



Armstrong House
3 Bassett Avenue
Southampton
SO16 7DP

T: 02381 555 000
E: info@24acoustics.co.uk

100 ROBERT STREET

LONDON

PLANT NOISE ASSESSMENT

Technical Report: R10861-1 Rev 0

Date: 22nd October 2024

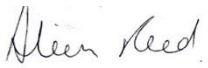


For: Greggs plc (south east)
87 Millmarsh Lane
Enfield
Middlesex
EN3 7XJ

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	Name	Position	Signature	Date
Prepared by	Aileen Reed BEng MIOA	Principal Consultant		22/10/2024
Reviewed by	Neil McLeod BA (Hons) MIOA	Principal Consultant		22/10/2024
Approved by	Reuben Peckham BEng MPhil CEng MIOA	Principal Consultant		22/10/2024
For and on behalf of 24 Acoustics Ltd				

Document Status and Approval Schedule

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1.0 INTRODUCTION

1.1 24 Acoustics Ltd has been appointed by Greggs plc (south east) to undertake an assessment of noise from proposed condensing plant and kitchen extract plant at 100 Robert Street, London NW1 3QP. This noise assessment has included:

- Environmental noise monitoring;
- Consideration of background noise levels at nearby noise-sensitive properties;
- Assessment of noise from new external plant.

1.2 This report presents the results of the assessment, following site visits and an environmental noise survey undertaken on 17th October 2024.

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

2.0 SITE DESCRIPTION

2.1 The site is located at 100 Robert Street, London and currently comprises a ground floor vacant retail space within a larger 3 storey building (96 to 108 Robert Street), consisting of retail /commercial use (to the ground floor) and residential apartments to the upper floors. The rear of the site comprises a flat roof / balcony (at first floor level) with overlooking residential properties in apartment blocks Wasdale to the north, Grasmere to the east and Windermere to the west.

2.2 It is proposed to convert the unit to a Greggs Outlet Store. There will be no fresh food preparation on site and the store will sell goods which were previously freshly available at their main stores on the previous day. The store opening hours are not yet finalised but will be no earlier than 06.00 and no later than 19.00.

2.3 It is proposed to install two external condensing units to the rear façade of the ground floor within a small loading / storage area with a roller shutter door. The kitchen extract fan will be ducted to the rear façade which lies in the same area. Plant will operate during store opening hours only.

2.4 The nearest neighbouring residential receptors to the proposed plant are as described below:

- Receptor 1: Lower floors to southern façade of Wasdale, Cumberland Market, approximately 15 m from the proposed plant location.

- Receptor 2: First floor flat above 100 Robert Street, approximately 6 m from the proposed plant location.

2.5 The site and receptor location are shown in Figure 1. The proposed plant locations are shown in Figure 2.

3.0 CRITERIA

NPPF and NPSE

3.1 The National Planning Policy Framework (NPPF) [Reference 1], states 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 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 (PPG) was updated in 2019 [Reference 3]. This is written to support the NPPF with more specific planning guidance. The PPG 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 PPG 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 PPG 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 In general terms it is considered that a noise impact with an effects level which is lower than SOAEL is acceptable (providing the effect is mitigated to a minimum).

Local Authority Guidance

- 3.7 A noise assessment has been undertaken in line with the guidance of BS 4142:2014 [Reference 4] and compliant with the requirements of Camden's Local Plan [Reference 5].
- 3.8 Appendix 3 of Camden's Local Plan provides guidance on plant noise limits, reproduced below:

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 bedroom window (façade)	Day	'Rating level' 10dB* below background	'Rating level' between 9dB below and 5dB above background	'Rating level' greater than 5dB above background
Dwellings	Outside bedroom window (façade)	Night	'Rating level' 10dB* below background and no events exceeding 57dB L_{Amax}	'Rating level' between 9dB below and 5dB above background or noise events between 57dB and 88dB L_{Amax}	'Rating level' greater than 5dB above background and/or events exceeding 88dB L_{Amax}

Table 1 - Camden Local Plan, Appendix 3, Plant Noise Limit Guidance

- 3.9 Following the above and considering the guidance of BS 4142 (i.e. site context), a plant noise rating level of 5 dBA below the existing background noise level at the nearest receptor location is considered suitable for this location.

