Holborn Links – Project 1

Noise Planning Assessment

July 2022

Waterman Infrastructure & Environment Limited
2nd Floor , South Central, 11 Peter Street, Manchester, M2 5QR
www.watermangroup.com

Client Name:	Tristan Capital Partners
Document Reference:	WIE18421-100-R-3.1.3_Planning-Assessment-Noise
Project Number:	WIE18421

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
001	July 2022	Matthew Podesta Senior Consultant	Mark Maclagan Technical Director	Mark Maclagan Technical Director

Comments

Comments

Disclaimer

This report has been prepared by Waterman Infrastructure & Environment Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

Contents

Figures

Tables

Appendices

Contents

1. Introduction

Waterman Infrastructure & Environment Ltd (hereafter referred to as 'Waterman IE') was appointed by Tristan Capital Partners (hereafter referred to as the 'Applicant') to undertake a noise planning assessment for the proposed internal refurbishment works at Vernon & Sicilian House (London WC1A 2QR) and 21 Southampton Row (London WC1B 5HA) – collectively referred to as Project 1 of the proposed Holborn Links Estate (hereafter referred to as the 'Site'). The Development falls within the administrative boundary of the London Borough of Camden (LBC).

This report establishes baseline noise levels at and in the vicinity of the Site based on noise survey data gathered during noise surveys conducted by Waterman IE in July 2016; these noise data are then validated via comparison with national noise mapping in the area. The nearest potentially sensitive receptors to the site have been identified and established baseline noise levels have been used to set noise limiting criteria for any external building services plant proposed as part of the development, when measured at the nearest receptor location.

A glossary of the acoustic terminology used within this report is presented as **Appendix A**.

1.1 Site Description and Proposed Development

The Site lies within an urban area nearby Holborn Station, the surrounding land uses are predominantly commercial (office, retail, restaurants and cafes), with some residential dwellings in the nearby vicinity. The Site is bound by Sicilian Avenue, Southampton Row and Vernon Place; as such, the predominant noise source at the Site is road traffic noise from the surrounding transport network.

The current development proposals are to refurbish the internal areas of the Site to provide new office and retail accommodation.

Figure 1-1: Layout of Holborn Links Projects 1 – 7

2. Assessment Criteria & Guidance

2.1 National and Local Planning Policy

In preparation of this assessment regard has been given to National Planning Policy Framework (NPPF)[1], Noise Policy Statement for England[2], Noise Planning Practice Guidance[3] and local noise-related policies outlined in the Camden Local Plan 2018[4].

With regard to acoustic design and noise control, the NPPF provides a set of overarching aims, broadly reflecting those already contained in the Noise Policy Statement for England (NPSE). They are directed towards the avoidance of significant adverse impacts and reduction of other adverse impacts on health and quality of life; set within the context of the Government's policy on sustainable development. A key element of the NPPF is 'the agent of change principle' set out in Paragraph 187 which states:

"Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

In terms of local planning policy, Policy A4 of the LBC's Local Plan outlines their approach to new developments that have to potential to impact or be impacted by the local noise environment. The Policy reflects the aims of the NPPF and provides further guidance in relation to appropriate noise assessment criteria via reference to LBC supplementary planning guidance documentation.

2.2 Operational Noise Impact Assessment Criteria

2.2.1 External Building Services Noise Emissions to Atmosphere

The significance of building services noise impacts depends upon a number of factors including but not limited to, the absolute noise level, the nature of the noise, the time and duration at which the noise occurs, whether the noise is temporary, intermittent or permanent, whether the impact is as a result of a new source, or whether it is a change to an existing source and/or the sensitivity of the receptor.

The primary source of guidance in relation to noise which is commercial in nature, such as fixed building services plant, is provided in BS 4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound'*. BS 4142 provides an objective method for rating the likelihood of compliance from industrial and commercial operations and also provides a means of determining noise levels from fixed building services plant installations and prevailing background noise levels on, and around, proposed developments. The criteria for the assessment of complaints as taken from BS 4142 are presented in Table 2-1.

Table 2-1: Likelihood of Complaints (BS 4142).

