1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been appointed by Barack Holdings & Group of Companies to provide a noise impact assessment for the proposed change of use at 239 Camden High Street, London.

1.2 It is proposed to convert the first and second floors of the building from restaurant use to residential apartments and extend the building to provide a third floor with new residential apartments. Accordingly, this report considers the following:

- Environmental noise monitoring;
- Consideration of rooftop plant noise affecting the proposed apartments;
- Assessment of internal noise levels within the proposed apartments;
- Consideration of internal sound insulation requirements between commercial and residential premises;

1.3 This report presents the results of the assessment, following site visits, sound insulation testing and an environmental noise survey undertaken between 19th and 25th October 2022.

1.4 All sound pressure levels quoted in this report are in dB relative to 20 µPa. A glossary of the acoustic terminology used in this report is provided in Appendix A.

2.0 SITE DESCRIPTION

2.1 239 Camden High Street currently comprises a takeaway/restaurant (KFC) to the basement, ground and first floors, with storage to the second floor. External Plant serving the takeaway is located to a flat roof area at first floor level.

2.2 The terraced building overlooks Camden High Street with retail and restaurant use to the ground floors of the surrounding buildings. Rear access to the building is off Early Mews, accessed off Arlington Road. A large residential apartment building overlooks the rear of the site at 220 Arlington Rd. The site location is shown on Figure 1.

2.3 The proposals include the change of use of the building's first and second floors with partial rear extensions. Additionally, a rooftop extension is proposed, to comprise additional residential apartments on a third floor.

2.4 External plant serving the KFC takeaway/restaurant is located to the existing first floor flat roof area. It is proposed to retain existing plant and re-route the extract fan's termination to above the proposed new rooftop level to accommodate the extension proposals.

3.0 STANDARDS AND GUIDANCE

National Planning Policy Framework and Noise Policy Statement for England

3.1 The National Planning Policy Framework (NPPF) [Reference 1], revised in July 2021, states (paragraph 185) in relation to noise that planning policies and decisions should aim to:

- 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;
- Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

3.2 The NPPF states that where the operation of an existing business could have a significant adverse effect on new development in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed. Paragraph 187 states:

> *"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."*

3.3 It is relevant to note that the Agent of Change principle applies under the condition of a likely significant adverse impact.

3.4 The NPPF also refers to the Noise Policy Statement for England (NPSE) [Reference 2] which is intended to apply to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise. The NPSE sets out the Government's long-term vision 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' which is supported by the following aims.

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life.

3.5 The NPSE defines the concept of a 'significant observed adverse effect level' (SOAEL) as 'the level above which significant adverse effects on health and quality of life occur'. The following guidance is provided within the NPSE:

> *"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."*

3.6 The National Planning Practice Guidance (NPPG) [Reference 3] is written to support the NPPF with more specific planning guidance. The NPPG reflects the NPSE and states that noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. The NPPG states that noise can over-ride other planning concerns but should not be considered in isolation from the other economic, social and environmental dimensions of the proposed development.

3.7 The NPPG expands upon the concept of SOAEL (together with Lowest Observable Adverse Effect Level, LOAEL and No Observed Effect Level, NOEL) as introduced in the NPSE and provides a table of noise exposure hierarchy for use in noise impact assessments in the planning system.

3.8 The NPPG also expands on the 'agent of change' principle and provides guidance on how the risk of conflict between new development and existing businesses can be addressed, including where mitigation is required.

3.9 The NPPF, NPSE and NPPG documents do not refer to specific noise criteria. For residential developments 24 Acoustics considers that the spirit of the requirements of the NPPF and NPSE will be complied with if criteria and guidance from British Standard 8233: 2014 and the World Health Organisation are adopted.

BS 8233: 2014 and World Health Organisation Criteria

3.10 BS 8233:2014 [Reference 4] provides design guidance for dwelling houses, flats and rooms in residential use and recommends that internal noise levels in dwellings do not exceed 35 dB $L_{Aeq,16\ hour}$ in living rooms and bedrooms during the day, 40 dB $L_{Aeq,\ 16\ hour}$ in dining rooms during the day and 30 dB $L_{Aeq,\ 8\ hour}$ in bedrooms at night.

