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# 24-28 BLOOMSBURY WAY
# LONDON

# TERRACE NOISE ASSESSMENT

Technical Report: R10180-2 Rev 1

Date: 15th December 2023

For: RWE Central Ltd
20 Thomas Street
London
SE1 9RS

## 24 Acoustics Document Control Sheet

**Project Title:** 24-28 Bloomsbury Way, London – Terrace Noise Assessment

**Report Ref**: R10180-2 Rev 1

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| | Name | Position | Signature | Date |
|---|---|---|---|---|
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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 |
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| 0 | Approved for issue | Miles Hodge | Neil McLeod | Stephen Gosling |
| 1 | Minor Amendments | Miles Hodge | Neil McLeod | Stephen Gosling |
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## 1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been instructed by RWE Central Ltd to provide a noise assessment for the proposed new roof terrace at 24-28 Bloomsbury Way, London.

1.2 This report presents the results of the assessment, following site visits and ambient noise surveys undertaken between 10th and 15th August 2023.

1.3 All sound pressure levels quoted in this report are in dB relative to 20 µPa. All sound power levels are quoted in dB relative to $10^{-12}$ Watts. A glossary of the acoustic terminology used in this report is provided in Appendix A.

## 2.0 SITE DESCRIPTION

2.1 24-28 Bloomsbury Way is a five-storey office building located to the north of the A40, opposite Barter Street, within the London Borough of Camden. The site location is shown in Figure 1.

2.2 It is proposed to construct a new terrace on the roof of the fourth floor to provide an outdoor seating space for office users and neighbouring residents. Figure 2 shows the proposed site layout.

2.3 The nearest residential properties are in the Russell Chambers building which share the lightwell with 24-28 Bloomsbury Way, as shown in Figure 2. Other receptors are located to the east on Bloomsbury Square.

2.6 It is proposed to use operate the terrace in the daytime only, between the hours of 09:00 and 17:00 Monday to Friday.

2.7 This technical report has considered the noise impact associated with the proposed new terrace. The assessment has considered the following:

- Noise associated with the proposed roof top seating area;
- Recommendations for noise control measures

## 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], 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 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.

3.3 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."*

3.4 The 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. It also states that opportunities should be taken, where practicable, to achieve improvements to the 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.

3.5 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.

3.6 The NPPF, NPSE and NPPG documents do not refer to specific noise criteria, therefore the specific criteria to be used will depend on the nature of the assessment being undertaken.

Noise from Terrace Activity

3.7 There is no published objective method of assessing the potential for noise impact arising from people using an external terrace and no related guidance in the Camden Local Plan (2017) [Reference 4].

3.8 The approach adopted in this assessment has been to assess the impact of noise from people using the terrace on the nearest noise sensitive properties. It is therefore proposed to undertake a comparison of existing ambient $L_{Aeq}$ noise levels with the predicted noise level from people talking. For the proposed development, an increase of more than 2 or 3 dB is considered likely to represent the threshold of acceptability.

## 4.0 NOISE MEASUREMENTS

4.1 An environmental noise survey was undertaken at the site, between the 10th and 15th August 2023, to determine the existing ambient noise levels at the nearest residential properties. Noise monitoring equipment was located on the roof of the fourth floor. The survey location is shown in Figure 1.

4.2 Measurements were undertaken in samples of 5-minutes in terms of the overall free-field A-weighted $L_{eq}$ and $L_{90}$ 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 5].

4.3 The background noise survey was undertaken with the following instrumentation:

- Rion NL-52 Class 1 accuracy sound level meter;
- Brüel and Kjær Type 4231 Class 1 accuracy acoustic calibrator.

4.4 The instrumentation calibration was verified before and after the surveys in accordance with the manufacturer's instructions. No significant drift in calibration was recorded. Calibration of 24 Acoustics' equipment is traceable to National Standards. The instrumentation was equipped with an environmental microphone and an extension cable. The instrument was powered by external batteries and stored in a weatherproof case.

