BURO HAPPOLD

UCL 40 Bernard Street Fit-Out

Noise Impact Assessment

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0051430

18 March 2022

Revision P03

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P01	First issue	CDB	24/02/2022	PL
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Glossary

Term	Definition
Ambient noise (as defined in BS 4142)	Totally encompassing noise in a given situation at a given time; it is usually composed of noise from many sources, near and far.
Background Noise (as defined in BS 4142)	A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels.
Specific sound level, $L_{Aeq,Tr}$ (as defined in BS 4142)	equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r
Residual sound level, $L_{Aeq,T}$ (as defined in BS 4142)	equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T
Rating level, $L_{Ar,Tr}$ (as defined in BS 4142)	specific sound level plus any adjustment for the characteristic features of the sound
Decibel, dB	Commonly used unit used for the comparison of the powers of levels sound. Abbreviation dB. For sound pressure level (L_p) the reference quantity is $2x10^{-5}$ N/m^2. The sound pressure level existing when microphone measured pressure is $2x10^{-5}$ N/m^2 is 0 dB, the threshold of hearing.
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
L_{eq} (& L_{Aeq})- Equivalent continuous noise level of a time-varying noise	Equivalent continuous sound pressure level (A-weighted) over a period of time, T.
L_p - sound pressure level	Sound pressure level, in decibels, of a sound is 20 times the logarithm to the base of 10 of the ratio of the sound pressure to the reference pressure. The reference pressure shall be explicitly stated and is defined by standard.
$L_{F,max,T}$ (& $L_{AFmax,T}$)	The maximum sound pressure level measured during the measurement period T using the fast time constant.
Statistical noise levels	Noise levels that vary greatly over time are usually expressed using statistical values of the level exceeded for a stated percentage of the time. These are denoted Lx, showing the level that is exceeded x% of the time. L_{A90} is considered to be the (A-weighted) background noise level with unusually loud events being excluded. L_{A10} is usually used for the measurement of traffic noise.
Weightings (as defined in IEC 61672:2003):	A-Weighting: Frequency weighting devised to attempt to take into account the fact that human response to sound is not equally sensitive to all frequencies; it consists of an electronic filter in a sound level meter, which attempts to build in this variability into the indicated noise level reading so that it will correlate, approximately, with human response.). C-Weighting: One of the frequency weightings corresponding to the 100-phon contour and the closest to the linear or un-weighted value.

1 Introduction

1.1 Introduction

UCL Estates have commissioned Buro Happold to carry out a Noise Impact Assessment for the proposed fixed mechanical plant installations installed as part of the refurbishment works at 40 Bernard Street, London.

This report presents the results of a noise survey carried out by Buro Happold in February 2022 in the vicinity of the proposed site on 40 Bernard Street, London, WC1N 1LE. The details of the survey, along with a summary of the results, are provided below.

The design team will use the results of the environmental noise survey to:

- Assess the existing acoustic environment and potential risks associated with noise
- Determine the current background noise levels at the site to assess the likelihood of disturbance due to the operation of new plant and activity noise associated with the development at the nearest Noise Sensitive Receptor (NSR).

1.2 Site Description

The site is located at 40 Bernard Street, close to Russell Square, London. The local sound environment at the site consists primarily of vehicle movements on the local road network (Bernard Street and Woburn Place), pedestrian activity, and occasional aircraft. Mechanical plant noise is also considered to contribute to the sound environment, to a lesser extent, nonetheless.

Figure 1—1 displays the site location, the nearest Noise Sensitive Receptor (NSR) and the local road network:

- Holiday Inn hotel to the north (considered the nearest NSR)
- Bernard Street to the south
- Woburn Place to the west.

