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Holborn Roof Bar, Kingsbourne House, High Holborn

Noise Impact Assessment

Rooftop and Friends Limited

Revision 2

25 October 2024

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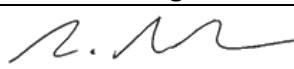
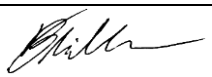
Author	Rupert Burton BSc (Hons) MIOA	Director		25/10/2024
Reviewer	Robert Miller BSc (Hons) MIOA	Director		25/10/2024

Revision	Date	Reason
0	28/08/2024	Issue
1	30/08/2024	Client comments.
2	25/10/2024	Music noise assessment.

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1 Introduction

1.1 Appointment

1.1.1 F1 Acoustics Company Limited (F1AC) has been appointed by Rooftop and Friends Limited to provide a noise impact assessment to assess the music noise, customer noise and general operational activities for a roof bar at Kingsbourne House, 229-231 High Holborn, London, WC1V 7DA.

1.2 Proposed Development

1.2.1 The proposed development is for a roof bar at Kingsbourne House, High Holborn. The bar will normally operate during the evening period until 23:00 on Friday and Saturdays; and 22:30 on Sunday to Thursday; with occasional openings from 12:00. The proposed capacity of the bar is for 200 people.

1.2.2 This report sets out the national and local planning policies; national standards and guidance for measuring and assessing sound; assessments, results and our conclusions.

2 Acoustics Terminology

2.1 Introduction to Noise

2.1.1 The range of audible sound is from 0 dB to 140 dB. The frequency response of the ear is usually taken to be about 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 dB(A) weighting. This is an internationally accepted standard for noise measurements.

2.2 Environmental Acoustics

2.2.1 For variable sound sources such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of the energy of a sound source would increase the overall sound by 3 dB(A). For example, if one item of machinery results in sound levels of 30 dB(A) at 10 m, then two identical items of machinery adjacent to one another would result in sound levels of 33 dB(A) at 10 m. The 'loudness' of a sound is a purely subjective parameter but it is generally accepted that an increase/decrease of 10 dB(A) corresponds to a doubling/halving in perceived loudness.

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

- **L_{Amax}**: This is the maximum sound level recorded over the measurement period.

- **L_{Aeq}**: This is the 'equivalent continuous A-weighted sound pressure level, in decibels' and is defined in British Standard 7445: Description and measurement of environmental noise (BS 7445) [1] 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'.

  The L_{Aeq} is a unit commonly used to describe sound from transport, construction and industrial premises and is the most suitable unit for the description of other forms of

environmental sound. In more straightforward terms, it is a measure of energy within the varying sound levels. It is also the unit best suited to assessing community response.

- **L_{A10}**: This is the sound level that is exceeded for 10% of the measurement period and gives an indication of the louder sound levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

- **L_{A90}**: This is the sound level that is exceeded for 90% of the measurement period and gives an indication of the sound level during quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial sound.

3 National and Local Standards and Guidance

3.1 National Planning Policy Framework

3.1.1 The National Planning Policy Framework (NPPF) [2] came into place on 27th March 2012 with the latest version being published on 20th July 2021. The NPPF sets out the Governments planning policies for England and how these are expected to be applied.

3.1.2 The NPPF does not contain specific noise criteria but does contain the following statements with regard to noise impacts:

> *"15. Conserving and enhancing the natural environment*
>
> *174. Planning policies and decisions should contribute to and enhance the natural and local environment by:*
>
> *…*
>
> *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
>
> *…*
>
> *185. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*
>
> *a) 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[65];*
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;*

…

65 See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs, 2010).”

3.1.3 The NPPF refers to the Noise Policy Statement for England (NPSE) [3] for the derivation of significant adverse impacts.

3.2 Noise Policy Statement for England

3.2.1 The NPSE from the Department for Environment, Food & Rural Affairs published on 15th March 2010 sets out the long-term vision of Government noise policy:

“Noise Policy Vision

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.”

3.2.2 The NPSE goes on to set out three aims for noise control:

*“**The first aim of the Noise Policy Statement for England***

Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

2.23 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).

The second aim of the Noise Policy Statement for England

Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

2.24 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.

The third aim of the Noise Policy Statement for England

Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

2.25 This aim seeks, where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development (paragraph 1.8), recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim."

3.3 Planning Practice Guidance

3.3.1 Planning Practice Guidance (PPG) [4] on noise from The Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government first published on 6th March 2014 and last updated on 22nd July 2019 expands on the NPPF and NPSE and sets out more detailed guidance on noise assessment.

3.3.2 The guidance, like the NPPF and NPSE does not contain any specific noise levels but sets out further principles that should inform an assessment.

3.3.3 The PPG guidance on noise states:

"Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.*

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation…"

3.3.4 The guidance presents a table, reproduced below as Table 3.1, that summarises the noise exposure hierarchy, based on the likely average response.

Table 3.1: PPG Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
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 such that there is a perceived change in the quality of life.	No Observed Adverse Effect	
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative 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 life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed Adverse Effect Level	
Noticeable and Disruptive	The noise causes a material change in 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 acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate 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

3.4 Local Planning Policies

3.4.1 The London Plan [5] published in March 2021 provides the following policies in relation 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

A 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."

3.4.2 The Camden Local Plan 2017 [6] provides the following relevant policies in relation to noise:

*"**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."

3.4.3 The Camden Local Plan also provides the following relevant noise criteria:

*"**Appendix 3: Noise thresholds***

The significance of noise impact varies dependent on the different noise sources, receptors and times of operation presented for consideration within a planning application. Therefore, Camden's thresholds for noise and vibration evaluate noise impact in terms of various 'effect levels' described in the National Planning Policy Framework and Planning Practice Guidance:

• NOEL – No Observed Effect Level

• LOAEL – Lowest Observed Adverse Effect Level

• SOAEL – Significant Observed Adverse Effect Level

Three basic design criteria have been set for proposed developments, these being aimed at guiding applicants as to the degree of detailed consideration needed to be given to noise in any planning application. The design criteria outlined below are defined in the corresponding noise tables. The values will vary depending on the context, type of noise and sensitivity of the receptor:

• Green – where noise is considered to be at an acceptable level.

• Amber – where noise is observed to have an adverse effect level, but which may be considered acceptable when assessed in the context of other merits of the development.

• Red – where noise is observed to have a significant adverse effect.

…

Entertainment Noise

Assessments for noise from entertainment and leisure premises must include consideration to amplified and unamplified music, human voices, footfall and vehicle movements and other general activity. Appropriate metrics must be used to measure and assess the noise impact including LAeq and LAmax metrics and appropriate frequency spectrum. Planning permission will not be granted in instances where it is not possible to achieve suitable and sufficient internal noise levels with reference to the most up to date and appropriate guidance within proposed noise sensitive receptors despite appropriate mitigation proposals due to the totality of noise from existing entertainment venues.