3.11 The standard states that the above limits apply to steady external noise sources without specific character, and also states the following:

> *"Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate."*

3.12 BS 8233 also notes that "*Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,f}$, depending on the character and number of events per night."*

3.13 The World Health Organisation (WHO) [Reference 5] provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO 2000 guidelines suggest internal noise levels not exceeding 30 dB $L_{Aeq,8hr}$ or regularly exceeding 45 dB $L_{Amax,f}$ for 'a good night's sleep'.

Professional Practice Guidance on Planning & Noise (ProPG)

3.14 The Professional Practice Guidance on Planning and Noise (ProPG) [Reference 6] was published jointly by the Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health in May 2017. The guidance relates to the consideration of existing sources of transportation noise upon proposed new residential development and strives to:

- Advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;
- Encourage the process of good acoustic design in and around new residential developments;
- Outline what should be taken into account in deciding planning applications for new noise-sensitive developments;
- Improve understanding of how to determine the extent of potential noise impact and effect; and
- Assist the delivery of sustainable development.

3.15 The guidance describes a recommended approach for new residential development, which includes four key elements of the assessment process, identified below:

i. Good acoustic design process;
ii. Internal noise level guidelines;
iii. External amenity area noise assessment;
iv. Assessment of other relevant issues.

3.16 It is important to note that the guidance in ProPG does not constitute an official government code of practice and neither replaces nor provides an authoritative interpretation of the law or government policy.

Plant Noise Affecting Development

3.17 The proposed apartments on the southwest façade of the building will overlook the first floor flat roof plant area. It is recommended that the building fabric be specified such that noise levels from this plant does not exceed a level 5 dB better than the recommended internal noise limits set out in BS 8233:2014 and the WHO Guidelines. An upper internal daytime level of 30 dB $L_{Aeq,\ 16\ hour}$ for bedrooms and living rooms should apply; and a night-time level for bedrooms of 25 dB $L_{Aeq,\ 8\ hour}$ should apply.

Sound Insulation to Adjacent Commercial Premises

3.18 The party floor will be required to comply with Part E of the Building Regulations [Reference 7]. 24 Acoustics considers that an enhanced sound insulation requirement of 60 dB $D_{nT,w}$ is appropriate for the floor, to ensure a suitable level of acoustic separation between the proposed apartments and ground floor takeaway/restaurant.

4.0 ENVIRONMENTAL NOISE SURVEYS

Noise Survey Procedure

4.1 An environmental noise survey was undertaken from 19th to 25th October 2022 to determine the existing noise levels at the site. Noise levels were measured using the following equipment:

- 2 × Rion precision sound level meter Type NL-52;
- B&K acoustic calibrator Type 4231.

4.2 Noise monitoring equipment was located over two positions to the front and rear of the building as described below and identified in Figure 1.

- Measurement Location 1: Northeast façade overlooking Camden High Street at second floor level;
- Measurement Location 2: Southwest façade overlooking the rear rooftop plant area at first floor level.

4.3 Noise measurements were undertaken in samples of either 1-minute or 5-minute in terms of the overall free-field A-weighted and linear octave-band L_{eq}, L_{90} and $L_{max,f}$ noise levels. Measurements were made in accordance with BS 7445:1991 "Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use" [Reference 8].

4.4 The instrumentation calibration was checked before and after the survey in accordance with the manufacturer's instructions. No significant drift in calibration was recorded. Calibration of 24 Acoustics' equipment is traceable to National Standards. All instruments were fitted with environmental weather shields during the surveys.

4.5 Weather conditions during the survey were variable with periods of rainfall and wind speeds exceeding 5m/s. Measurements affected by meteorological conditions have been included in the results summery but omitted from the design analysis and assessment.

Noise Measurement Results

4.6 Measurement results at Location 1, to the front of the building, are shown graphically in Appendix B and summarised in Table 1.