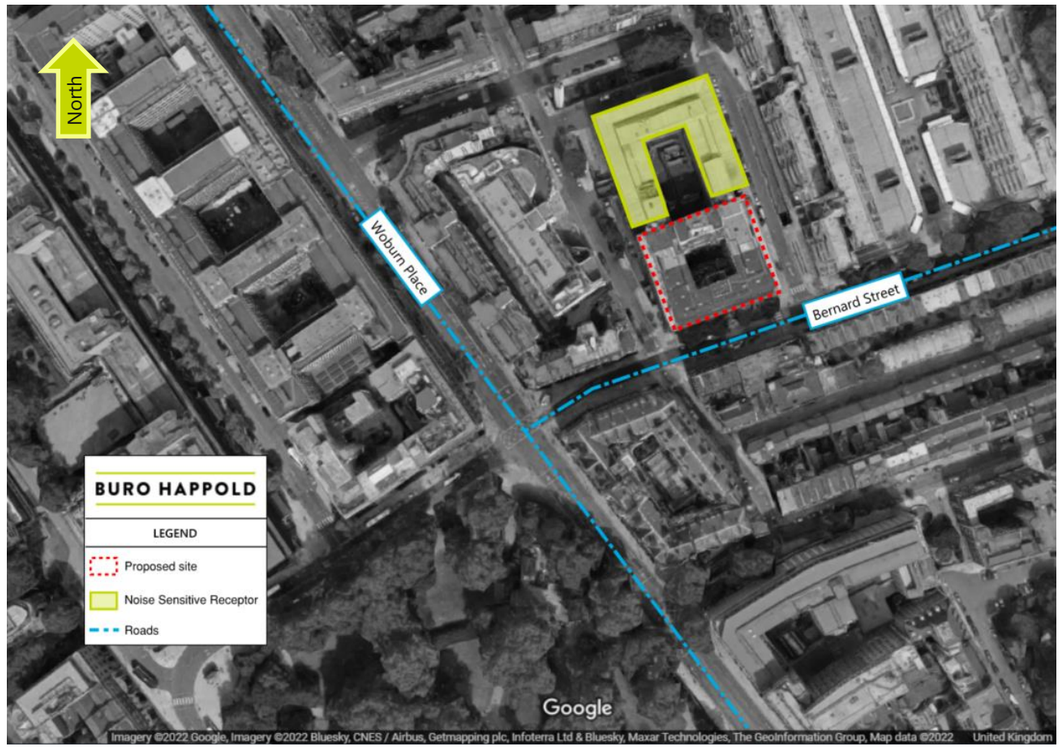

Figure 1—1 Site location (Source: Google Maps)

2 Acoustic Criteria

2.1 Introduction

Any external plant needs to be controlled to ensure that the future associated noise from fixed noise sources associated with the development does not increase the existing noise levels at nearby noise-sensitive receptors to an unreasonable degree.

This report is based on guidance from the following documents:

- The National Planning Policy Framework, 2021 (NPPF)
- Noise Policy Statement for England, 2010 (NPSE)
- Camden Local Plan, 2017
- BS 4142: 2014+2019 Methods for rating and assessing industrial and commercial sound
- The London Plan, Policy D13 Agent of Change and D14 Noise, 2021

2.2 National Policy and Guidance

2.2.1 English Planning Policy on Noise Impact – The NPPF and NPSE

The NPPF is the overarching Planning Policy document that applies to all new developments in England. The guidance and assessment criteria given (or referred to) in this document can, therefore, be applied to all other standards in terms of assessing the suitability of granting Planning Permission concerning noise impact.

The NPPF (paragraph 185) states 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; and identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

With specific reference to noise impact, the NPPF document refers to the Noise Policy Statement for England (NPSE). The NPSE provides guidance, which enables decisions to be made regarding the acceptable noise burden to place on society, using three key phrases:

- No Observed Effect Level (NOEL)
- Lowest Observed Adverse Effect Level (LOAEL)
- Significant Observed Adverse Effect Level (SOAEL).

To provide a consistent frame of reference (and to allow a view to be taken on the suitability of the application regarding the relevant planning guidance), the levels or criteria given in other relevant documents used in the assessment can be re-framed as shown in Table 2—1.

Table 2—1 NOAEL, LOAEL and SOAEL

Effect Level	Description
NOEL	The NOEL is the level of noise impact below which no effect can be detected, and there would be no discernible negative effect on health or quality of life.
LOAEL	The LOAEL is the lowest level of noise impact above which adverse effects on health or quality of life can be detected. Designing noise impacts to be equal-to-or-less-than, the LOAEL should see that any adverse effects on health or quality of life are negligible.
SOAEL	The SOAEL is the level above which significant adverse effects on health and quality of life occur. Designs should always seek to avoid a noise impact, which would be categorised as a SOAEL.

Table 2—2 Planning Practice Guidance (PPG 2014)

Perception	Example Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not so much that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in the behaviour and/or attitude. E.g. turning up volume of television; speaking more loudly; where there is no alternative means of ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of live.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in the behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in the acoustic character of the area	Significant Observed Adverse Effect	Avoid through the use of appropriate mitigation whilst taking into account the social and economic benefit
Noticeable and very disruptive	Extensive and regular changes in the behaviour and/or inability to mitigate the effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent through use of appropriate mitigation

2.3 London Policy and Guidance

2.3.1 The London Plan 2021

The London Plan states the following with respect to noise:

Policy D13 Agent of Change

A. *The Agent of Change principle places the responsibility for mitigating impacts from existing noise and other nuisance-generating activities or uses on the proposed new noise-sensitive development. Boroughs should ensure that Development Plans and planning decisions reflect the Agent of Change principle and take account of existing noise and other nuisance-generating uses in a sensitive manner when new development is proposed nearby.*
B. *Development should be designed to ensure that established noise and other nuisance-generating uses remain viable and can continue or grow without unreasonable restrictions being placed on them.*
C. *New noise and other nuisance-generating development proposed close to residential and other noise-sensitive uses should put in place measures to mitigate and manage any noise impacts for neighbouring residents and businesses.*
D. *Development proposals should manage noise and other potential nuisances by:*
    1) *ensuring good design mitigates and minimises existing and potential nuisances generated by existing uses and activities located in the area*
    2) *exploring mitigation measures early in the design stage, with necessary and appropriate provisions including ongoing and future management of mitigation measures secured through planning obligations*
    3) *separating new noise-sensitive development where possible from existing noise-generating businesses and uses through distance, screening, internal layout, sound-proofing, insulation and other acoustic design measures.*
E. *Boroughs should not normally permit development proposals that have not clearly demonstrated how noise and other nuisances will be mitigated and managed.*

Policy D14 Noise

In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:

1. *avoiding significant adverse noise impacts on health and quality of life*
2. *reflecting the Agent of Change principle as set out in Policy D13 Agent of Change*
3. *mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development without placing unreasonable restrictions on existing noise-generating uses*
4. *improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity)*
5. *separating new noise-sensitive development from major noise sources (such as road, rail, air transport and some types of industrial use) through the use of distance, screening, layout, orientation, uses and materials – in preference to sole reliance on sound insulation*
6. *where it is not possible to achieve separation of noise-sensitive development and noise sources without undue impact on other sustainable development objectives, then any potential adverse effects should be controlled and mitigated through applying good acoustic design principles*
7. *promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver. B Boroughs, and others with relevant responsibilities, should identify and nominate new Quiet Areas and protect existing Quiet Areas in line with the procedure in Defra's Noise Action Plan for Agglomerations.*

2.4 Local Requirements

2.4.1 Camden Council

The *Camden Local Plan, 2017* Policy A4 (shown in) provides a summary of the Noise and Vibration requirements for the Local Planning Authority.