Table D: Noise levels applicable to proposed entertainment premises (customer noise)

Noise sensitive receptor	Assessment Location	Design Period	LOAEL (Green)	LOAEL to SOAEL (Amber)	SOAL (Red)
Dwellings	Garden used for amenity (free field)	Day	The higher of 55dB $L_{Aeq,5min}$ Or 10dB below existing $L_{Aeq,5min}$ Without entertainment noise	56dB to 60dB $L_{Aeq,5min}$ Or 9dB to 3dB below existing $L_{Aeq,5min}$ Without entertainment noise	The higher of 61dB $L_{Aeq,5min}$ Or 2dB below existing $L_{Aeq,5min}$ Without entertainment noise
Dwellings	Garden used for amenity (free field)	Evening	The higher of 50dB $L_{Aeq,5min}$ Or 10dB below existing $L_{Aeq,5min}$ Without entertainment noise	51dB to 55dB $L_{Aeq,5min}$ Or 9dB to 3dB below existing $L_{Aeq,5min}$ Without entertainment noise	The higher of 56dB $L_{Aeq,5min}$ Or 2dB below existing $L_{Aeq,5min}$ Without entertainment noise
Dwellings	Garden used for amenity (free field)	Night	The higher of 45dB $L_{Aeq,5min}$ Or 10dB below existing $L_{Aeq,5min}$ Without entertainment noise	46dB to 50dB $L_{Aeq,5min}$ Or 9dB to 3dB below existing $L_{Aeq,5min}$ Without entertainment noise	The higher of 51dB $L_{Aeq,5min}$ Or 2dB below existing $L_{Aeq,5min}$ Without entertainment noise

For entertainment and plant noise rating curves should be measured as a 15 minute linear Leq at the octave band centre frequencies.

Room	Noise rating curve	Design Period
Bedrooms	NR25	23:00-07:00hrs
All habitable rooms	NR35	07:00-23:00hrs

Advice note: We recommend that you seek advice from the Environmental Health department in advance of any noise surveys on the location of measurements and the nearest noise sensitive receptor. Further detail will be provided in our supplementary planning document Camden Planning Guidance on amenity."

3.4.4 Consultation was undertaken with Camden Environmental Health Team to establish the location of the nearest residential premises; and to agree the survey methodology and the assessment criteria to be used in the noise impact assessment of the customer noise from the roof bar.

3.5 International Organization for Standardization 9613 'Acoustics: Attenuation of sound during propagation outdoors', 1996

3.5.1 International Organization for Standardization 9613 (ISO 9613) Part 2 [7] provides a method for predicting acoustic propagation outdoors. The method is applicable in practice to a great variety of noise sources and environments. It is applicable, directly or indirectly, to most situations concerning road or rail traffic, industrial noise sources, construction activities, and many other ground-based noise sources.

3.5.2 The method predicts the L_{Aeq} under meteorological conditions favourable to propagation from sources of known sound emission. These conditions are for downwind propagation or, equivalently, propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs at night. Inversion conditions over water surfaces are not covered and may result in higher sound pressure levels than predicted from this method.

3.5.3 Calculations are made for each individual octave band from 63 Hz to 8 kHz. The calculation is summarised by:

$$L_{AT}\,(DW) = \Sigma\,[L_W + D_C - A_{div} - A_{atm} - A_{gr} - A_{bar} - A_{misc}]$$

(contributions are summed for each source and in each octave band)

Where:

- L_{AT} (DW) = average 'A'-weighted downwind sound pressure level at receptor
- L_W = sound power level of source*
- D_C = directivity of the source*
- A_{div} = attenuation due to geometric divergence*

- A_{atm} = attenuation due to atmospheric absorption*
- A_{gr} = attenuation due to ground effect*
- A_{bar} = attenuation due to a barrier*
- A_{misc} = attenuation due to miscellaneous other effects (e.g. woodland)*

*(per source and octave band)

3.5.4 The estimated accuracy for values of L_{AT} (DW) is stated as ±3 dB for a mean source / receptor height of up to 5 m and source / propagation separation distance of up to 1 km.

4 Site Description and Proposed Application

4.1 Existing Site Description

4.1.1 The existing site, the roof at Kingsbourne House is currently an unused roof space at 8 storeys high. A site location plan is provided in Figure 1.

4.2 Proposed Use

4.2.1 The proposed development is for a roof bar at Kingsbourne House, High Holborn. The bar will normally operate during the evening period until 23:00 on Friday and Saturdays; and 22:30 on Sunday to Thursday; with occasional openings from 12:00.

4.2.2 The proposed capacity of the bar is for 200 people.

4.2.3 The proposed sound system at the roof bar will be comprised of the following speakers:

Northern Section

- 8x Electro-Voice EVID-S5.2X Loudspeakers mounted at 1.7 m high

Southern Section

- 7x Electro-Voice EVID-S5.2X Loudspeakers mounted at 2.5 m high, angled down 15°
- 2x Electro-Voice EVID-S10.1D Subwoofers

4.2.4 Noise from regulated entertainment is usually controlled through the Licencing regime (The Licencing Act 2003), under the prevention of public nuisance objective. This assessment will seek to demonstrate the feasibility of the bar with reasonable music noise levels and resultant acceptable external music noise levels. The assessed operating music noise levels do not represent a limit for planning purposes; however, they are used to demonstrate a reasonable expected music noise level can be achieved for the type of venue being proposed.

4.2.5 Floor plans of the proposed development, including the location of the speakers for the proposed sound system are shown in Figure 2.

5 Baseline Sound Environment

5.1 Baseline Noise Survey Details

5.1.1 To establish the baseline sound environment at the noise sensitive receptors in the surrounding area a baseline noise survey was carried out.

Noise Survey Location and Duration

5.1.2 An unattended baseline noise survey was undertaken on the western edge of the roof, between 16:00 on Thursday 11th July and 16:00 on Thursday 18th July 2024.

5.1.3 The noise survey was mounted on a pole attached to the existing boundary balustrade around the roof. The microphone of the sound level meter was at a height of 1.5 m above the roof level and in a free-field location. The survey location was considered representative of the nearest noise sensitive receptors and is shown in Figure 1.

5.1.4 The primary noise sources audible at the survey location during the set-up and collection was road traffic, plant noise and aircraft. During the survey there was construction work being undertaken on the roof, this was finished each day by 19:00. The noise impact assessments will be undertaken for the evening period, 19:00 to 23:00, therefore any noise from construction work on the roof will not impact the assessments.

Noise Survey Equipment and Calibration

5.1.5 The instrumentation used was a Rion NL-53 sound level meter (SLM) (F1AC-082) and Rion NC-75 sound level calibrator (SLC) (F1AC-083). The SLM was configured to log 15-minute octave band measurements of the L_{Aeq}, L_{A90}, L_{A10}, and L_{Amax} during the unattended survey.

5.1.6 The SLM had field calibration checks carried out prior to and immediately following the measurements using the SLC and no significant deviation was recorded (greater than ±0.5 dB). All instrumentation used has been laboratory calibrated to traceable standards within two years.

Weather

5.1.7 Meteorological conditions were monitored throughout the survey duration and were considered suitable for noise monitoring throughout, following the guidance contained within BS 4142 [8].