Date (October 2022)	Measurement Location 1: Sound Pressure Level (dB)		
	Daytime $L_{Aeq,\ 16\ hour}$ (07:00 - 23:00)	Night-Time (23:00 - 07:00)	
		$L_{Aeq,\ 8\ hour}$	Typical $L_{Amax,f}$
Wednesday 19th	69	64	84
Thursday 20th	71	66	84
Friday 21st	69	69	88
Saturday 22nd	70	69	90
Sunday 23rd	70	-	-
Design Level	**70**	**65**	**88**

Table 1: Summary of Measured Noise Levels at Location 1.

4.7 Road traffic was the primary source of ambient noise at Measurement Location 1.

4.8 Measurement results at Location 2, to the rear of the building, are shown graphically in Appendix B and summarised in Table 2.

Date (October 2022)	Measurement Location 2: Sound Pressure Level (dB)		
	Daytime $L_{Aeq,\ 16\ hour}$ (07:00 - 23:00)	Night-Time (23:00 - 07:00)	
		$L_{Aeq,\ 8\ hour}$	Typical $L_{Amax,f}$
Wednesday 19th	61	59	63
Thursday 20th	60	59	62
Friday 21st	61	59	67
Saturday 22nd	61	60	67
Sunday 23rd	61	59	72
Monday 24th	68	66	67
Tuesday 25th	59	-	-
Design Level	**61**	**59**	**63**

Table 2: Summary of Measured Noise Levels at Location 2.

4.9 Noise from plant on the first-floor roof, associated with the ground floor takeaway/restaurant, was found to be the dominant noise source at Measurement Location 2.

4.10 24 Acoustics determines the typical night-time maximum level to be the tenth highest value during relevant periods.

5.0 CALCULATIONS AND NOISE IMPACT ASSESSMENT

Noise Break-In Assessment for New Residential Rooms

5.1 Calculations have been undertaken, based on the measured external noise levels, to determine the glazing/window and ventilation requirements for habitable rooms which will ensure that internal noise levels from road traffic do not exceed 35 dB $L_{Aeq,\ 16\ hour}$ during the day and 30 dB $L_{Aeq,\ 8\ hour}$ at night and also not regularly exceed 45 dB $L_{Amax.f}$ at night, in accordance with BS 8233: 2014 and WHO Guidelines.

5.2 Additionally, the below recommendations will ensure that internal plant noise levels from existing rooftop equipment will achieve the enhanced criteria of 5 dB better than the BS 8233:2014 noise level targets, as outlined in Section 3.

5.3 The analysis given below has been based on 24 Acoustics' assumption of the performance of the existing and proposed extension façades' sound insulation performance to be a minimum of 52 dB R_w. This assumption should be confirmed during detailed design.

5.4 Typical room dimensions and glazed areas (based on current architectural drawings) have been used in the calculations. If there are any future changes to the building layout, room layout, volumes or elevations, the calculations should be reviewed accordingly.

5.5 The acoustic design of the internal layouts is considered favourable, such that the most sensitive rooms (bedrooms) are located to the quietest façades of the building (to the rear). Living rooms will be located to the front of the property overlooking Camden High Street.

5.6 Whilst the first-floor rooftop supply fan's termination point will be relocated, the supply fan itself will remain in the current location and plant noise levels in the surrounding area will not be significantly altered from the current environment. Therefore, plant noise break-in calculations have used the existing measured levels and are considered to provide a robust, worst-case assessment.

Ventilation Requirements

5.7 Mechanical ventilation is recommended to all habitable rooms on all façades of the development. This may be provided by either an MVHR system serving each dwelling, or individual mechanically assisted room ventilators achieving a minimum sound insulation performance of 49 dB $D_{n,e,w}$.

5.8 Note, ventilation systems should be specified to allow for adequate ventilation to meet background ventilation requirements as per Part F of the Building Regulations [Reference 9].

Glazing Requirements

5.9 All existing glazing to the first and second floors comprises double glazed windows and will be retained. Therefore, it is recommended to provide a secondary glazing system to these areas. New glazing is proposed to habitable rooms within the proposed extension areas.