For the installation of industrial or commercial plant, the Camden Local Plan states that for both daytime and night-time periods, the plant rating level ($L_{Ar,Tr}$ dB) should ideally be limited to 10 dB below the existing background noise level ($L_{A90,T}$ dB) to achieve LOAEL impact. A further requirement at night is for no plant to exceed a L_{Amax} 57 dB noise level (see).

The rating limit and background noise level should be defined using the guidance contained in BS 4142:2014+A1:2019. BS 4142:2014 guidance is used to assess the noise impact of industrial and commercial sources on residential receptors and provides guidance as to the likely community response.

The impact is assessed by comparing the measured background sound level ($L_{A90,T}$ dB), at a location representative of the nearest noise-sensitive receptor, to the 'rating level' ($L_{Ar,Tr}$ dB) (the specific sound source to be introduced into the locality, corrected for acoustically distinguishing characteristics which may make it more subjectively prominent).

Based on the above and , the target for new plant items serving UCL 40 Bernard Street are to achieve a green or amber noise impact rating (LOAEL to SOAEL design criteria). Section 4 provides plant noise limits in line with this.

Policy A4 Noise and vibration

The Council will seek to ensure that noise and vibration is controlled and managed.

Development should have regard to Camden's Noise and Vibration Thresholds (Appendix 3). We will not grant planning permission for:

a. development likely to generate unacceptable noise and vibration impacts; or
b. development sensitive to noise in locations which experience high levels of noise, unless appropriate attenuation measures can be provided and will not harm the continued operation of existing uses.

We will only grant permission for noise generating development, including any plant and machinery, if it can be operated without causing harm to amenity. We will also seek to minimise the impact on local amenity from deliveries and from the demolition and construction phases of development.

Figure 2—1 Camden Local Plan, 2017 Noise and Vibration Policy excerpt (Source: https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf/ce6e992a-91f9-3a60-720c-70290fab78a6)

Table C: Noise levels applicable to proposed industrial and commercial developments (including plant and machinery)

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 57dBL_{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 88dBL_{Amax}

*10dB should be increased to 15dB if the noise contains audible tonal elements. (day and night). However, if it can be demonstrated that there is no significant difference in the character of the residual background noise and the specific noise from the proposed development then this reduction may not be required. In addition, a frequency analysis (to include, the use of Noise Rating (NR) curves or other criteria curves) for the assessment of tonal or low frequency noise may be required.

**levels given are for dwellings, however, levels are use specific and different levels will apply dependent on the use of the premises.

The periods in Table C correspond to 0700 hours to 2300 hours for the day and 2300 hours to 0700 hours for the night. The Council will take into account the likely times of occupation for types of development and will be amended according to the times of operation of the establishment under consideration.

Figure 2—2 **Excerpt from the Camden Local Plan, 2017. Indicating the noise level thresholds for this report (Source: https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf/ce6e992a-91f9-3a60-720c-70290fab78a6)**

3 External Noise Survey

3.1 Introduction

Buro Happold conducted an external noise survey at the proposed site primarily to capture the existing background noise levels at nearby noise-sensitive (i.e. residential) receivers. This allows the specification of limiting noise levels for any externally located (or external terminations of) services plant, to see that the installation will not unduly increase existing noise levels in the vicinity of the site.

3.2 Survey Methodology

Buro Happold staff visited the site to undertake a noise survey via unattended measurements. Measurements were carried out in logging periods of 15 minutes between 11th and 15th February 2022.

A long-term unattended noise monitoring location was adopted on the fifth floor terrace to the east and is considered representative of the nearest NSR (i.e. hotel). The noise measurement location is shown on the aerial site image in Figure 3—1.

Table 3—1 presents the instrumentation and equipment used throughout the survey.

The sound level meter was calibrated prior to and after measurements being undertaken. No significant drift in calibration level was witnessed. Calibration certificates for all items of equipment detailed above are available upon request.

The weather conditions were noted to have been between 4°C and 9°C in temperature and wind speeds were no greater than 5 ms^{-1}. There were periods of rain during the measurements, however these have been excluded from the assessment, based on historical weather data.

For reference, measurements were undertaken in a free-field environment at a height of approximately 1.2 metres above local ground level.