5.2 Noise Survey Results

5.2.1 A summary of the measured broadband noise levels during the survey period are presented in Table 5.1. Detailed survey results are provided in Appendix A.

Table 5.1: Noise Monitoring Results Summary

Date	Period (T)	$L_{Aeq,T}$, dB[1]	Range of $L_{Amax,15min}$, dB	$L_{A10,T}$, dB[2]	$L_{A90,T}$, dB[2]
Thursday 11/07/2024	16:00 to 23:00	61	68 – 90	62	58
	19:00 to 23:00	60	70 - 90	61	56
	23:00 to 07:00	58	61 – 92	57	52
Friday 12/07/2024	07:00 to 23:00	59	65 - 93	60	55
	19:00 to 23:00	59	65 – 91	59	55
	23:00 to 07:00	56	62 – 87	57	51
Saturday 13/07/2024	07:00 to 23:00	59	63 – 90	59	54
	19:00 to 23:00	59	67 – 90	59	54
	23:00 to 07:00	56	63 – 85	56	51
Sunday 14/07/2024	07:00 to 23:00	60	62 – 97	60	55
	19:00 to 23:00	60	65 – 88	61	55
	23:00 to 07:00	56	61 – 82	57	51
Monday 15/07/2024	07:00 to 23:00	60	66 – 87	61	56
	19:00 to 23:00	59	66 – 82	60	56
	23:00 to 07:00	56	60 – 86	57	51
Tuesday 16/07/2024	07:00 to 23:00	64	68 – 96	63	56
	19:00 to 23:00	59	68 – 85	59	55
	23:00 to 07:00	56	61 – 80	57	51
Wednesday 17/07/2024	07:00 to 23:00	61	66 – 93	62	58
	19:00 to 23:00	61	66 – 89	61	58
	23:00 to 07:00	55	62 – 85	57	51
Thursday 18/07/2024	07:00 to 16:00	61	68 - 93	62	58

1. Logarithmic average of measurement period sound levels in the period (T).
2. Arithmetic average of measurement period sound levels in the period (T).

5.2.2 The average measured free-field noise levels at the survey location over the survey period are $L_{Aeq,16hrs}$ 61 dB during the daytime (07:00 to 23:00), $L_{Aeq,4hrs}$ 60 dB during the evening (19:00 to 23:00) and $L_{Aeq,8hrs}$ 57 dB during the night-time (23:00 to 07:00).

6 Music Noise Assessment

6.1 Methodology

6.1.1 To assess the impact of music noise from the operation of the roof bar sound propagation predictions have been undertaken using ISO 9613 'Acoustics – Attenuation of sound during propagation outdoors' as implemented by SoundPLAN 9.0 sound modelling software.

6.2 Receptor Assessment Locations

6.2.1 Following liaison with Camden Council and information provided by the Landlord of Kingsbourne House it was established that there are no residential dwellings within Kingsbourne House itself and that the closest residential dwellings are located at 115 High Holborn and 10 Gate Street, as shown in Figure 1.

6.3 Assessment Criteria

6.3.1 To determine the criteria for the assessment, and for the music noise from the roof bar to adhere to NPPF and NPSE a LOAEL needs to be identified.

6.3.2 Appendix 3 of the Camden Council Local Plan provides noise thresholds for entertainment noise within the borough. The threshold for entertainment noise between 07:00 and 23:00 is that the linear octave band $L_{eq,15min}$ should not exceed the noise rating curve NR35 within all habitable rooms.

6.3.3 Therefore, the LOAEL and the criteria for this noise impact assessment will be that the music noise level should not exceed NR35 within any habitable room. Table 6.1 shows the octave band values for the NR35 curve.

Table 6.1: NR35 Curve Octave Band Noise Levels

Noise Rating	Octave Band, dB							
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
NR35	63.1	52.4	44.5	38.9	35.0	32.0	29.8	28.0

6.4 Music Noise Propagation Predictions

6.4.1 To determine the maximum operating music sound level for the roof bar whilst achieving the LOAEL, sound propagation predictions have been undertaken using

ISO 9613 'Acoustics – Attenuation of sound during propagation outdoors' as implemented by SoundPLAN 9.0 noise modelling software.

6.4.2 The ISO 9613 predictions have taken into account the attenuation, geometrical divergence, atmospheric absorption and ground effect between the roof and the nearest NSRs. Typical variable atmospheric conditions have been considered to be a temperature of 15°C and 70 % relative humidity for the assessment. The attenuation from ground effect has been calculated based on hard ground between the venue and the NSRs.

6.4.3 ISO 9613 sound propagation predictions assume downwind propagation in all directions from all sources for the purposes of accounting for the worst-case wind direction. In reality, only one set of receptors in one direction will be downwind at any one time and during neutral wind conditions there may be no downwind receptors.

6.4.4 The sound system has been input using d&b audiotechnik ArrayCalc software to model equivalent approximate speaker system as proposed for the bar and detailed in Paragraph 4.2.3. The detailed sound system directivity patterns are directly imported to the SoundPLAN model which uses this data to predict sound levels from individual sound system elements.

6.4.5 A 3D view of the noise model for the assessment of the music noise is provided in Figure 3.

6.4.6 To calculate the noise break-in to noise sensitive premises the sound reduction of windows open in a typical manner for ventilation have been applied to the free-field external predictions to calculate the internal music noise levels. For a window open in a typical manner for ventilation a sound reduction of 13 dB has been assumed across all frequencies.

Music Noise Level Prediction Results

6.4.7 The maximum operating octave band music sound levels at the centre of the two main areas of the roof bar that achieve the LOAEL have been calculated and are presented in Table 6.2 below, detailed results and calculations are provided in Appendix B.

Table 6.2: Maximum Operating Music Sound Levels

Area of the Roof bar	Octave Band $L_{Zeq,15min}$, dB							
	63 Hz	**125 Hz**	**250 Hz**	**500 Hz**	**1 kHz**	**2 kHz**	**4 kHz**	**8 kHz**
Centre of the Northern Section	102	90	74	71	70	69	66	65
Centre of the Southern Section	104	90	81	75	71	68	68	67

Assessment Results Discussion

6.4.8 The results of the music noise level predictions show that it will be feasible to operate the proposed roof bar with background music and quantifies the maximum operating music sound levels that would not exceed the criteria set for the LOAEL.

7 Customer Noise Assessment

7.1 Methodology

7.1.1 Noise from people talking whilst at the roof bar has the potential to cause a disturbance to nearby noise sensitive premises occupants. Therefore, this assessment will consider the likely impact from the people talking at the proposed roof bar.

7.1.2 To assess the noise from people talking at the nearest noise sensitive premises, a noise model has been built using SoundPLAN 9.0 noise modelling software.

7.2 Assessment Criteria

7.2.1 To determine the criteria for the assessment and to adhere to NPPF and NPSE a LOAEL needs to be identified.

7.2.2 Appendix 3 of the Camden Council Local Plan provides noise thresholds for entertainment noise within the borough. The threshold for customer noise during the evening periods (19:00 to 23:00) is that the $L_{Aeq,5min}$ should not exceed the higher of $L_{Aeq,5min}$ 50 dB or 10 dB below the existing $L_{Aeq,5min}$ without entertainment noise.