4.5 Weather conditions at the start and end of the survey period were fine and dry, with wind speeds below 5 m/s.

Results

4.6 The results of the environmental noise survey are shown graphically in Appendix B.

4.7 The measured ambient noise levels during the proposed hours of operation (09:00 to 17:00 hours, Monday to Friday) are summarised in Table 1.

| **Date** | **Operational Hours (09:00 to 17:00) dB, $L_{Aeq,T}$** |
|---|---|
| Thursday 10/8/2023 | 53 |
| Friday 11/8/2023 | 53 |
| Monday 14/8/2023 | 52 |
| Tuesday 15/8/2023 | 52 |
| **Representative** | **52** |

**Table 1:** Measured Ambient Noise Levels

4.8 The existing ambient noise levels at the measurement location were dominated by services plant and distant road noise. The values in Table 1 are representative of noise conditions at the nearest residential windows.

## 5.0 CALCULATIONS & ASSESSMENT

5.1 The following sections consider noise associated with the proposed rooftop terrace during the stated opening hours (09:00 to 17:00), by comparing predicted noise levels with the existing ambient noise levels.

5.2 The proposals allow for acoustic screening to be provided along perimeter of the roof terrace (as shown in Figure 2). It is proposed that a solid fence / screen be installed which meets the following criteria:

- Imperforate, with no holes or gaps;
- Has a minimum mass per unit area 15kg/m$^2$ (e.g. two layers of minimum 25mm thick timber board);
- Has a minimum height of 1.8 m;
- Installed along the entire perimeter boundary of the terrace (as shown in Figure 2).

5.3 Calculations have been undertaken to predict the noise level from people on the proposed roof terrace, based on the following source noise levels, with reference to the definitions in ANSI S3.5 [Reference 6].

- A single 'normal' voice sound pressure level of 60 dBA at 1 m;

5.4 Noise levels have been calculated at the windows of the nearest residential properties at the Russell Chambers building and on Bloomsbury Square, taking into account losses due to distance (approximately 15 m and 20 m from centre of the terrace, respectively) and acoustic screening. The terrace has seating capacity for up to 48 people. The calculations have assumed full capacity, and that approximately 50% of the people (i.e. 24 people) would be talking with raised voices at a time. This is considered a reasonable assumption for when the terrace is fully occupied.

5.5 The results of the calculations are summarised in Table 2 below, compared to the measured existing ambient noise levels during the proposed operating hours.

| Location | Ambient Noise Level (dB $L_{Aeq}$) | Predicted Noise Level (dB $L_{Aeq}$) | Resultant Noise Level (dB $L_{Aeq}$) | Increase (dB $L_{Aeq}$) |
|---|---|---|---|---|
| Russel Chambers | 52.0 | 41.3 | 52.4 | **0.4** |
| Bloomsbury Square | 52.0 | 38.8 | 52.2 | **0.2** |

**Table 2:** Assessment of Speech Noise Levels

5.6 The results in Table 2 demonstrate that the increase in noise level, from people using the proposed terrace during the proposed operating hours, would be less than 0.5 dBA at the nearest residential receptors. This is a negligible increase in noise level, and hence unlikely to cause disturbance.

5.7 It is recommended that tables and chairs used on the new terrace have rubber or plastic feet, to minimise noise arising from the movement of furniture.

5.8 It is proposed to have provision to play background music at the tables (i.e., no higher than speech level), which is acceptable.

5.9 With the provision of perimeter screening and the limited hours of use measures in place, noise levels associated with the proposed terrace would be acceptable at the nearest residential properties .

## 6.0 CONCLUSIONS

6.1 24 Acoustics Ltd has been instructed by RWE Central Ltd to provide an assessment and noise management plan for the proposed rooftop terrace at 24-28 Bloomsbury Way, London.

6.2 The assessment has been carried out following an ambient noise survey undertaken at the closest residential properties to the proposed site.

6.3 Potential sources of noise generated at the site have been determined and mitigation measures proposed in the form of limited hours and a perimeter fence. The implementation of these measures will ensure that noise levels at the nearest residential properties are acceptable.