BS 4142:2014+A1:2019 Methods for Rating Industrial and Commercial Sound

- 3.10 BS 4142:2014 provides a method for rating the effects of industrial and commercial sound on residential areas. The standard advocates a comparison between the representative measured L_{A90} background noise level and L_{Aeq} noise level from the source being considered. For rating purposes if the noise source is tonal, intermittent or otherwise distinctive in character, a rating correction should be applied.
- 3.11 The standard states that a difference between the rating level and the background level of around +10 dBA is an indication of a significant adverse impact, depending on the context and a difference of around +5 dBA is likely to be an indication of an adverse impact, also depending on the context. Where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact (depending upon the context).

4.0 ENVIRONMENTAL NOISE SURVEY

- 4.1 An environmental noise survey was undertaken on 17th October 2024 to determine the prevailing background noise levels in the area. A lack of security meant that it was not possible to leave noise monitoring equipment unattended at the site.
- 4.2 Attended noise measurements were undertaken over two periods representative of store opening hours, 06:00 – 07:30 and 10:30 – 14:30. The monitoring location was located to the rear of the site at ground floor level (free-field conditions) at a location representative of residential properties in the apartment block 'Wasdale' and above the Robert Street commercial units. This location is representative of the nearest residential properties and is shown in Figure 1.
- 4.3 Background noise levels were measured using the following equipment:
- Rion precision sound level meter Type NL-52;
 - Rion acoustic calibrator Type NC74.
- 4.4 Noise measurements were undertaken in samples of 1 minute in terms of the overall free-field A-weighted 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 6].
- 4.5 The instrumentation's 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. The instrument was fitted with an environmental weather shield during the survey.
- 4.6 The weather during the survey was fine and dry with light winds.
- 4.7 The results of the noise survey are summarised in Table 2 and shown graphically in Appendix B.

Early Morning 06:00 to 07:00 dB LA90, 15 min	Daytime 07:00 to 14:30 dB LA90, 1 hour
42	45

Table 2 - Summary of Measured Background Noise Levels

- 4.8 24 Acoustic determines the typical background noise level in this case as the average minus one standard deviation.

5.0 PLANT SOURCE NOISE DATA

5.1 A kitchen extract fan, two condensing units and a small amenity/toilet extract fan are proposed to serve the building. Initial calculations demonstrate that noise levels from the amenity/toilet extract fan will be very low and, therefore, this has not been considered further.

5.2 Kitchen extract and condensing unit locations are shown in Figure 2.

Condensing Units

5.3 Two Mitsubishi condensing units are proposed: models PUZ-ZM71VHAR1 and PUZ-ZM140VKAR2 and these are to be installed within the small loading area to the rear of the building. The manufacturer quotes sound power levels of 67 dBA and 70 dBA respectively for these units. Octave band noise data has been assumed based on similar condenser units and Table 2 provides the sound power level data utilised in this assessment.

Mitsubishi Unit Model:	Sound Power Level (dB) Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
PUZ-ZM71VHAR1	76	74	68	63	62	57	52	46	67
PUZ-ZM140VKAR2	81	73	71	68	64	61	55	48	70

Table 3 - Condenser sound power level

Kitchen Extract Fan

5.4 A kitchen extract fan will be installed internally, with the exhaust duct terminating at a louvred grille on the rear façade within the loading area.

5.5 The extract fan proposed is a Ruck EL 315 E2 01 with manufacturer's noise data for the fan's outlet shown in Table 4.

Ruck EL 315 E2 01 Extract Fan - Outlet Manufacturer's unweighted sound power level (dB) Octave Band Centre Frequency (Hz)							dBA
125	250	500	1k	2k	4k	8k	
66	79	78	77	74	70	66	81

Table 4 - Manufacturer's unweighted sound power level – kitchen extract fan outlet

5.6 The above manufacturer's noise levels have been used to calculate the proposed plant noise levels at the nearest receptor locations, as shown in the following section.