Table 3—1 Noise instrumentation/equipment details

Instrumentation	Model No.	Serial Number
Sound Level Meter	Brüel & Kjær 2250	2644992
Acoustic Calibrator	Brüel & Kjær 4231	2342813

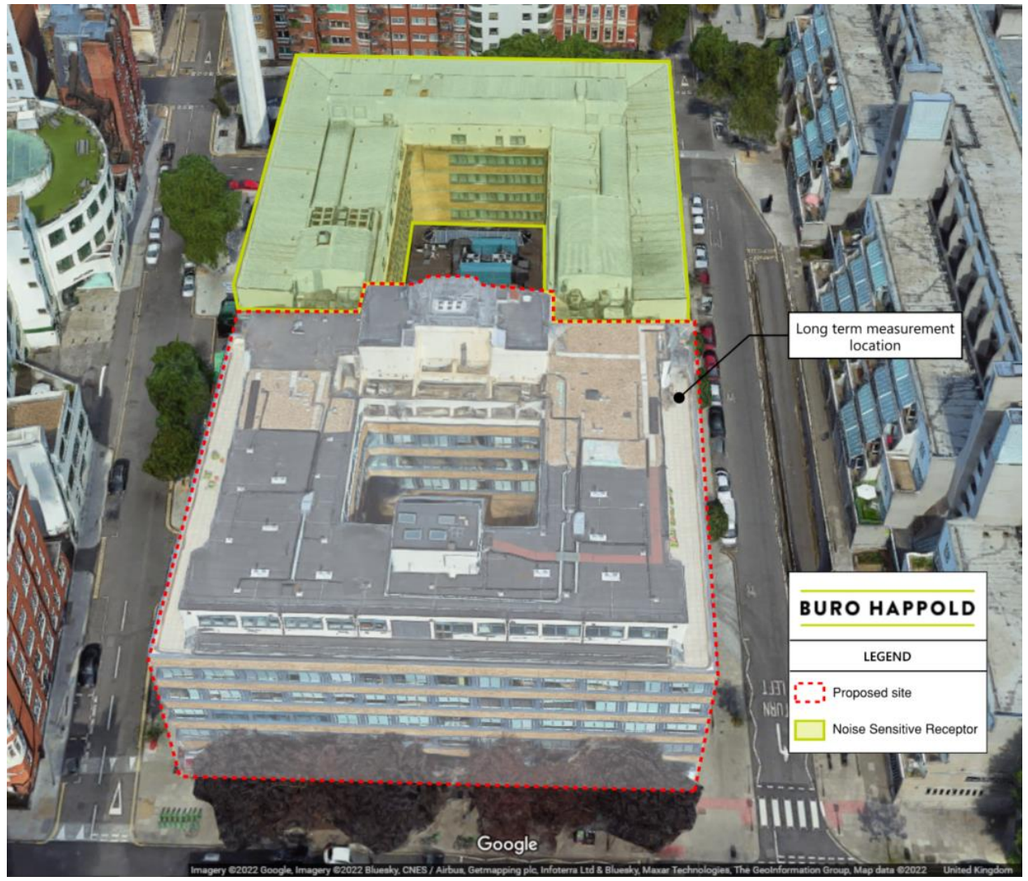

Figure 3—1 Long-term measurement location (Source: Google Maps)

3.3 Noise Survey Results - Background Sound Level

Data analysis has been performed on the values measured to determine the typical value required for a BS 4142 assessment. In this instance, the data was closely grouped together, and there was a clear and definitive trend towards $L_{A90,T}$ 49 dB during the day. Therefore, the modal value was used to define the typical background sound level.

As seen from Figure 3—2, a background level of $L_{A90,T}$ 49 dB was measured over 55% of the time during the measurement period. Therefore, the 'typical' background sound level is taken to be $L_{A90,T}$ 49 dB during the daytime.

Modal analysis of the night-time levels saw a significant trend toward $L_{A90,T}$ 46 dB. Therefore, the modal value was used to define the typical background sound level.

As seen from Figure 3—3, a background level of $L_{A90,T}$ 46 dB was measured over 65% of the time during the measurement period, and clearly the most typical noise level on-site. Therefore, the 'typical' background sound level is taken to be $L_{A90,T}$ 46 dB at night.

In summary, the adopted background sound levels are presented in Table 3—2.

3.4 Discussion

Unattended noise measurements conducted on the 5th floor terrace of the proposed site have been undertaken throughout 5 days, including a weekend.

Measurements undertaken over the weekend have been used as a worst-case scenario as background sound level are typically at their lowest.

The results of the noise survey will be used to set out the rating level at the nearest noise sensitive receptors in line with Camden London Borough Council planning requirements.