7.2.3 The existing $L_{Aeq,4hour}$ during the evening period as measured during the baseline survey is $L_{Aeq,15min}$ 60 dB.

7.2.4 Therefore, the LOAEL and the criteria for this noise impact assessment will be that the customer noise level should not exceed $L_{Aeq,5min}$ 50 dB.

7.3 Noise Predictions

7.3.1 To determine the noise level of people talking at the nearest NSRs, sound propagation predictions have been undertaken using ISO 9613 ‘Acoustics – Attenuation of sound during propagation outdoors’ as implemented as implemented by SoundPLAN 9.0 sound modelling software. A 3D view of the noise model is provided in Figure 4.

7.3.2 The ISO 9613 predictions have taken into account the attenuation, geometrical divergence, atmospheric absorption and ground effect between roof bar and the nearest NSRs. Typical variable atmospheric conditions have been considered to be a temperature of 15°C and 70 % relative humidity for the assessment. The attenuation

from ground effect has been calculated based on hard ground between the venue and the NSRs.

7.3.3 ISO 9613 sound propagation predictions assume downwind propagation in all directions from all sources for the purposes of accounting for the worst-case wind direction. In reality, only one set of receptors in one direction will be downwind at any one time and during neutral wind conditions there may be no downwind receptors.

Noise Source

7.3.4 The assessment of the customers at the proposed roof bar has been based on the roof bar being at its maximum capacity of 200 people. To calculate the noise level of people it has been assumed that 50% of customers will be talking at any one time, of the 100 people talking it has been assumed that 50% will be talking at a normal and 50% will be talking at a raised level.

7.3.5 Table 7.1 below details the octave band sound power levels for a single person talking at a normal and raised level (as referenced in Acoustics of Schools - A Design Guide [9]) The total number of people talking has been spread evenly over an area source at 1.5 m high throughout the new roof bar.

Table 7.1: Source Noise Levels for People Talking

Speech Type	Octave Band Sound Power Level, L_w (dB)						
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Speech at normal level (per person)	55	65	69	63	56	50	45
Speech at raised level (per person)	59	70	75	72	64	57	48

7.4 Receptor Assessment Locations

7.4.1 Following liaison with Camden Council and information provided by the Landlord of Kingsbourne House it was established that there are no residential dwellings within Kingsbourne House itself and that the closest residential dwellings are located at 115 High Holborn and 10 Gate Street, as shown in Figure 1.

7.4.2 Free-field noise predictions have been made at 1 m from the windows of the nearest NSRs.

7.5 Noise Prediction Results and Assessment

7.5.1 Table 7.2 below provides a summary of the highest predicted sound level of people using the roof bar at each of the nearest NSRs and the floor they were predicted at. Detailed results and calculations are provided in Appendix C.

Table 7.2: Predicted Sound Level of People Using the Roof bar

Receptor	**Broadband Sound Level of People Talking ($L_{Aeq,T}$), dB**
115 High Holborn (6th Floor)	48
10 Gate Street (6th Floor)	48

7.5.2 Table 7.2 shows that the predicted sound level from customers using the proposed roof bar achieves the criteria set for the LOAEL.

8 Venue Noise Management

8.1 Noise Management Plan

8.1.1 It is recommended that the venue management develop a noise management plan (NMP) that the bar will operate under based on the recommendations below.

8.1.2 The NMP should identify and consider any potential source of noise from the venue that may have the potential to impact the surrounding noise sensitive premises including but not limited to:

- Music Noise
- Noise from customers
- Disposal of glass

Music Noise

8.1.3 Music noise will be controlled to background music noise levels as per the assessment in Section 6.

Noise from Customers

8.1.4 Signs and staff interactions should promote a culture of respect for the surrounding neighbours.

8.1.5 Any customers being overly loud or animated should be politely asked to respect the enjoyment of other customers and the amenity of neighbours.

Disposal of Glass

8.1.6 The disposal of glass can be a significantly loud process when bottles are placed into bins and when glass bins are emptied. To avoid glass disposal being a significant disturbance to nearby noise sensitive premises glass bins should only be emptied inside the building not on the rooftop.

8.2 Neighbour Relations and Complaints

8.2.1 The venue management will look to keep an open and informative relationship with the occupants of any nearby noise sensitive premises with the aim of allowing any issues to be raised and addressed in a timely manner.

8.2.2 Contact information for the venue, including an email address and telephone number, should be readily available on any venue website or social media.

8.2.3 Should any complaints be received in person, by phone, email or social media about noise (or other environmental factors) they will be logged, with the complainant's permission, with the name, address, contact phone and/or email, and the nature of the complaint.

8.2.4 If any immediate fixes to the complaint are reasonable and possible to implement (i.e. reminding any loud customers to be quiet) then they will be made as soon as possible, and the actions logged.

8.2.5 The venue management will review any complaint within 48 hours and assess if any further action is possible or required to resolve the complaint. A log will be maintained of any further actions made.

9 Conclusions

9.1.1 F1 Acoustics Company Limited (F1AC) has been appointed by Rooftop and Friends Limited to provide a noise impact assessment to assess the customer noise and general operational activities for a roof bar at Kingsbourne House, 229-231 High Holborn, London, WC1V 7DA.

9.1.2 This noise impact assessment provides an assessment of the:

- music noise propagation from the sound system associated with the roof bar; and
- customer noise from the roof bar.

9.1.3 To assess the impact of music noise from the operation of the roof bar sound propagation predictions have been undertaken using ISO 9613 'Acoustics – Attenuation of sound during propagation outdoors' as implemented by SoundPLAN 9.0 sound modelling software.

9.1.4 The maximum operating octave band music sound levels at the centre of the two main areas of the roof bar that achieve the LOAEL have been calculated.

9.1.5 The results of the music noise level predictions show that it will be feasible to operate the proposed roof bar with background music and quantifies the maximum operating music sound levels that would not exceed the criteria set for the LOAEL.

9.1.6 To assess the impact of the noise from people talking at the nearest noise sensitive premises, propagation predictions have been undertaken using ISO 9613 'Acoustics – Attenuation of sound during propagation outdoors' as implemented by SoundPLAN 9.0 sound modelling software.

9.1.7 The predicted sound level from customers using the proposed roof bar achieves the criteria set for the LOAEL.

9.1.8 Venue noise management plan recommendations have been proposed to mitigate and manage any potential noise impact from the roof bar.

9.1.9 Based on the assessment of the music noise, customer noise and the adoption of the noise management plan recommendations, there is no material reason with regard to noise why the planning permission should not be granted.

References

1. British Standards Institution. British Standard 7445: Description and measurement of environmental noise. Part 1: Guide to environmental quantities and procedures. 2003.