Noise Level Difference dB(A)	Likelihood of Complaints
>10 dB	Typically, the greater this difference, the greater the magnitude of the impact
10 dB	A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
5 dB	A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context
<5 dB	The lower the rating level is relative to the measured background sound

[1] Ministry of housing, Communities and Local Government. (February 2019) National Planning Policy Framework. HMSO.
[2] Defra. (2010) *Noise Policy Statement for England.*· Crown copyright.
[3] https://www.gov.uk/guidance/noise--2 (Accessed 1st July 2022) Note in process of being updated to reflect revised NPPF.
[4] https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf/ce6e992a-91f9-3a60-720c-70290fab78a6

Noise Level Difference dB(A)	Likelihood of Complaints
	level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

The standard sets out a methodology whereby the likelihood of complaints about an industrial noise source can be assessed. The measured or predicted noise level from the source in question, the 'specific noise' level, immediately outside the dwellings is compared with the 'background noise' level. Where the noise contains a "*distinguishable discrete continuous note (whine, hiss, screech, hum, etc.)*" or "*if there are distinct impulses in the noise (bangs, clinks, clatters or thumps)",* or *"if the noise is sufficiently irregular as to attract attention*", then a correction of is added based on the assessors' judgment of the potential effects these subjective characteristics could have on the extent of community annoyance due to the source. The corrected

level is the referred to as the 'rating level' in dB $L_{Ar,Tr}$. The likelihood of noise provoking complaints is assessed by subtracting the background noise level from the rating noise level.

Requirements of London Borough of Camden

LBC provides guidance in relation to the potential noise impacts of new items of fixed building services plant via their Supplementary Planning Guidance Document – Amenity (SPG-A). Chapter 6 of the document – entitled '*Noise and Vibration*' – outlines the LBC's approach to planning noise assessments for both noise sensitive and noise generating developments.

The SPG-A recommends the use of BS 4142 (summarised above) as the basis of any assessment relating to items of new fixed external building services plant.

3. Baseline Environmental Conditions

3.1 Nearest Noise Sensitive Receptors

Following a review of the site and surrounds, the closest existing sensitive receptors that have the potential to be adversely affected by the development have been identified and are presented as Table 3-1.

Table 3-1: Nearest Sensitive Receptors

Receptor	Type of Receptor	Description / Name	Approximate Distance to Site Boundary (m)
SR A	Commercial	Commercial Operations along Southampton Place	Across courtyard behind Site, approx. 10m from Site boundary
SR B	Commercial	Adjacent Commercial Operations along Southampton Row (1 Southampton Row)	Immediately adjacent Site
SR C	School	CATS London, 43 – 45 Bloomsbury Square	Immediately adjacent Site
SR D	Residential	Residential Dwellings along Barter Street	Approx. 70m south west of Site boundary

Further to the above, a greater number of sensitive receptors have been identified around the site than are presented in Table 3-1; however, given their distance relative to the site and the above receptors, it is considered that so long as noise impacts are adequately controlled at the receptors identified above, further receptors would experience no significant noise effects. Receptors further to the above have therefore not been considered within these assessments.

3.2 Environmental Noise Survey – July 2016

A baseline environmental noise survey was previously conducted by Waterman at and within the vicinity of Southampton Row from Tuesday 12th July until Wednesday 13th July 2016, to establish the prevailing ambient noise levels. To allow continuous noise monitoring at secure locations, an environmental sound level meter was installed on a balcony at 5th floor level of 21 Southampton Row overlooking Southampton Row. In addition to this an environmental noise logger was installed at the rear of the building at ground floor level and is considered representative of the background noise level at the rear of buildings on Southampton Place.

Supplementary short-term attended noise monitoring was conducted within the alleyway that connects Southampton place to the courtyard to the rear of the Site.

Table 3-2 presents the results of the baseline noise survey with monitoring locations described above. The daytime period is taken as 07:00 – 19:00, evening period as 19:00 – 23:00 and night-time period as 23:00 – 07:00.