5.10 The recommended glazing type and relevant acoustic performances are shown below in Table 4 with relevant façade locations identified in Figure 2.

Glazing Type	Minimum SRI (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
A	(retained double glazing + recommended secondary glazing system)					
B	31	35	42	44	46	46

Table 4: Required Glazing Performance

5.11 In making a comparison with the values in Table 4, it is important that the glazing figures used are the result of tests in accordance with ISO 10140, Part 2: 2010 and that the quoted minimum sound reduction specifications are met by the entire glazing system as a whole, including frames, seals, any insulated panels and not just the glass.

5.12 In order to assist with the selection process, the following glazing configurations, if installed properly, would be capable of achieving the required sound reduction performance. The glazing type B configuration is provided as a guide only and final glazing selections must be based on the figures in Table 5:

- **Glazing Type A**: existing double glazing, 63mm air cavity with absorbent reveals, new 6mm secondary inner pane.
- **Glazing Type B**: 6 mm glass - 12 mm cavity (minimum) - 6.4 mm Stadip Silence (or similar).

5.13 Based on the above measures, it is considered that an appropriate acoustic environment can be provided to the proposed residential properties.

Sound Insulation Between Proposed and Current Residential Uses

5.14 Sound insulation tests were undertaken by 24 Acoustics on 19th October 2022 across the separating floor between the ground and first floor spaces. Via on site investigations the floor was found to be a timber construction. Results of the tests demonstrate that the existing floor achieves an airborne sound insulation performance of 52 (-3) dB $D_{nT,w}$ (C_{tr}) and therefore achieves the requirement of Approved Document E.

5.15 The existing floor construction will require enhancement in order to achieve the recommended sound insulation performance of 60 dB $D_{nT,w}$. Therefore, it is recommended to provide enhancements to the existing floor/ceiling construction, to be confirmed during detailed design.

6.0 CONCLUSIONS

6.1 24 Acoustics Ltd has been instructed by Barack Holding & Group of Companies to undertake a noise impact assessment for a proposed residential development at 239 Camden High Street. A change of use and extension is proposed to provide three apartments to the upper floors with the ground floor takeaway/restaurant use to be retained.

6.2 The site is subject to road traffic noise from Camden High Street and the surrounding road network as well as noise from external plant associated with the ground floor take away.

6.3 For internal noise in residential properties, acoustic design recommendations have been provided in terms of acoustically rated glazing and alternative means of ventilation.

6.4 Following the recommended measures, road traffic noise within habitable rooms would comply with maximum internal levels of 35 dB L_{Aeq} during the daytime and 30 dB L_{Aeq} and 45 dB $L_{Amax,f}$ at night for regular events in accordance with the guidance of British Standard 8233.

6.5 Additionally, the recommended measures will ensure that internal plant noise levels from existing/relocated rooftop plant will achieve internal noise levels at least 5 dB better than those recommended by BS 8233/ the WHO.

6.6 Sound insulation tests have been undertaken to assess the performance of the party floor separating the proposed apartments and ground floor takeaway/restaurant. To achieve the recommended enhanced sound insulation performance it will be necessary to enhance the existing floor/ceiling construction between ground and first floor spaces (to be confirmed during detailed design).

6.7 It is concluded that, with the recommended measures given, noise levels within the proposed residential development will be acceptable for future occupiers of the scheme.