6.0 PLANT NOISE ASSESSMENT

- 6.1 Calculations have been undertaken to determine the cumulative level of noise from the proposed plant at the nearest residential receptor locations. Corrections have been included for distance, number of units and, where applicable, directivity and screening.
- 6.2 The following assessment assumes operation of all proposed units during potential store opening hours only.
- 6.3 Initial calculations identified the need for mitigation to the kitchen extract fan system. Therefore, an in-line attenuator is recommended between the carbon filter and atmospheric grille. The attenuator must achieve the minimum insertion losses stated in Table 5.

Minimum Insertion Loss (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
4	7	14	23	21	13	14	15

Table 5 - Kitchen Extract Fan Attenuation – Acoustic Performance Specification

- 6.4 Based on Greggs typical fit out equipment/suppliers, an SIL 315-500 attenuator would achieve the above performance requirement.
- 6.5 In addition, the storage / loading area will need to be fitted with acoustic louvred doors (instead of an open roller shutter door) which will need to remain closed during plant operation. The acoustic louvred doors must achieve the minimum sound reduction index stated in Table 6.

Minimum Louvred Door Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
63	125	250	500	1k	2k	4k	8k
0	4	4	5	5	5	6	6

Table 6 - Acoustic Louvred Doors to Loading area – Acoustic Performance Specification

- 6.6 With the above attenuation included, calculations have been undertaken, following the requirements of BS 4142, to determine the maximum cumulative plant noise levels at the nearest receptor locations. It is not anticipated that any tonal, impulsive or otherwise distinctive noise characteristics will be present from the new units. Resultant noise levels are shown in Tables 7 and 8.

	Receptor 1 – Predicted Plant Noise Levels	
	Early morning 06:00 to 07:00	Daytime 07:00 to 19:00
Typical Background Noise Level	42 dB LA90 15 min	45 dB LA90 1 hour
Predicted Plant Noise Level	37 dB LAeq 15 min	37 dB LAeq 1 hour
Rating Correction	0	0
Rating Level	37 dB LAr 15 min	37 dB LAr 1 hour
Difference	-5	-8

Table 7 - Receptor 1 (southern façade of Wasdale): BS 4142 predicted maximum plant noise levels

	Receptor 2 – Predicted Plant Noise Levels	
	Early morning 06:00 to 07:00	Daytime 07:00 to 19:00
Typical Background Noise Level	42 dB LA90 15 min	45 dB LA90 1 hour
Predicted Plant Noise Level	26 dB LAeq 15 min	26 dB LAeq 1 hour
Rating Correction	0	0
Rating Level	26 dB LAr 15 min	26 dB LAr 1 hour
Difference	-16	-19

Table 8 - Receptor 2 (flat above 100 Robert Street): BS 4142 predicted maximum plant noise levels