2. Department for Communities and Local Government. National Planning Policy Framework: HMSO. February 2019.

3. Department for Environment, Food and Rural Affairs. Noise Policy Statement for England. Defra. 2010.

4. Ministry of Housing, Communities & Local Government. Planning Practice Guidance – Noise. July 2019.

5. Greater London Authority. The London Plan 2021. March 2021.

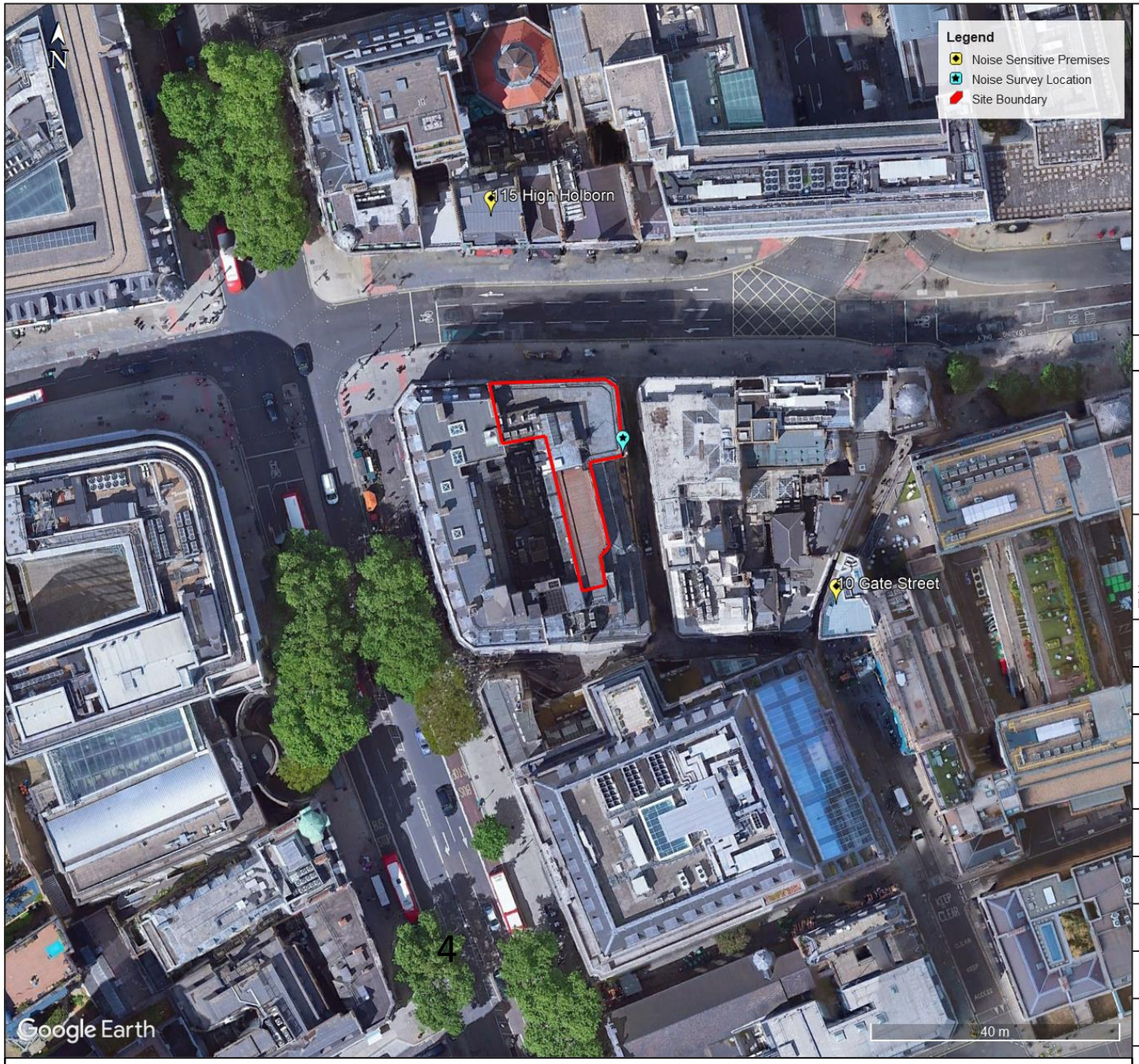
6. Camden Local Plan. Camden Council. 2017.

7. International Organization for Standardization. ISO 9613 'Acoustics: Attenuation of sound during propagation outdoors'. 1996.

8. British Standards Institution. British Standard 4142: Methods for rating and assessing industrial and commercial sound. 2014.

