

50 Fountain Street, Manchester

Noise Impact Assessment

M&G Real Estate Ltd.

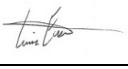
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1.0

Introduction

1.0 Introduction

This report has been prepared by Cundall in support of a planning application for the redevelopment of the existing building at 50 Fountain Street, located in central Manchester, to provide extended Cat A office accommodation.

To establish the prevailing noise climate across the existing site, a long-term unattended noise survey was undertaken from Friday 12 February to Monday 15 February 2021. Additional attended noise measurements were undertaken within the existing building on Wednesday 4 August 2021 (i.e. once all national COVID-19 restrictions had been lifted).

The findings of the noise survey have been evaluated in relation to the proposed scheme and recommendations provided for mitigation measures (e.g. glazing systems) required to achieve a comfortable internal acoustic environment whilst accounting for the desired natural mixed mode ventilation strategy.

The scope of the assessment is based on the relevant technical guidance and good practice techniques, local and national planning policies, and extensive previous experience of similar projects.

2.0

Assessment criteria

2.0 Assessment criteria

This section of the report outlines the key legislation and guidance relevant to the assessment of noise for a development of this type.

2.1 Noise Policy Statement for England

The Noise Policy Statement for England (NPSE) was published by Defra in March 2010. This NPSE sets out the long-term vision of Government noise policy:

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

The NPSE long term vision is supported by the following aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *Avoid significant adverse impacts on health and quality of life;*
- *Mitigate and minimise adverse impacts on health and quality of life; and*
- *Where possible, contribute to the improvement of health and quality of life.*

2.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was originally published in March 2012 and amended in July 2021. The NPPF is part of government reform to make the planning system less complex and more accessible, and to promote sustainable growth. It replaced existing national planning policies such as Planning Policy Guidance PPG24: Planning and Noise.

The NPPF states:

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;*
- 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;*

2.3 British council for Offices Guide to Specification 2019 (BCO 2019)

BCO 2019 contains guidance on acoustics in offices. Table 1 shows BCO 2019 recommendations for internal noise limits (split between noise intrusion from external sources and building services noise):

Type of space	Upper limit for external noise intrusion	Upper limit for building services noise
Speculative offices*	NR 38 $L_{eq,T}$ 55 dB $L_{A01,1hour}$	NR 38
Reception / Lift lobbies / Circulation	-	NR 40
Toilets	-	NR 45
Note: *For the purpose of Cat A fit out stage, the noise rating for 'speculative offices' should be achieved in the main open plan office spaces.		

Table 1 – BCO internal noise levels

The document clarifies that:

These criteria are also based on building services noise without a specific character. Where individual noise sources are impulsive or tonal, they shall be at least 5 dB lower (10 dB lower where the noise is both impulsive and tonal).

Where noise levels are likely to be significantly below these NR levels, localised noise sources e.g. extract stub ducts, duct noise breakout, risers and plantrooms, should also be at least 5 dB lower than indicated above and 10 dB lower where the noise is both localised and either tonal or intermittent."

With regards to naturally ventilated buildings, the document states:

"In the case of naturally ventilated buildings, it may be appropriate to accept higher external noise intrusion levels (than shown ... in the table guideline NR Levels) in maximum ventilation mode, provided occupants have the choice to open or close windows or ventilation openings. For example, depending on the character of the noise, a +5 dB relaxation may be acceptable during occasional periods.

2.4 BREEAM

It is expected that credits Hea 05 and Pol 05 may be targeted under BREEAM UK New Construction 2018 (BREEAM).

Both sections call for evidence to be submitted by a suitably qualified acoustician. Cundall is a member of the Association of Noise Consultants (ANC) and is registered to carry out sound insulation testing under their pre-completion testing accreditation scheme. Cundall employs acoustic consultants at various global locations, most of whom hold corporate membership of the Institute of Acoustics (IOA).