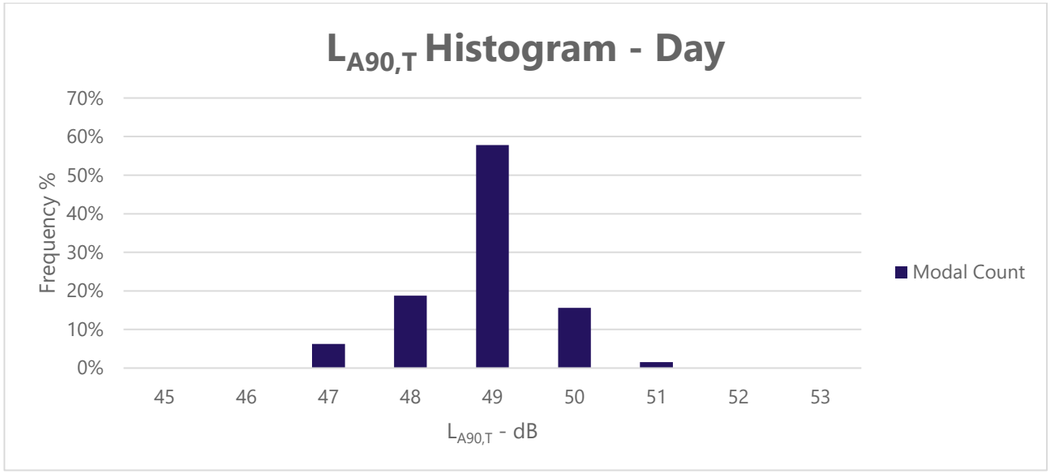

Figure 3—2 Daytime $L_{A90,T}$ histogram

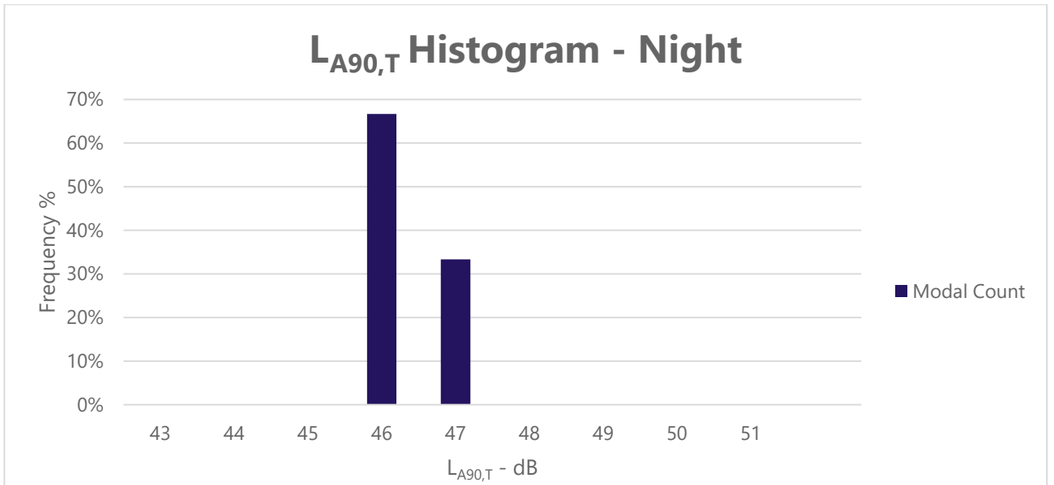

Figure 3—3 Night-time $L_{A90,T}$ histogram

Table 3—2 Adopted typical background sound levels

Daytime 07:00 – 23:00	Night-time 23:00 – 07:00
$L_{A90,T}$ 49 dB	$L_{A90,T}$ 46 dB

4 Plant Noise Limits

4.1 Introduction

This section of the report details noise limits for new plant items associated with the UCL 40 Bernard Street refurbishment. This is to see that noise emissions do not cause a negative impact on existing NSRs. The nearest NSR is shown in Figure 4—1.

4.2 External Plant Noise Limits

From the results obtained during the noise survey, the modal background noise levels are $L_{A90,15min}$ 49 dB during the daytime and $L_{A90,15min}$ 46 dB during the night-time.

Table 4—1 shows the broadband plant noise rating level that should not be exceeded at 1 m from the nearest NSR façades.

It is noted that the limit given below is a rating level (as defined in BS 4142:2014+2019) and therefore must consider the effects of acoustically distinguishable features (tonality, impulsivity, intermittency, etc.). Should final selections include plant items which generate noise which includes these features, then appropriate penalties (as defined in BS 4142:2014+2019) must be applied. It is noted that this limit is a cumulative level and applies to all items operating simultaneously. It may be necessary to design individual items to lower levels so that the cumulative limit is met.

Compliance with this rating level should see that noise at the nearest NSR is highly likely to be imperceptible and is therefore unlikely to generate complaints with regards any newly-created noise associated with the operation of the proposed development. As plant noise would largely be imperceptible, this represents the NOEL as referenced in the Noise Policy Statement for England.

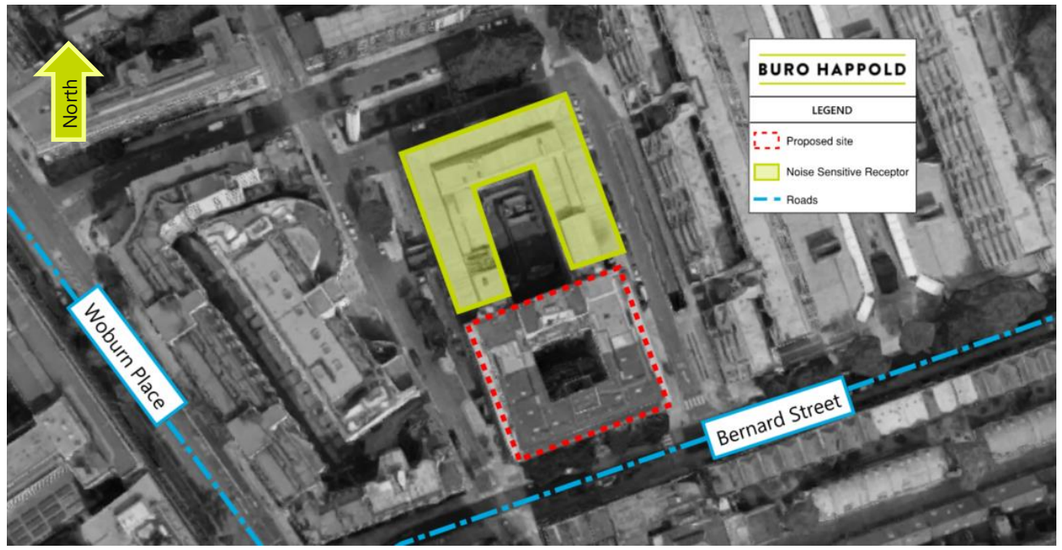

Figure 4—1 Site location (Source: Google Maps)