## REFERENCES

1. Department for Levelling Up, Housing & Communities. National Planning Policy Framework, September 2023.

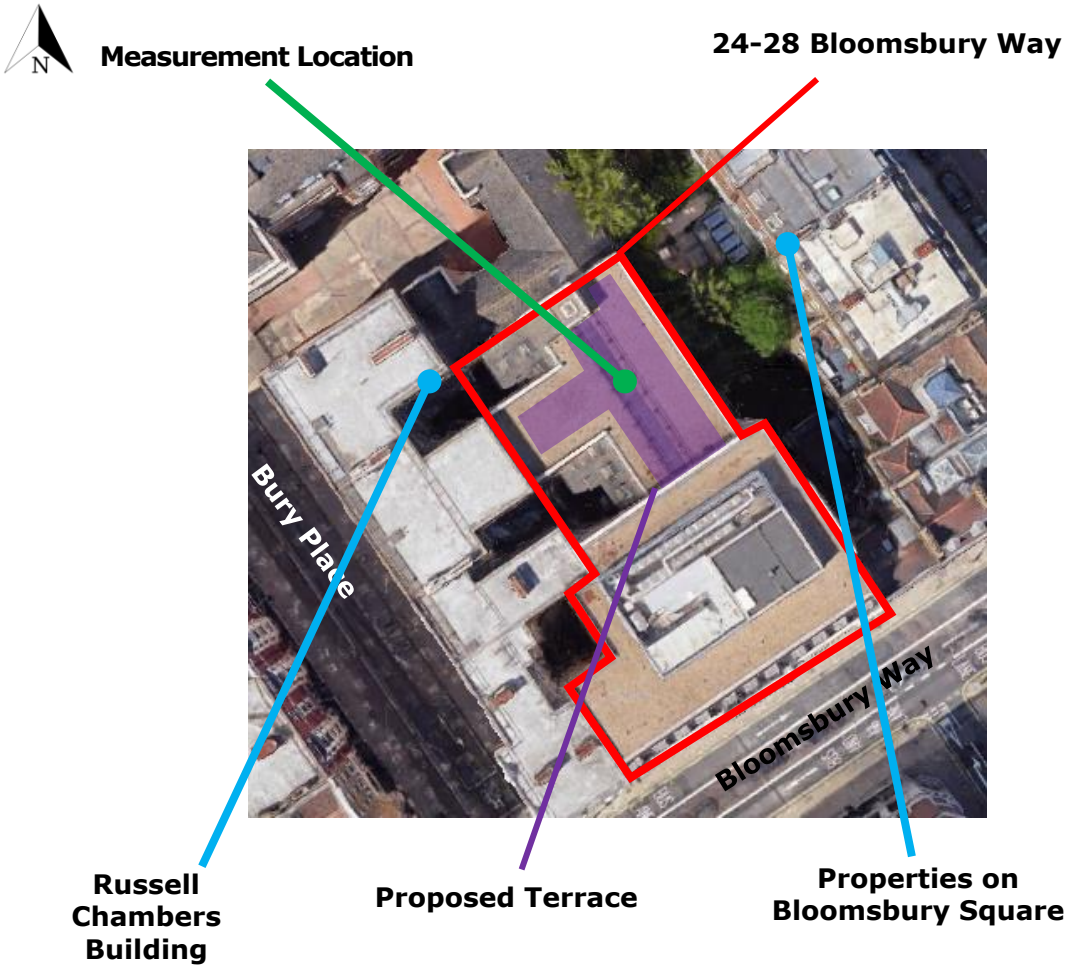
2. DEFRA, Noise Policy Statement for England, March 2010.