9. Institute of Acoustics & Association of Noise Consultants. Acoustics of Schools – A Design Guide. 2015.

Figures

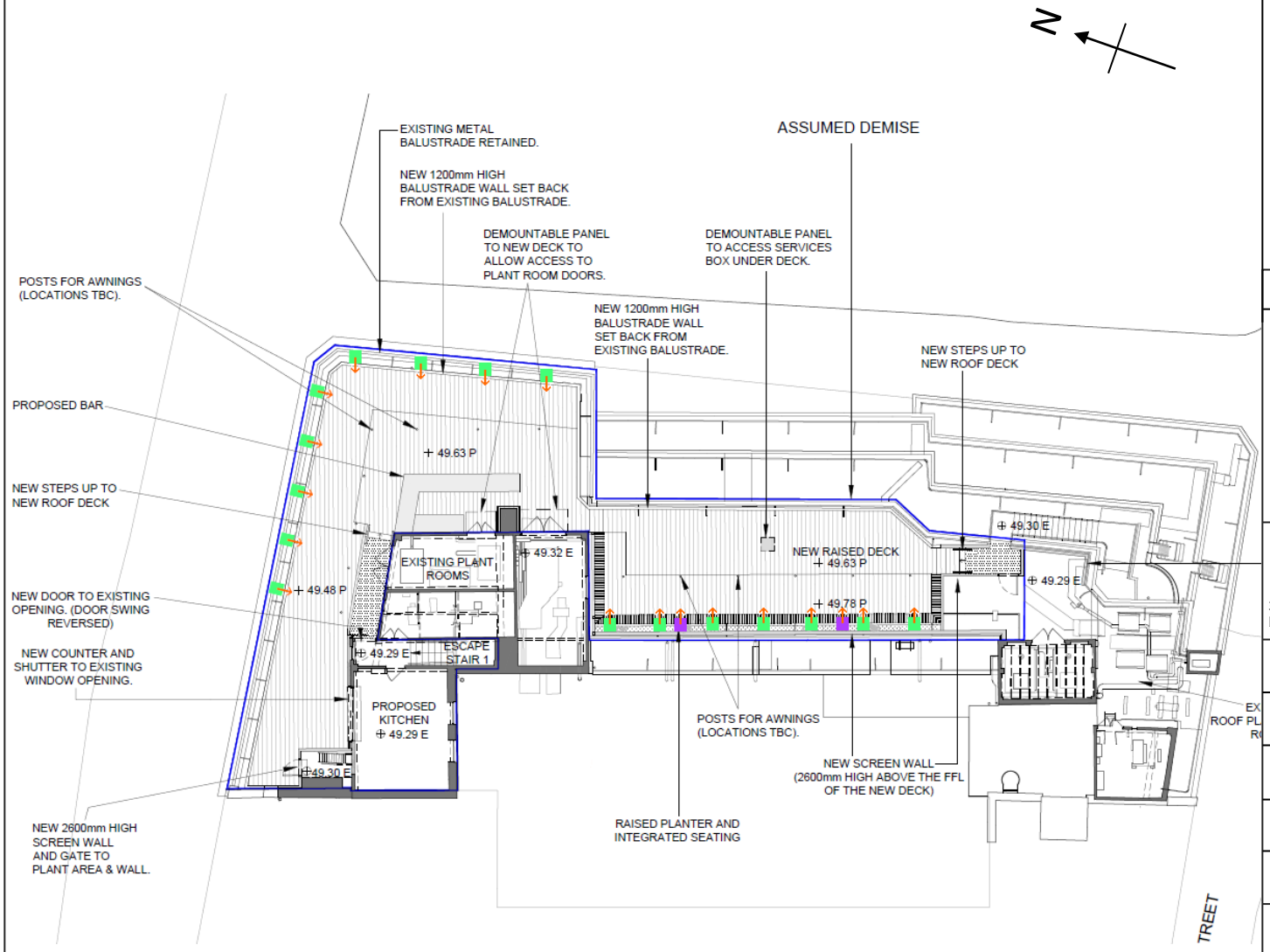


Key

REV	DATE	D	R	DESCRIPTION
0	26/07/2024	RB	RM	Issue

F1:Acoustics
38 Briton Hill Road, South Croydon, Surrey, CR2 0JL
info@f1acoustics.com ☎ +44 1273 526569 f1acoustics.com

PROJECT:	Holborn Roof Bar, Kingsbourne House, High Holborn
CLIENT:	Rooftop and Friends Limited
TITLE:	Site Location, Noise Sensitive Receptors and Noise Survey Location
DATE:	26/07/2024
REVISION:	0
SCALE:	As shown
DRAWING NO:	1951/Figures/1/0
FIGURE NO:	1
DRAWN BY:	Rupert Burton
REVIEWED BY:	Robert Miller



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0	26/07/2024	RB	RM	Issue
1	24/10/2024	RB	RM	Update

F1:Acoustics
38 Briton Hill Road, South Croydon, Surrey, CR2 0JL
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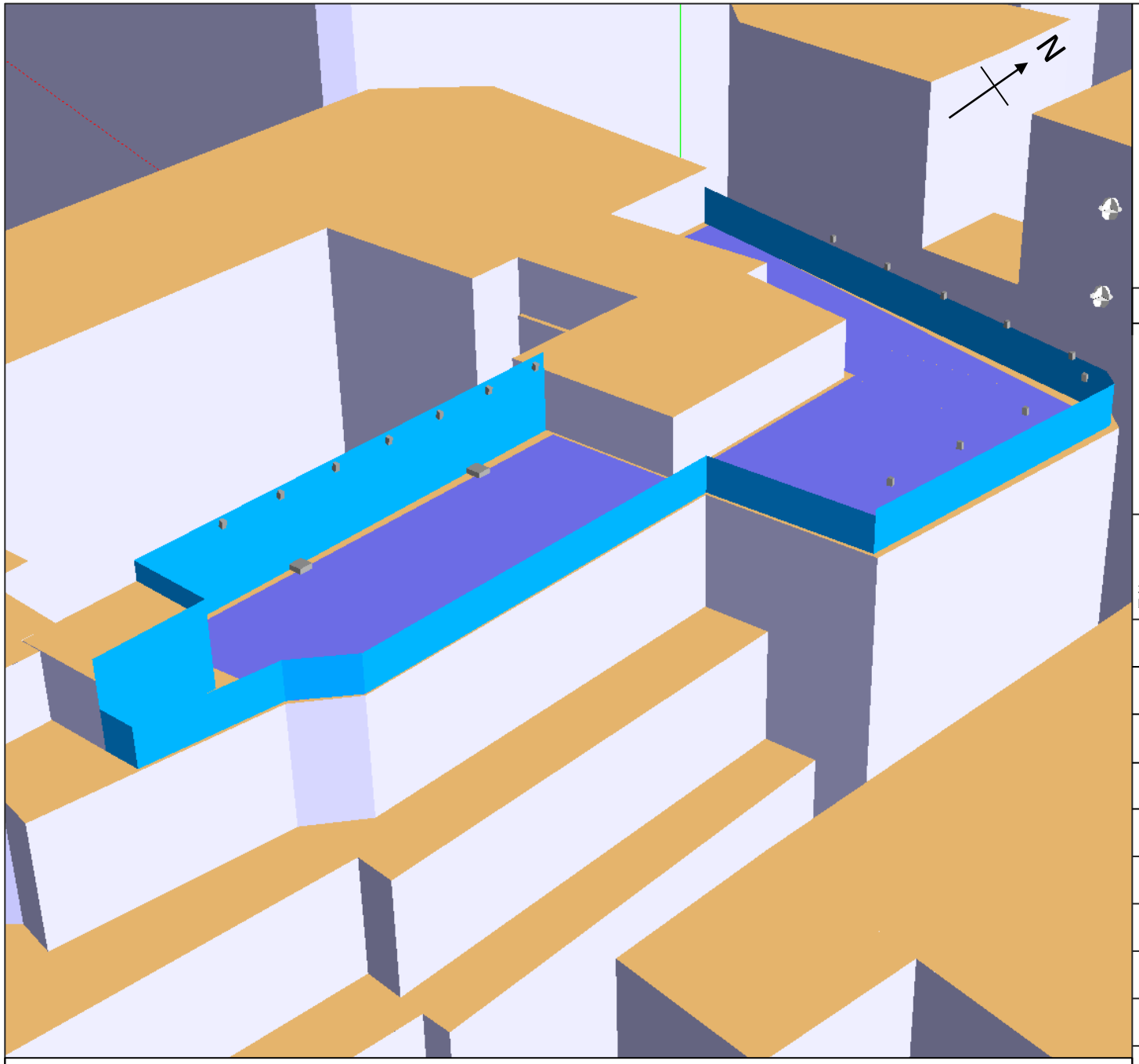
PROJECT:	Holborn Roof Bar, Kingsbourne House, High Holborn
CLIENT:	Rooftop and Friends Limited
TITLE:	Proposed Site Plan
DATE:	24/10/2024
REVISION:	1
SCALE:	Not to Scale
DRAWING NO:	1951/Figures/2/1
FIGURE NO:	2
DRAWN BY:	Rupert Burton
REVIEWED BY:	Robert Miller



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0	26/07/2024	RB	RM	Issue
1	24/10/2024	RB	RM	Update