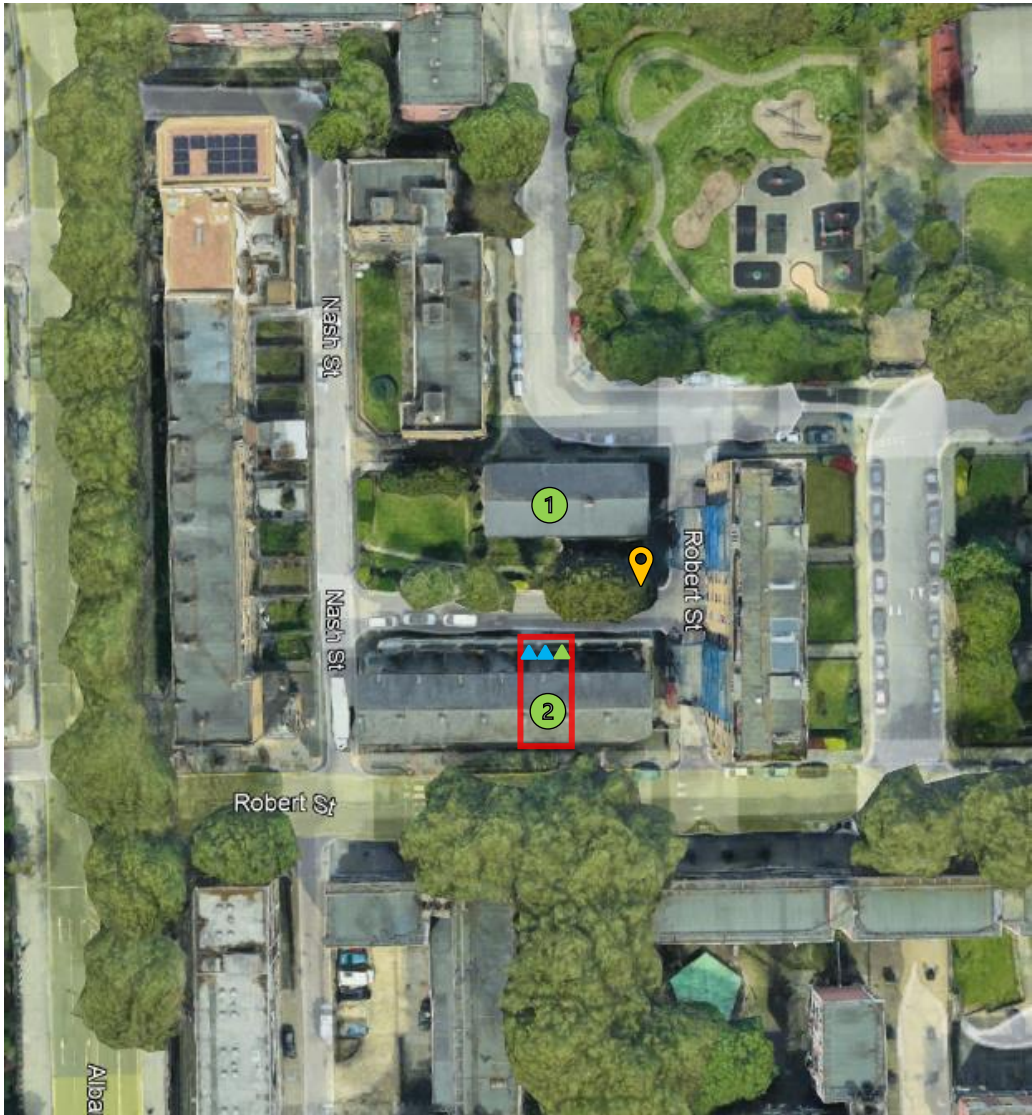
- 6.7 The calculations demonstrate that, with the recommended mitigation, the noise rating levels from the proposed plant would be at least 5 dBA below the representative background noise level at all residential receptor locations during all periods of plant operation. This is a low impact under BS 4142 and is, therefore, acceptable.






7.0 CONCLUSIONS


- 7.1 24 Acoustics Ltd has been instructed by Greggs plc (south east) to undertake a noise impact assessment for new condensing plant and kitchen extract plant at 100 Robert Street, London.
- 7.2 A noise survey has been carried out at the site to determine the prevailing background noise levels during potential early morning and daytime periods.
- 7.3 Initial recommendations for attenuation have been provided in the form of a silencer to the kitchen extract and louvered doors to the loading / storage area to the rear of the building.
- 7.4 Plant noise calculations, undertaken in line with BS 4142:2014, demonstrate that cumulative noise levels from the proposed plant will be at least 5 dBA below the typical background noise level at the nearest neighbouring residential properties and are, therefore, acceptable.