REFERENCES

1. Department for Communities and Local Government. National Planning Policy Framework, 2018.

2. DEFRA. Noise Policy Statement for England, 2010.

3. Department of Communities and Local Government. National Planning Practice Guidance, March 2014.

4. British Standards Institution. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings, 2014.

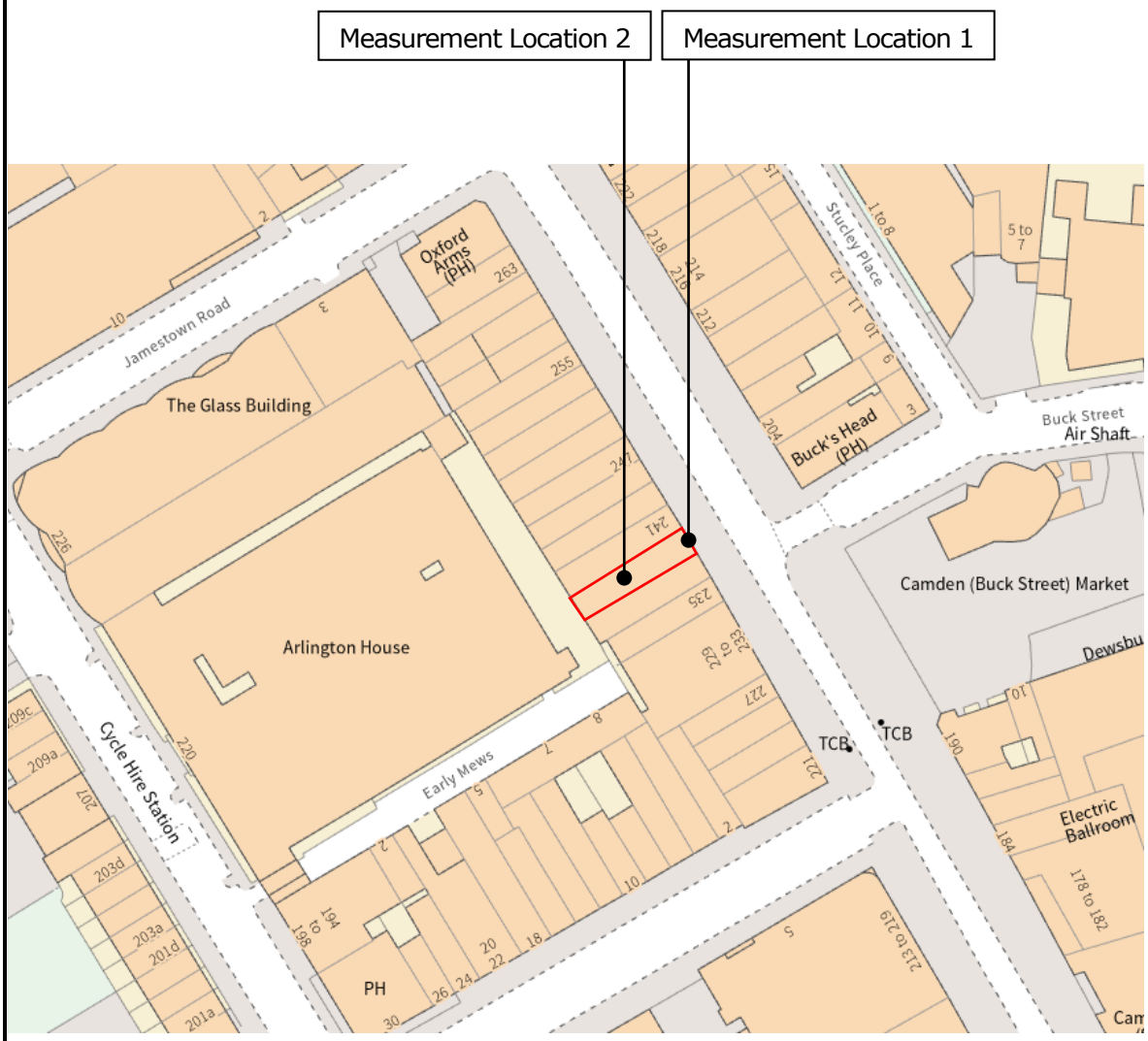
5. World Health Organisation. Guidelines for Community Noise, 2000.