Table 4—1 Limiting rating noise levels for new plant

Daytime background noise level $L_{A90,15min}$ (dB) (07:00 – 23:00)	Plant daytime rating limit @ 1 m from NSR façade $L_{Ar,Tr}$ (dB)	Night-time background noise level $L_{A90,15min}$ (dB) (23:00 – 07:00)	Plant night-time rating limit @ 1 m from NSR façade $L_{Ar,Tr}$ (dB)
	LOAEL		LOAEL
49	39	46	36
LOAEL: green noise impact rating SOAEL: amber noise impact rating, as defined by Camden Local Plan, 2017			

5 Plant Noise Impact Assessment

5.1 Introduction

New plant items must achieve a rating level difference (noise level including any penalties for acoustically distinguishing characteristic, as defined in BS 4142) of -10 dB compared to the typical background sound level at the curtilage of NSRs. Additionally, noise from plant items must not exceed L_{Amax} 57 dB during night-time periods (23:00 – 07:00), assessed at the same location.

5.2 Fixed Plant Proposals

It is understood that the following new plant items are to be installed as part of the proposed development:

- 4No. PURY-M350YNW-A1 units at fifth floor level
- 4No. PUZ-ZM250YKA.UK units at fifth floor level
- 1No. PURY-M350YNW-A1 unit at second floor mezzanine level
- 1No. PURY-M4000YNW-A1 unit at second floor mezzanine level

The proposed location for the above items is shown in Figure 5—2, Figure 5—3 and Figure 5—4. Sound data provided by the manufactures used for the assessment is shown in Table 5—1.

Table 5—1 Manufacturer data for proposed plant items

Plant unit	Sound pressure level (dB) at octave band centre frequencies (Hz)								Broadband sound pressure level, dB(A)
	63	125	250	500	1k	2k	4k	8k	
PURY-M350YNW-A1	69	64	64	62	57	52	47	40	63 @ 1 metre from the unit
PURY-M400YNW-A1	74	64	66	64	59	55	49	45	65 @ 1 metre from the unit
PUZ-ZM250YKA.UK	41	61	61	61	57	53	49	42	62 @ 1 metre from the unit

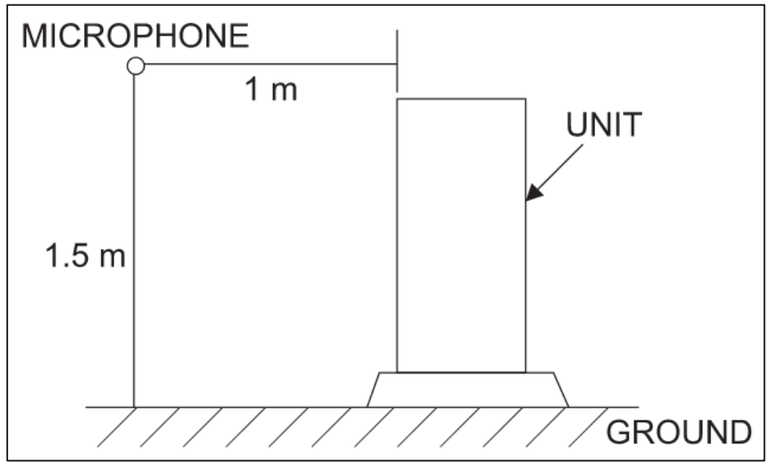

Figure 5—1 Measurement location from the unit

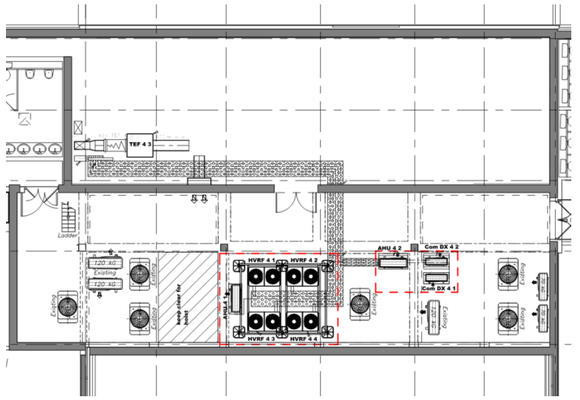

Figure 5—2 Proposed fifth floor plan – proposed location for new plant items (highlighted in red)

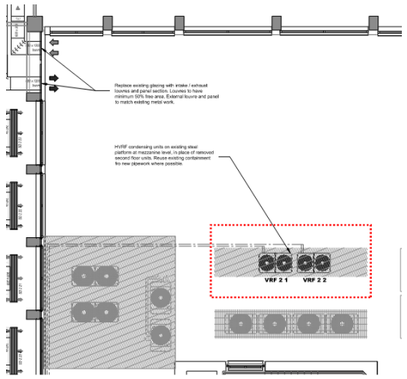

Figure 5—3 Proposed second floor mezzanine plan – proposed location for new plant items (highlighted in red)