3. Planning Practice Guidance - Noise, Department of Communities and Local Government (revised July 2019).

4. Camden London Borough Council, Camden Local Plan, 2017.

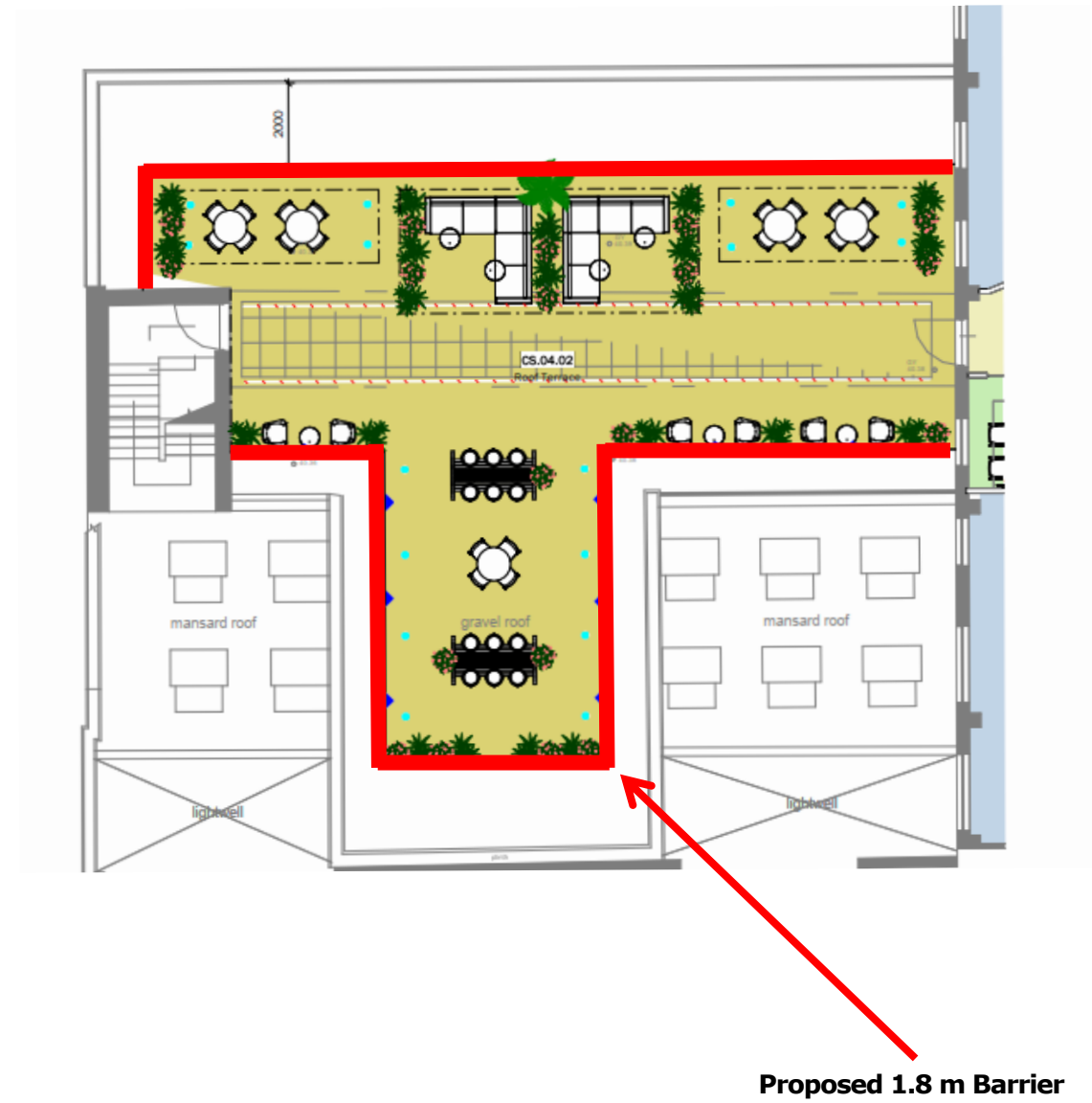
5. British Standards Institution. British Standard 7445: 1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use

6. American National Standards Institute (ANSI), American National Standard Methods for the Calculation of the Speech Intelligibility Index. (ANSI S3.5), 1997.




View from east

| | | |
|---|---|---|
| **Project**: 24-28 Bloomsbury Way, London | **Title**: Aerial View of Site, Receptors & Measurement Location | |
| **DWG No:** Figure 1 | **Scale:** N.T.S. | **Rev**: 0 |
| **Date:** September 2023 | **Drawn By:** MH | **Job No**: 10180 |




| | | |
|---|---|---|
| **Project**: 24-28 Bloomsbury Way, London | **Title**: Proposed Roof Layout & Barrier Location | |
| **DWG No:** Figure 2 | **Scale:** N.T.S. | **Rev**: 0 |
| **Date:** September 2023 | **Drawn By:** MH | **Job No**: 10180 |

## 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 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA 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