6. ProPG Professional Practice Guidance on Planning and Noise (ProPG), ANC, IOA, CIEH, May 2017.

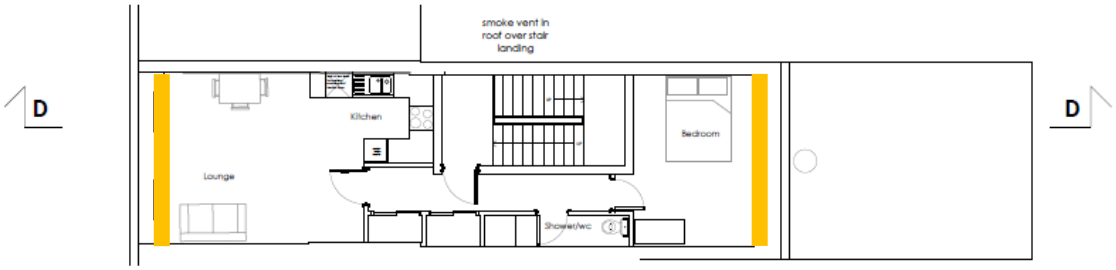
7. Building Regulations. Approved Document E – Resistance to the Passage of Sound, 2010.

8. British Standards Institution. British Standard 7445:1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use, 1991.

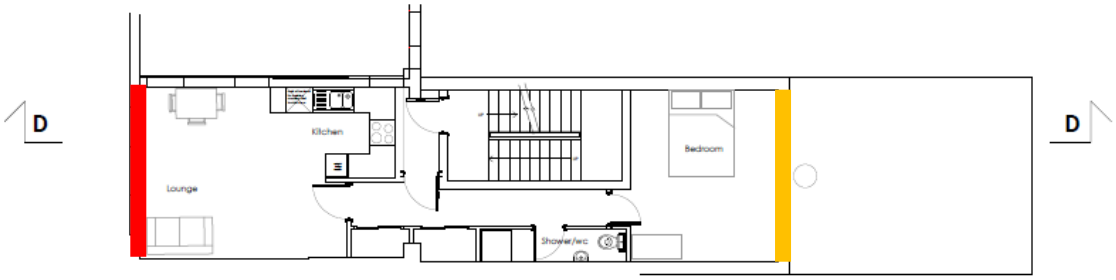
9. Building Regulations. Approved Document F - Ventilation, 2010.



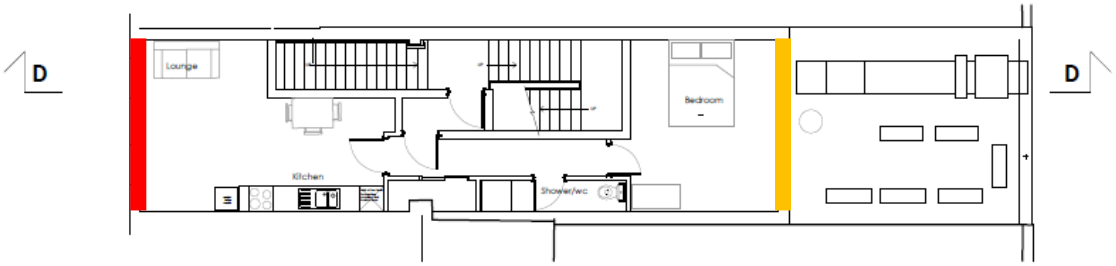
Project: 239 Camden High Street, London	**Title**: Areal View and Measurement Locations	
DWG No: Figure 1	**Scale:** N.T.S.	**Rev**: 0
Date: October 2022	**Drawn By:** KE	**Job No**: 9757



proposed third floor



proposed second floor



proposed first floor

Glazing Type A	Existing window/glazing + secondary glazing system
Glazing Type B	New window/glazing system (see Table 4)

Project: 239 Camden High Street, London	**Title**: Proposed Arrangement and Glazing Locations	
DWG No: Figure 2	**Scale:** N.T.S.	**Rev**: 0
Date: October 2022	**Drawn By:** KE	**Job No**: 9757

APPENDIX A – ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB corresponds to a doubling/ halving in perceived loudness.