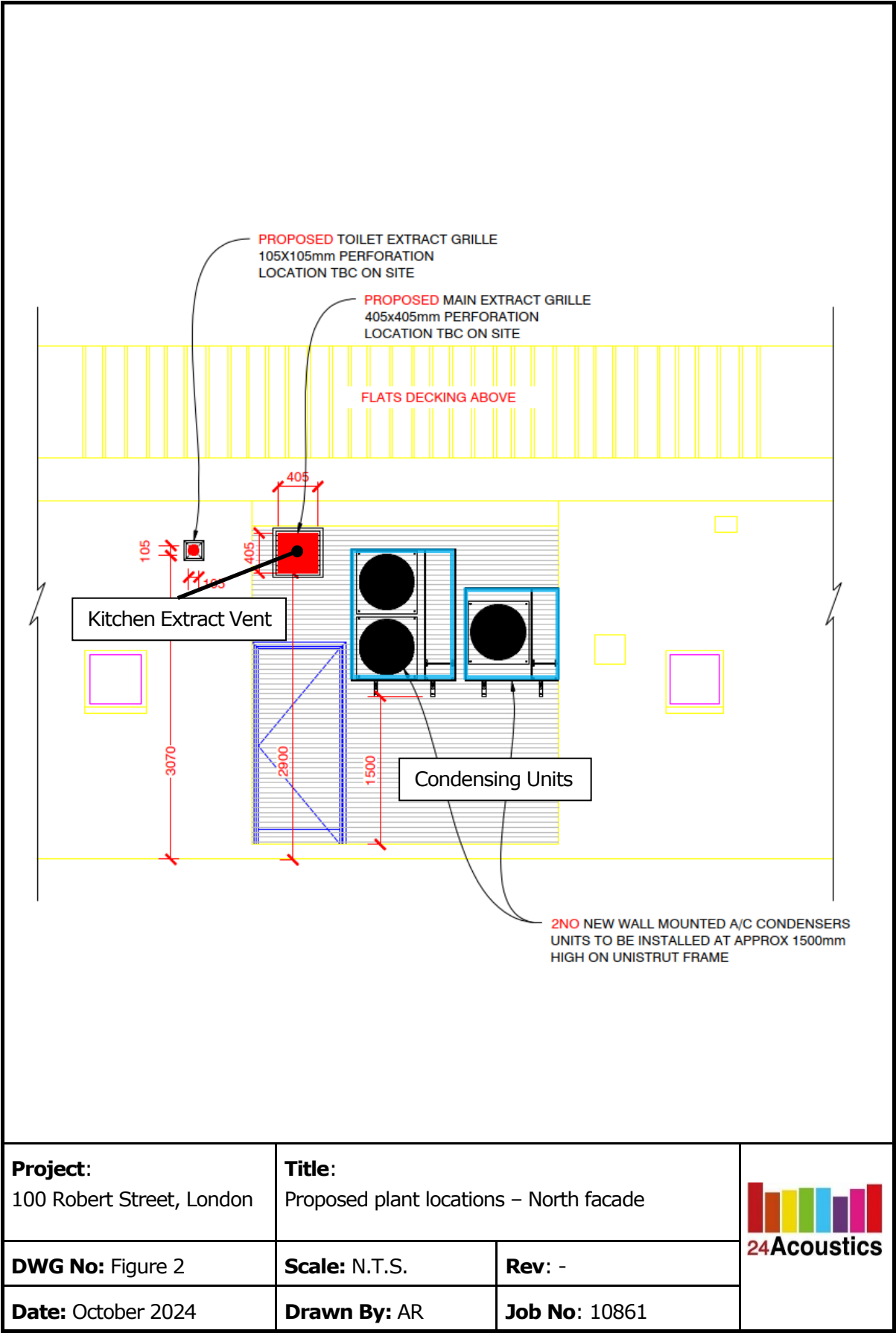
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2. Noise Policy Statement for England, Defra, 2010.
3. Planning Practice Guidance, Department of Communities and Local Government, July 2019.
4. British Standards Institution. British Standard 4142+A1:2019. Methods for Rating Industrial and Commercial Sound, 2014.
5. Camden Local Plan, June 2017.
6. British Standards Institution. British Standard 7445:1991 Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use, 1991.



	Site Location	
	Measurement Location	
	Receptor Locations	
	Condenser Unit	
	Kitchen Extract Vent	
Project: 100 Robert Street, London	Title: Site, plant, measurement and receptor locations	
DWG No: Figure 1	Scale: N.T.S.	Rev: -
Date: October 2024	Drawn By: AR	Job No: 10861





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 interval, 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 MEASUREMENTS