F1:Acoustics
38 Briton Hill Road, South Croydon, Surrey, CR2 0JL
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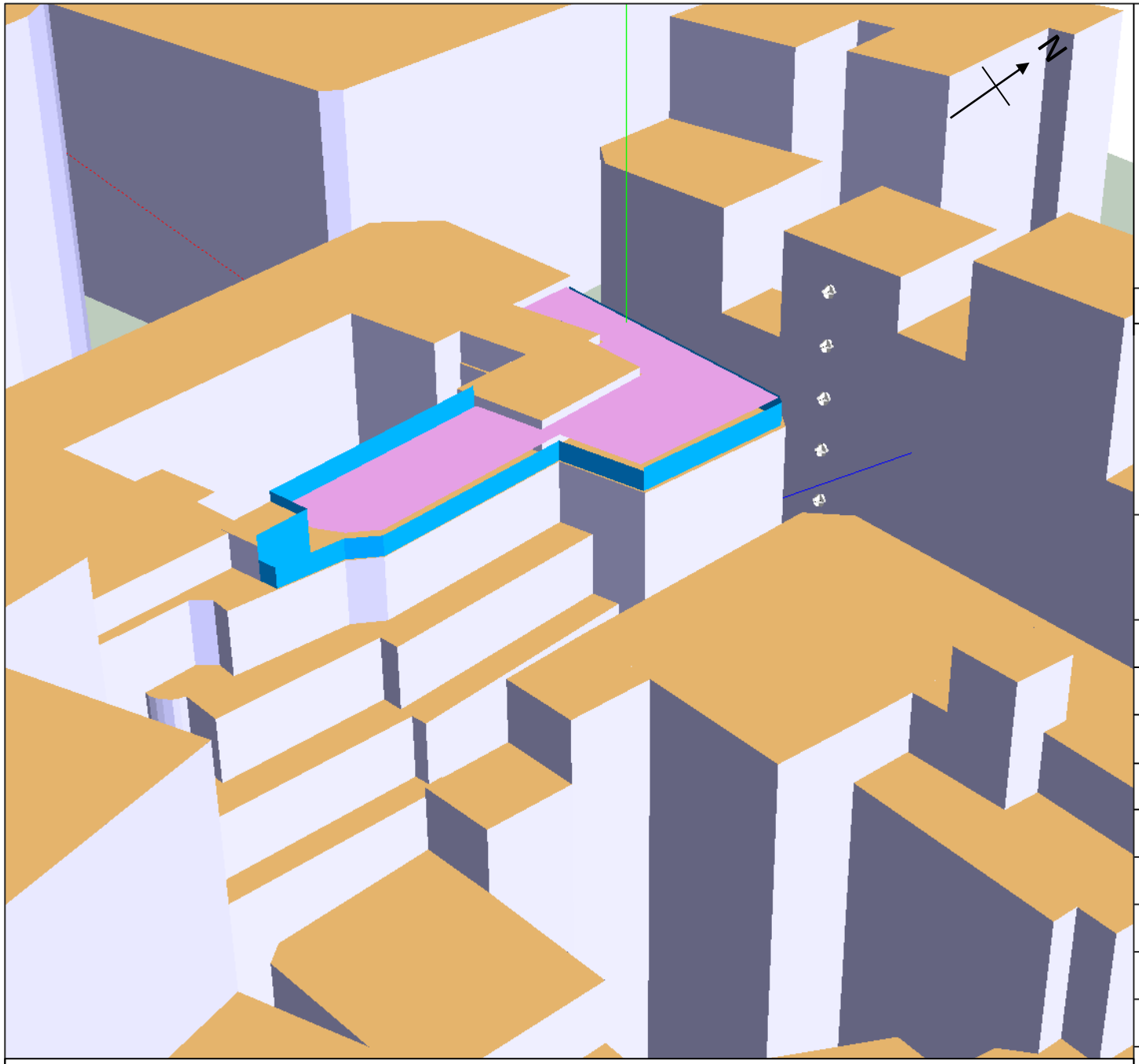
PROJECT:	Holborn Roof Bar, Kingsbourne House, High Holborn
CLIENT:	Rooftop and Friends Limited
TITLE:	Noise Model (Music) – 3D View
DATE:	24/10/2024
REVISION:	0
SCALE:	Not to Scale
DRAWING NO:	1951/Figures/3/1
FIGURE NO:	3
DRAWN BY:	Rupert Burton
REVIEWED BY:	Robert Miller



REV	DATE	D	R	DESCRIPTION
0	26/07/2024	RB	RM	Issue
1	24/10/2024	RB	RM	Update

F1:Acoustics
38 Briton Hill Road, South Croydon, Surrey, CR2 0JL
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PROJECT:	Holborn Roof Bar, Kingsbourne House, High Holborn
CLIENT:	Rooftop and Friends Limited
TITLE:	Noise Model (People) – 3D View
DATE:	24/10/2024
REVISION:	0
SCALE:	Not to Scale
DRAWING NO:	1951/Figures/4/1
FIGURE NO:	4
DRAWN BY:	Rupert Burton
REVIEWED BY:	Robert Miller

Appendices

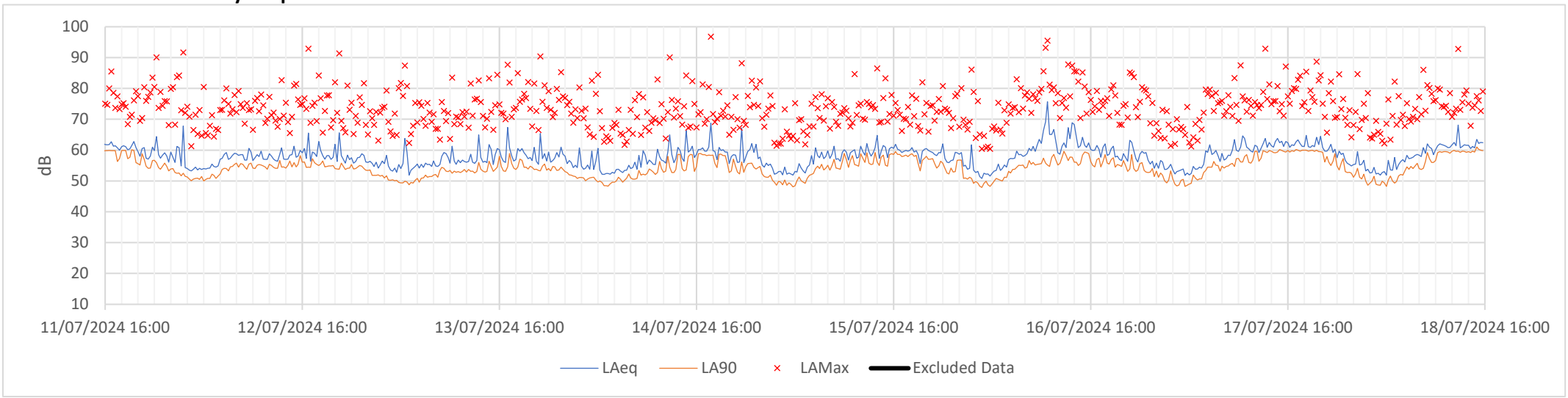
Appendix A

Detailed Noise Survey Results

Appendix A: Unattended Noise Survey Summary

Project number: 1951
Project name: Kingsbourne House, High Holborn
Survey location ID: 1
Start date & time: 11/07/2024 16:00
End date & time: 18/07/2024 16:00

Noise Level Data Summary Graph



Noise Survey Information

Instrumentation	ID	Make	Model
Sound Level Meter	F1AC-082	Rion	NL-53
Calibrator	F1AC-083	Rion	NC-75