Table 3-2: Summary of Baseline Survey Results

ID	Description	Period	L_{Aeq}[1]	L_{AFmax}[2]	L_{A10}[3]	L_{A90}[3]
LT1	21SH 5th Floor Balcony	Day	70	87	70	64
		Eve	66	82	69	60
		Night	65	82	68	58

ID	Description	Period	L_{Aeq}[1]	L_{AFmax}[2]	L_{A10}[3]	L_{A90}[3]
LT2	Rear of 21SH Ground Floor	Day	56	79	56	53
		Eve	54	77	54	51
		Night	51	69	52	49
ST1	Alley Way (Under croft South of 21SH)	Day	70	86	71	64

Note: [1] Logarithmic average. [2] 90th Percentile. [3] Arithmetic average.

The weather conditions during the survey period were monitored remotely, weather station ID IGREATER13 at Bloomsbury. Wind speeds throughout out the survey period were less than 5 m/s. During the afternoon period of Tuesday 12th July 2016 some light rain was recorded with a rain event during the evening and night-time period. Although the rain did not appear to have affected the measured noise levels, these data sets when rain was presents were removed from the subsequent data analysis.

The noise climate at all locations was dominated by road traffic noise although at the rear of the building the building structure itself affords attenuation against road traffic noise. At the rear of the building it is considered that there is also some contribution to the noise climate from existing building services plant although the selected noise monitoring location was shielded from plant within the rear courtyard area of 21 Southampton Row.

Full details of the baseline survey are available on request.

3.3 Survey Data Validation

Given the existing high traffic flows on the surrounding road network, it is considered that the noise levels around the Site would have been unlikely to have changed since the surveys in 2016.

To check the validity of the noise survey data, a noise propagation model of the Site and its surrounds was built using the CadnaA software package and calibrated to the measurements above. The calibrated model was then compared to the DEFRA strategic noise mapping for England and Wales[5]. The model calibrated to the 2016 data shows good correlation with the DEFRA noise maps and, as such, is considered suitable for use within this assessment.

A comparison of the 2016 data plots and DEFRA noise mapping is presented within Appendix B.

[5] Accessed via: http://www.extrium.co.uk/noiseviewer

4. Assessment

4.1 Operational Noise Impacts

4.1.1 External Building Services Noise Emissions to Atmosphere

As part of the operation of the development a mechanical ventilation system has been proposed. Although the specific items of external building services plant are yet to be finalised, it is currently understood that all new building services plant would be located at rooftop level of the existing buildings and would consist of air handling units, condenser units and extract fans.

To ensure that noise emissions from fixed mechanical plant are adequately controlled, noise level limits have been recommended based on the existing noise levels around the Site (dB L_{A90}, see Table 3-2) and the guidance provided in BS 4142:2014+A1:2019.

In the absence of specific industrial noise limiting criteria, it is recommended that noise from fixed building services plant is designed to a level 5dB below the existing background noise level at a position 1m from the façade of the nearest SRs (i.e. Plant $L_{Ar,Tr}$ = $L_{A90,T}$ -5dB) with a minimum value of 30dB $L_{Ar,Tr}$ where prevailing background noise level is less than 40dB L_{A90}. A noise limit of this magnitude would adequately safeguard residential amenity when account is taken of the prevailing ambient noise levels.

Table 4-1 presents the recommended plant noise limits.

Table 4-1: Recommended Plant Noise Limits

Measurement Location	Period	Representative (Modal Average) Background Noise Level dB L_{A90}	Plant Noise Limit dB $L_{Ar,Tr}$
All Sensitive Receptors (night-time period only applicable to residential receptors)	Day	52	≤47
	Night	49	≤44

Notes: [1]LT1 background noise levels used for all SRs.

Plant specification is sufficiently flexible as to ensure that suitably quiet, non-tonal plant can be procured and / or mitigation options such as screening (e.g. acoustic louvres) can be installed as necessary to ensure that guideline noise criteria set out in Table 4-1 are met. Measures to control noise from fixed mechanical plant to within the above criteria should be inherent in the detailed design of the development and, as such, potential effects associated with fixed mechanical plant would be insignificant.

A full assessment of the potential noise impacts of the proposed building services plant should be carried out by a suitably qualified acoustician once selections have been finalised.