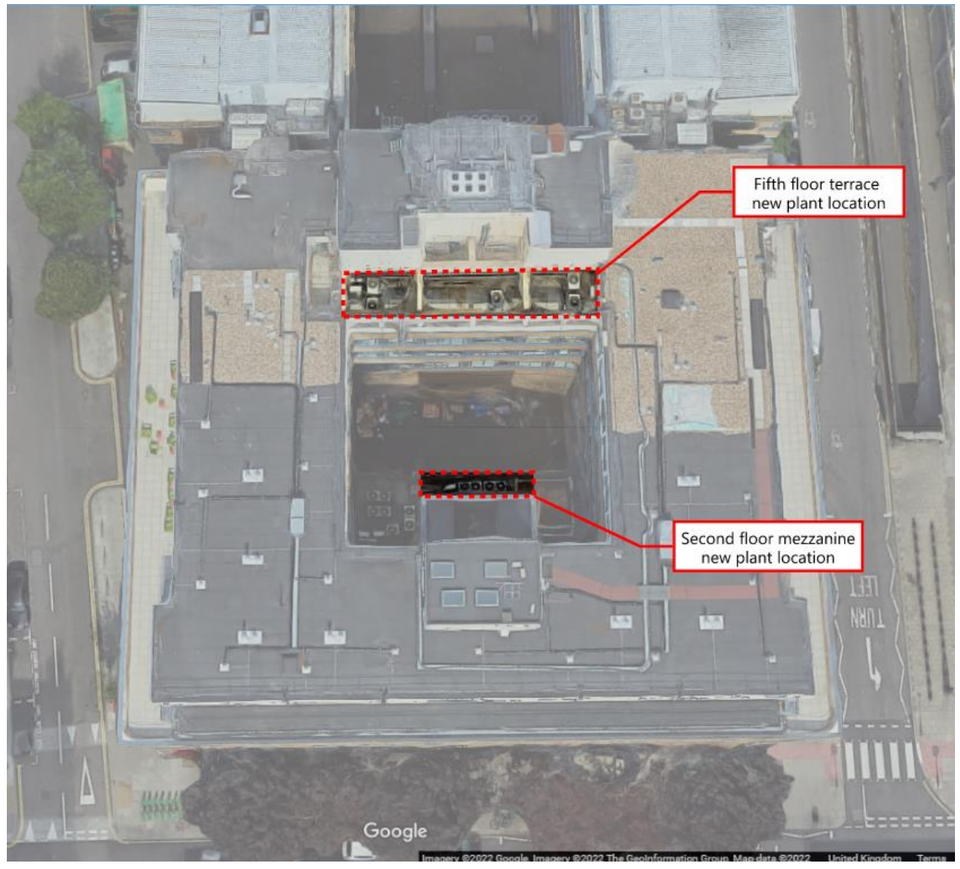

Figure 5—4 Aerial view of terrace where new plant is proposed (Source: Google Maps)

5.3 Specific Sound Level

The specific sound level of the mechanical plant equipment has been calculated as the equipment is not yet in operation. The specific sound was calculated using the noise modelling software, CadnaA 2019.

CadnaA® is a sophisticated noise modelling software package that predicts environmental noise levels based on the appropriate input data e.g. location and orientation of equipment and sound power data. The software package can take into account a variety of information about the site, including topography, buildings, and potential noise sources.

Inputs and assumptions used in the noise model include:

- The ground conditions have been modelled as hard, with a ground absorption of 0 representing hard ground
- Air temperature was assumed to be 10 degrees and humidity 70%
- It is assumed that all building façades are structured, and therefore they have been given an absorption coefficient of 0.02
- Three orders of reflection have been modelled
- The L_p of each plant item has been taken from the manufacturer's datasheet, and modelled at the location shown on the plant layout provided by the Buro Happold
- All mechanical plant and equipment operating at full capacity at sound power levels detailed in Table 5—1

Figure **5**—**5** and Figure **5**—**6** show the highest calculated levels incident on the façades of the Holiday Inn hotel to the north.

5.3.1 Results

Figure **5**—**5** and Figure **5**—**6** show the calculated specific sound level at the façade of the nearest NSRs due to the proposed fixed plant installation. The location of the proposed mechanical plant is such that the significant shielding is provided between UCL 40 Bernard Street and the Holiday Inn hotel.

As seen in Figure **5**—**6**, the specific sound level at the Holiday Inn Hotel is up to $L_{Aeq,Tr}$ 24 dB. This calculation is based on all items of plant operating with 100% on-time and at full duty. It is anticipated that the operating load during the evening and night-time will significantly reduce depending on building occupation. Therefore plant noise emissions are expected to be lower than the calculated levels under real-world conditions.

It should be noted that the proposed plant (condensers) generate constant sound fields and the main source of noise is due to aerodynamic movement generated by the fans. Therefore, the L_{Amax} is expected to be the same as the equivalent continuous specific sound level $L_{Aeq,Tr}$ 24 dB.