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

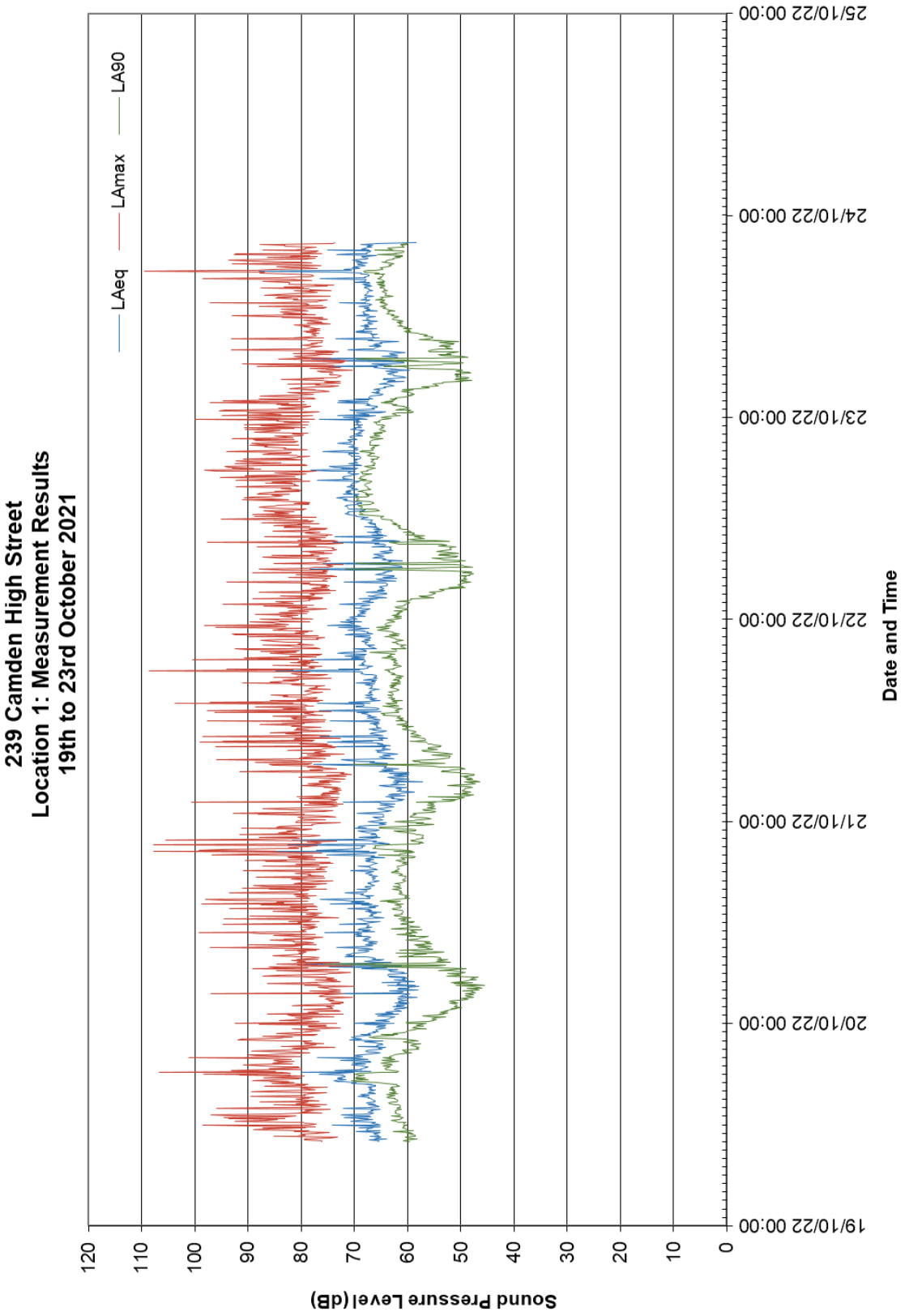
iii) The L_{A10} noise level

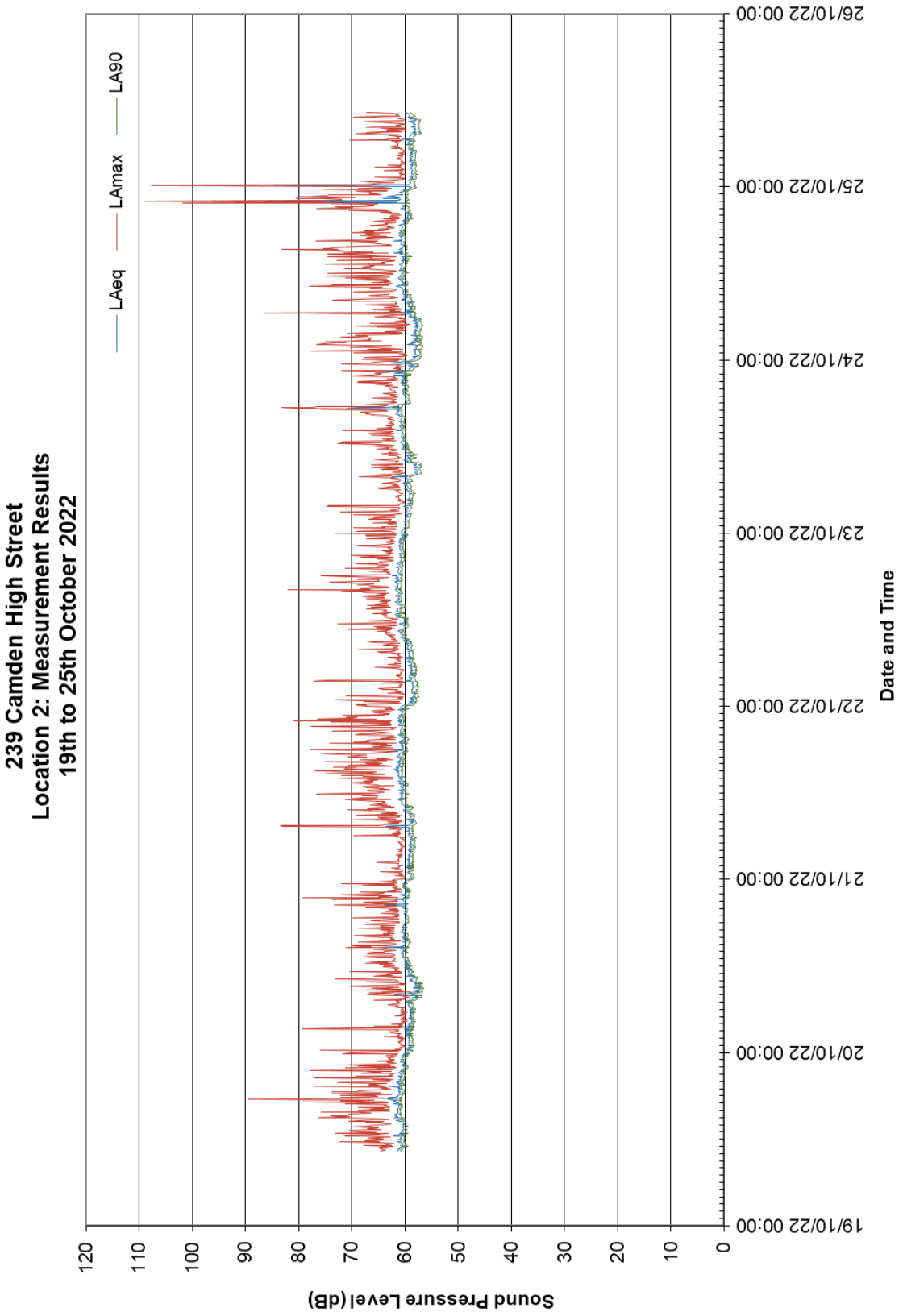
This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

APPENDIX B – ENVIRONMENTAL NOISE SURVEY RESULTS




239 Camden High Street
Location 2: Measurement Results
19th to 25th October 2022
LAeq
LAmax
LA90
Sound Pressure Level (dB)
120
110
100
90
80
70
60
50
40
30
20
10
0
19/10/22 00:00
20/10/22 00:00
21/10/22 00:00
22/10/22 00:00
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Date and Time