5. Conclusions & Recommendations

This noise and vibration assessment has been prepared by Waterman IE on behalf of the Applicant as part of their application to obtain planning permission for the proposed refurbishment works at Vernon & Sicilian House (London WC1A 2QR) and 21 Southampton Row (London WC1B 5HA) – collectively referred to as Project 1 of the proposed Holborn Links Estate.

Baseline noise levels were established at and in the vicinity of the Site via noise survey data gathered during noise surveys conducted by Waterman IE in July 2016; these noise data have been validated via comparison with national noise mapping in the area.

To minimise the potential noise impacts of the proposed development, noise limits for any new items of fixed external building services plant have been set at the nearest potentially sensitive receptors on the basis of the modal background noise levels established during the noise survey. The limits were set at 5 dB below the prevailing background noise level; this threshold has been based on the guidance provided in BS 4142:2014+A1:2019 (summary provided as Section 2.2) and is therefore in line with the noise assessment guidelines within Chapter 6 of the London Borough of Camden's Supplementary Planning Guidance Document – Amenity.

Overall, it is considered that with suitable noise mitigation measures in place to control the noise emissions of the proposed fixed mechanical plant items, the noise impacts of the development proposals would be negligible. A full assessment of the potential noise impacts of the proposed building services plant should be carried out by a suitably qualified acoustician once selections have been finalised.

APPENDICES

A. Glossary of Acoustic Terms

Ambient sound	The totally encompassing sound in a given situation at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
A-weighting	A frequency weighting applied to measured or predicted sounds levels in order to compensate for the non-linearity of human hearing.
Background noise	Background noise is the term used to describe the noise measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L_{90} noise level (see below).
Broadband	Containing the full range of frequencies.
Decibel [dB]	The level of noise is measured objectively using a Sound Level Meter. This instrument has been specifically developed to mimic the operation of the human ear. The human ear responds to minute pressure variations in the air. These pressure variations can be likened to the ripples on the surface of water but of course cannot be seen. The pressure variations in the air cause the eardrum to vibrate and this is heard as sound in the brain. The stronger the pressure variations, the louder the sound that is heard. The range of pressure variations associated with everyday living may span over a range of a million to one. On the top range may be the sound of a jet engine and on the bottom of the range may be the sound of a pin dropping. Instead of expressing pressure in units ranging from a million to one, it is found convenient to condense this range to a scale 0 to 120 and give it the units of decibels. The following are examples of the decibel readings of every day sounds: Four engine jet aircraft at 100m 120 dB Riveting of steel plate at 10m 105 dB Pneumatic drill at 10m 90 dB Circular wood saw at 10m 80 dB Heavy road traffic at 10m 75 dB Telephone bell at 10m 65 dB Male speech, average at 10m 50 dB Whisper at 10m 25 dB Threshold of hearing, 1000 Hz 0 dB
dB(A): A-weighted decibels	The ear is not as effective in hearing low frequency sounds as it is hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the 'A' filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter. The sound pressure level in dB(A) gives a close indication of the subjective loudness of the noise.
Façade Noise Level	A noise level measured or predicted at the façade of a building, typically at a distance of 1m, containing a contribution made up of reflections from the façade itself (+3 dB).
L_{Amax} noise level	This is the maximum noise level recorded over the measurement period.
L_{Amin} noise level	This is the lowest level during the measurement period.
$L_{Aeq,T}$ noise level	This is the 'equivalent continuous A-weighted sound pressure level, in decibels' and is defined in British Standard 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, noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise.
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 quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

L_{A10} noise level	This is the noise level which is achieved for 10% of the monitoring period and is often used to describe road traffic noise.
Sound Reduction Index (R)	The sound reduction index is a single-number rating of the sound reduction through a wall or other building element. Since the sound reduction may be different at different frequencies, test measurements are subjected to a standard procedure which yields a single number that is about equal to the average sound reduction in the middle of the human hearing range.
Weighted Sound Reduction Index (R_w)	Single number rating used to describe the **laboratory** airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
C_{TR}	An adjustment to the Rw scale to take account of the lower performance against a typical spectrum of road traffic noise dominated by low frequencies.
$D_{ne,w}$	Weighted element normalised level difference.
VDV	This is the vibration dose value, a measure of vibration exposure; the fourth root of the integral, over the measurement period, of the fourth power of the frequency-weighted and time-varying acceleration.