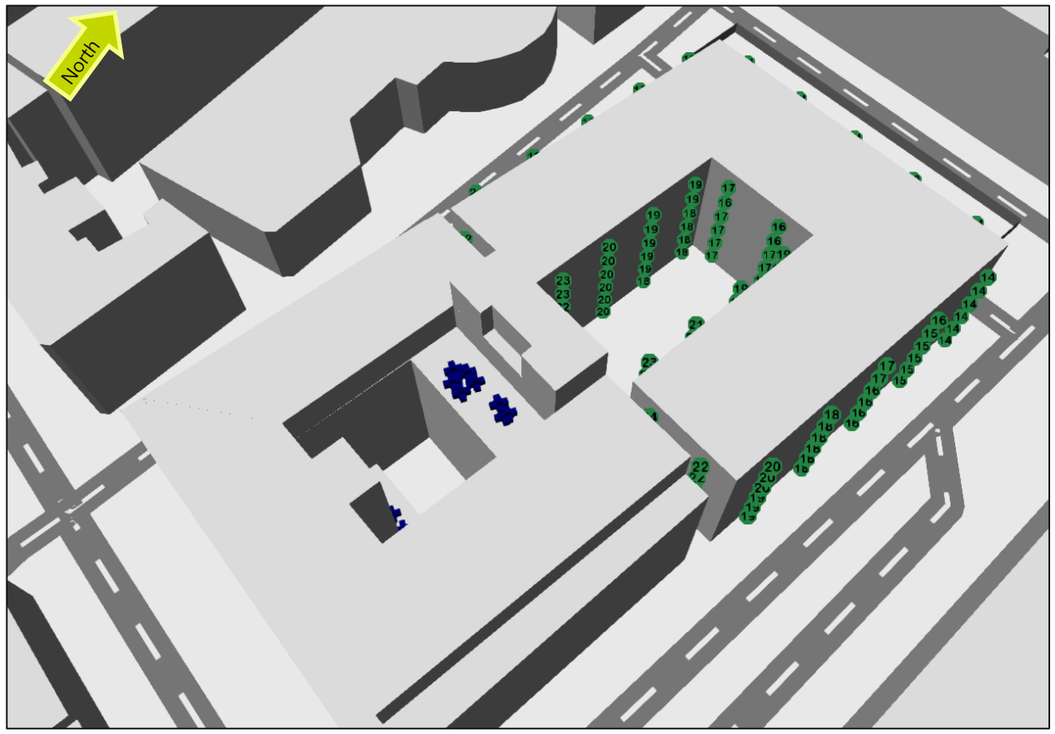

Figure 5—5 **3D view of CadnaA Model (view from south-east)**

Figure 5—6 **Highest predicted façade levels at NSR**

5.4 Rating level

As discussed in Section 0, it is a requirement of BS 4142 that the subjective prominence of the specific sound is considered when assessing the likely impact at nearby noise sensitive receivers, based on the likelihood of any acoustically distinguishing characteristics of the specific sound which may attract attention (whilst considering the existing residual sound climate).

Buro Happold have considerable experience of mechanical plant, and all Buro Happold staff are (minimum) degree-qualified engineering consultants in acoustics or a related discipline. All (acoustics) staff members involved in this scheme are corporate members of the Institute of Acoustics and are therefore considered suitably qualified to make the following assessments.

5.4.1 Tonality

Noise associated with the proposed units is not typically tonal in nature, given that the sound generation is typically associated with air movement and therefore includes sound associated with the motor, air displacement and turbulence.

No corrections for tonality are therefore considered to be required.

5.4.2 Impulsivity

The proposed units are not considered to have particularly steep 'ramp up' levels, nor do either have any features which rapidly interrupt the sound generation. On this basis, no corrections for impulsivity are required.

5.4.3 Intermittency

The units may, on occasion, ramp down and then back up, in response to load demands. However, the specific level of the fixed plant is significantly lower than the typical background sound level (12 dB). Therefore, the intermittency is not expected to be noticeable and therefore, no corrections will be applied.

5.4.4 Summary table – rating level

Table 5—2 shows the specific sound level, corrected for the various features given above to obtain the rating level required in BS 4142.

As can be seen, the cumulative corrections add up to a rating level of $L_{Ar,Tr}$ 24 dB, which will be compared against the typical background sound level in the following assessment.

Table 5—2 Plant rating level

Value	Correction dB	Specific sound level, $L_{Aeq,Tr}$ dBA
Baseline specific sound level	-	≤ 24
Tonality correction	+ 0	≤ 24
Impulsivity correction	+ 0	≤ 24
Intermittency correction	+ 0	≤ 24
Rating level, $L_{Ar,Tr}$ dB		**≤ 24**
Limiting $L_{Ar,Tr}$ Rating Level		**36 dB (night-time)**
Compliance		**Yes**

5.5 Discussion

The predicted levels at the hotel façades arising from the operation of new plant items are up to $L_{Ar,Tr}$ 24 dB. This is 22 dB below the typical background noise levels at the site and therefore complies with Camden Council requirements and represents the NOAL as reference in the Noise Policy Statement for England.

6 Conclusions

A noise survey was conducted around the proposed 40 Bernard Street site in February 2022 by Buro Happold Acoustics. The prevailing daytime and night-time background sound levels have been measured and used to set noise limits for new plant items associated with the UCL 40 Bernard Street refurbishment.

Based on Local Planning Authority requirements new UCL 40 Bernard Street plant items must achieve a rating level difference (noise level including any penalties for acoustically distinguishing characteristic, as defined in BS 4142) of 10 dB compared to the background noise level at 1 m from the NSR façades and must not exceed L_{Amax} 57 dB during night-time periods (23:00 – 07:00).

The noise breakout assessment identified that suitable noise levels can be achieved at nearby NSRs without further attenuation measures, therefore meeting the Camden London Borough Council's requirements.

Based on the above, the proposed development is considered suitable in terms of noise and planning, and acoustic concerns are not considered to represent any barrier to development.

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