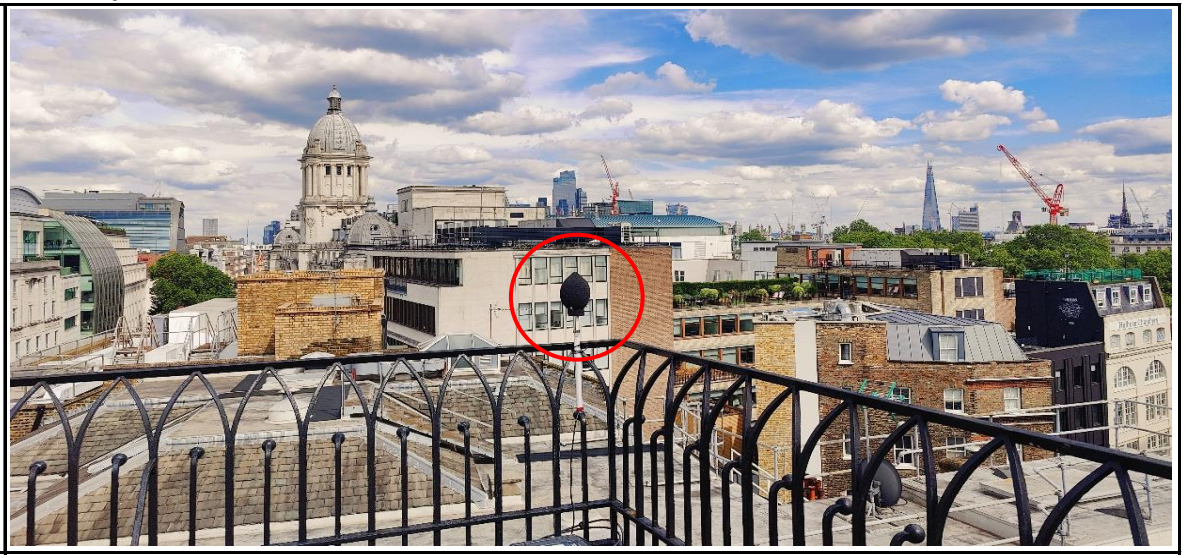
Set-up personnel:	RB & LM	
Collection personnel:	RB	
Field calibration check at start:	94.0	dB
Field calibration check at end:	93.9	dB
Microphone height:	1.5	m [*1]
Façade location:	No	[*2]
Measurement period (T):	15	minutes
Time weighting:	Fast	

[1] Height measured above local ground level.

[2] Façade location considered to be 1 m from a reflecting façade.

Photographs of Noise Survey Location

Noise survey microphone circled in red



Appendix B

Detailed Music Noise Prediction Results

Appendix B: Detailed Music Noise Prediction Results

Music Sound Level at the Roof Top Bar

Location	Octave Band Sound Level $L_{Zeq,15min}$, dB							
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Northern Section	102.1	89.9	73.8	71.1	69.6	68.6	66.2	64.6
Southern Section	104.2	90.1	80.6	75.0	71.0	67.6	67.7	67.0

Predicted Music Noise Level at the Nearest Noise Sensitive Premises

Location	Source	Octave Band Sound Level $L_{Zeq,15min}$, dB							
		63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
10 Gate Street - Floor 6	Northern Section	68.5	64.4	51.3	46.4	41.9	37.7	35.7	30.1
	Southern Section	73.5	55.9	56.0	50.5	46.8	43.9	41.9	40.3
	Both Sections	74.7	65.0	57.3	51.9	48.0	44.8	42.8	40.7
115 High Holborn - Floor 6	Northern Section	74.0	58.1	56.4	51.3	46.1	39.1	36.2	29.1
	Southern Section	70.8	64.6	48.4	38.0	29.7	31.6	28.6	24.1
	Both Sections	75.7	65.4	57.0	51.5	46.2	39.8	36.9	30.3

10 Gate Street - Floor 6

Parameter	Octave Band							
	63Hz, dB	125Hz, dB	250Hz, dB	500Hz, dB	1kHz, dB	2kHz, dB	4kHz, dB	8kHz, dB
Predicted MNL ($L_{Zeq,15min}$)	74.7	65.0	57.3	51.9	48.0	44.8	42.8	40.7
Partially open window (R)	13	13	13	13	13	13	13	13
Internal MNL ($L_{Zeq,15min}$)	61.7	52.0	44.3	38.9	35.0	31.8	29.8	27.7
NR35 Curve	63.1	52.4	44.5	38.9	35.0	32.0	29.8	28.0
Achieves Criteria?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

115 High Holborn - Floor 6

Parameter	Octave Band							
	63Hz, dB	125Hz, dB	250Hz, dB	500Hz, dB	1kHz, dB	2kHz, dB	4kHz, dB	8kHz, dB
Predicted MNL ($L_{Zeq,15min}$)	75.7	65.4	57.0	51.5	46.2	39.8	36.9	30.3
Partially open window (R)	13	13	13	13	13	13	13	13
Internal MNL ($L_{Zeq,15min}$)	62.7	52.4	44.0	38.5	33.2	26.8	23.9	17.3
NR35 Curve	63.1	52.4	44.5	38.9	35.0	32.0	29.8	28.0
Achieves Criteria?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix C

Detailed Customer Noise Prediction Results

Appendix C: Detailed Customer Noise Prediction Results

Noise Sensitive Receptor	Floor	Broadband Sound Level $L_{Aeq,T}$, dB	Octave Band Sound Level $L_{Zeq,T}$, dB						
			125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
10 Gate Street	Ground	31.8	17.3	26.6	31.2	28.2	20.1	11.4	-2.5
10 Gate Street	Floor 1	32.5	19.4	28.8	32.2	28.6	20.3	11.7	-2.1
10 Gate Street	Floor 2	34.7	22.6	32.3	35.1	29.9	21.0	12.2	-1.5
10 Gate Street	Floor 3	43.7	29.3	40.1	43.8	39.5	30.1	20.8	7.0
10 Gate Street	Floor 4	45.0	30.3	40.8	45.0	41.1	32.0	22.8	9.0
10 Gate Street	Floor 5	46.8	31.6	42.4	46.9	42.7	33.9	25.5	12.7
10 Gate Street	Floor 6	48.2	32.6	43.4	48.2	44.2	35.6	27.4	15.0
115 High Holborn	Ground	38.0	27.1	35.4	38.6	33.2	23.5	14.3	1.5
115 High Holborn	Floor 1	39.3	28.0	36.8	40.0	34.4	24.5	15.2	2.5
115 High Holborn	Floor 2	40.6	29.2	38.0	41.2	35.6	25.7	16.3	3.6
115 High Holborn	Floor 3	41.5	30.3	39.3	42.1	36.6	26.5	17.1	4.8
115 High Holborn	Floor 4	43.3	31.7	40.8	43.8	38.4	28.5	19.1	6.8
115 High Holborn	Floor 5	45.2	33.0	42.4	45.7	40.5	31.0	21.5	9.1
115 High Holborn	Floor 6	47.5	34.2	44.0	47.8	43.0	33.9	24.9	12.8