B. Comparison of 2016 Noise Survey Data with DEFRA Strategic Noise Mapping

Figure B-1: Modelled Noise Levels Based on July 2016 Survey Data

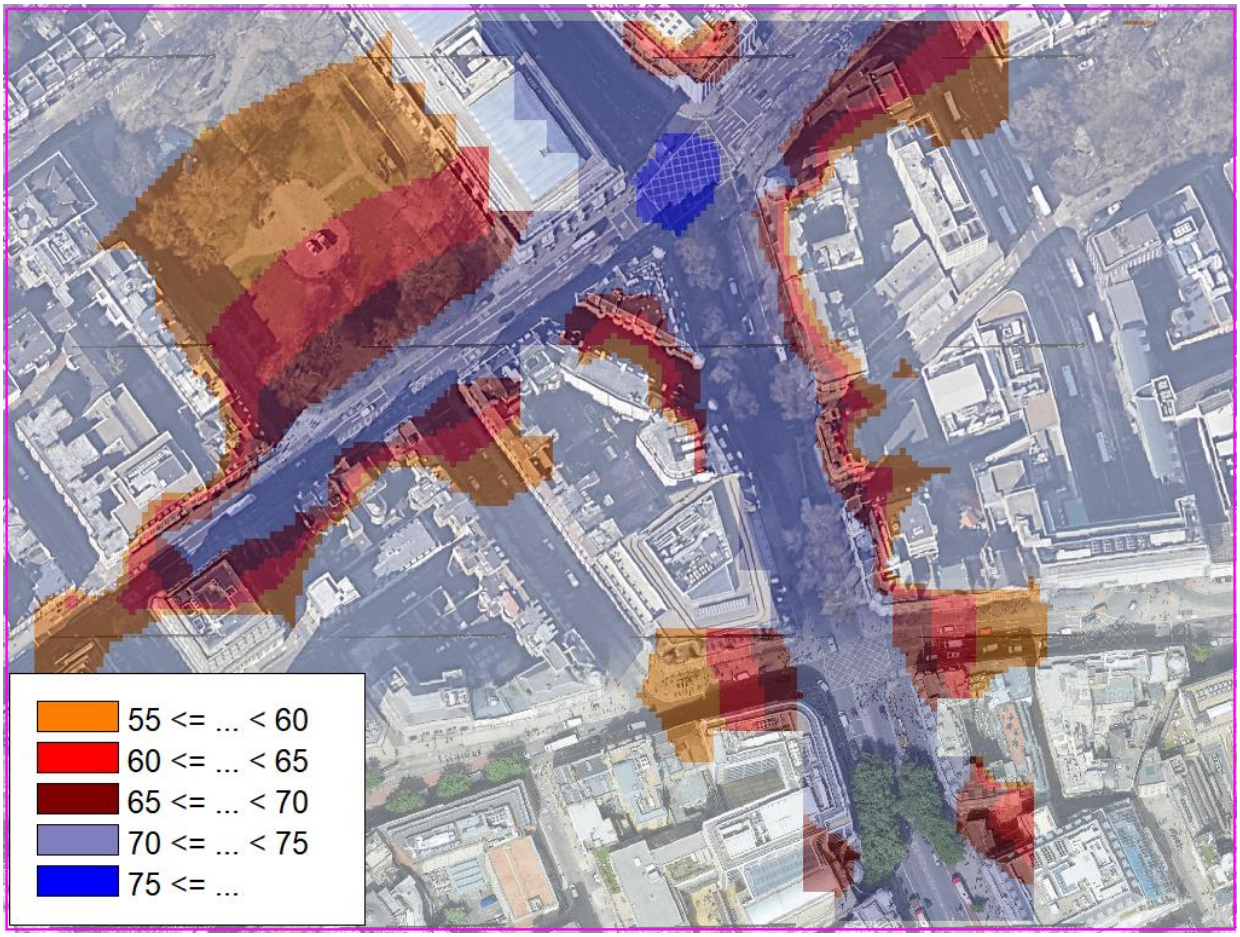
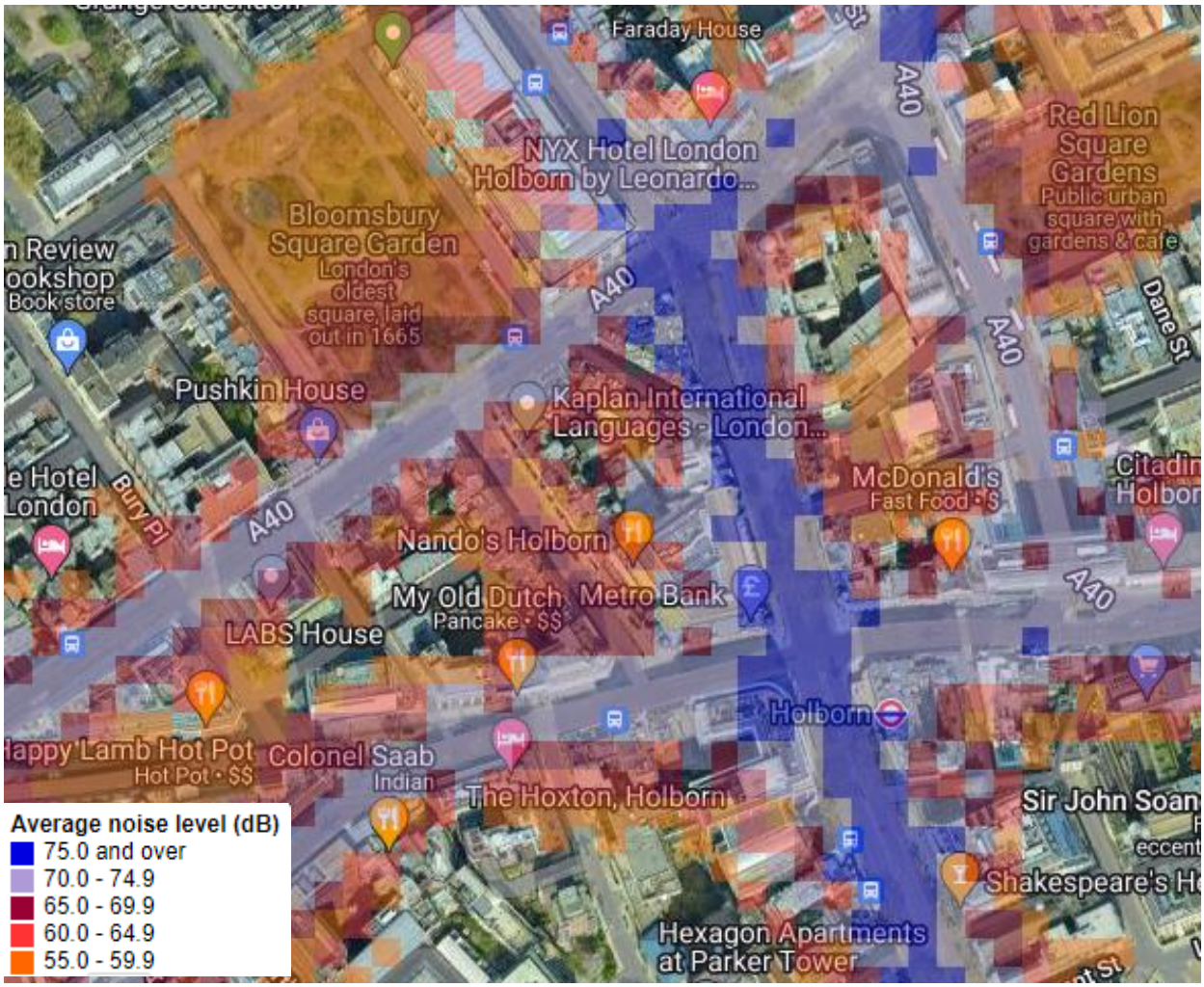


Figure B-2: DEFRA Strategic Noise Maps



UK and Ireland Office Locations