A confirmation is also required that an acoustic consultant was appointed to assist in the development of the project at an early stage in the design process. Cundall can confirm that we were appointed prior to RIBA Stage 2 and have a commission to assist the design team and contractor through the detailed design and construction phases of the development.

2.4.1 Hea 05 Acoustic performance

The following is required for acquiring the second credit (internal indoor ambient noise levels) available under Hea 05 of BREEAM:

Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233: 2014.

It should be noted that BS 8233 does not provide internal ambient noise level guidance for cellular / speculative office spaces and BCO 2019 instead provides the following commentary with regards to satisfying the BREEAM requirements:

BS 8233:2014 does not provide design ranges for cellular offices or speculative offices. If the BCO is adopted, including the guidance on provision to install electronic sound masking in certain situations, then the BREEAM requirements for indoor ambient noise levels should also be achieved.

On the basis of the above it is proposed that demonstrating compliance with the BCO internal ambient noise levels presented in Table 1 of this report should see that the requirements of the 2nd BREEAM Hea 05 credit are also satisfied.

2.4.2 Pol 05 Reduction of noise pollution

The credit available under BREEAM (2018) Pol 05 states:

Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800 m radius of the assessed site, a noise impact assessment compliant with BS 4142: 2014 is commissioned. Noise levels must be measured or determined for:

[...]

The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5 dB lower than the background noise throughout the day and night.

[...]

2.5 BS 4142:2014+A1:2019 methods for rating and assessing industrial and commercial sound

BS 4142:2014+A1:2019 (BS 4142) provides a method of rating the significance of impact when sources of industrial noise are located near residential properties. It involves comparing the rating level (the 'specific' sound level plus a range of potential feature corrections) of the sound source to the measured background sound level in order to estimate its initial impact. A formal BS 4142 assessment has not been carried out in this instance, however, the methods described have been used to inform this assessment.

The document states:

- a) Typically, the greater this difference, the greater the magnitude of the impact.*
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.*
- d) The lower the rating level is relative to the measured background sound 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 2014 version of the standard suggests that the noise source of interest will have a 'low impact' when the 'rating level' of a noise source is below than the existing background sound level. It is also important to note that the standard requires that any quantitative assessment results are considered in light of the context in which the sound occurs.

With regards to background sound levels, BS 4142 states:

In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.

BS 4142 suggests that penalties may also be applied to sounds based on a subjective assessment of their acoustic characteristics which may include tonality and impulsivity etc

2.6 Local Authority requirements

2.6.1 Plant noise emission limits

Section 3.6.1.5.1 of the Manchester City Council (MCC) 'Planning & Noise - Technical Guidance' document (December 2015) relates to noise limits for building services plant and states:

Many of the noise complaints Environmental Health receive about noise from plant, equipment and machinery specifically concern the character of the noise emitted. Any noise assessment needs to consider not only the overall level of noise emitted but also its particular characteristics. The noise assessment should be based on BS 4142: 2014 and any application for fixed plant, equipment or machinery must demonstrate that:

Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.

It can be seen that upon compliance with this guidance, the requirements for achieving the one credit under Pol 05 of BREEAM will also be met by default.

2.6.2 Entertainment noise limits

In the event that any amplified music is proposed flexible basement and ground floor commercial units, Section 3.6.1.2 of the MCC Planning & Noise Technical Guidance stated the following with respect to entertainment noise limits:

A planning application for a new entertainment venue that is structurally detached from other building uses should demonstrate that music noise from the proposal will not be 'audible' in nearby residential properties, assuming that the residential properties in question have their windows open. The criterion here is:

'Entertainment noise (L_{Aeq}) should be controlled to 10dB below the background noise level (L_{A90}) without the entertainment noise present, in each octave band at the nearest noise sensitive location'.

3.0

Environmental noise survey

3.0 Environmental noise survey

3.1 Site Context

The site is located on Fountain Street and is bounded by Fountain Street to the south east, Spring Gardens to the south west, Concert Lane to the north west and existing buildings off York Street to the north east. A site location with an approximate red line boundary is given in the Figure below.

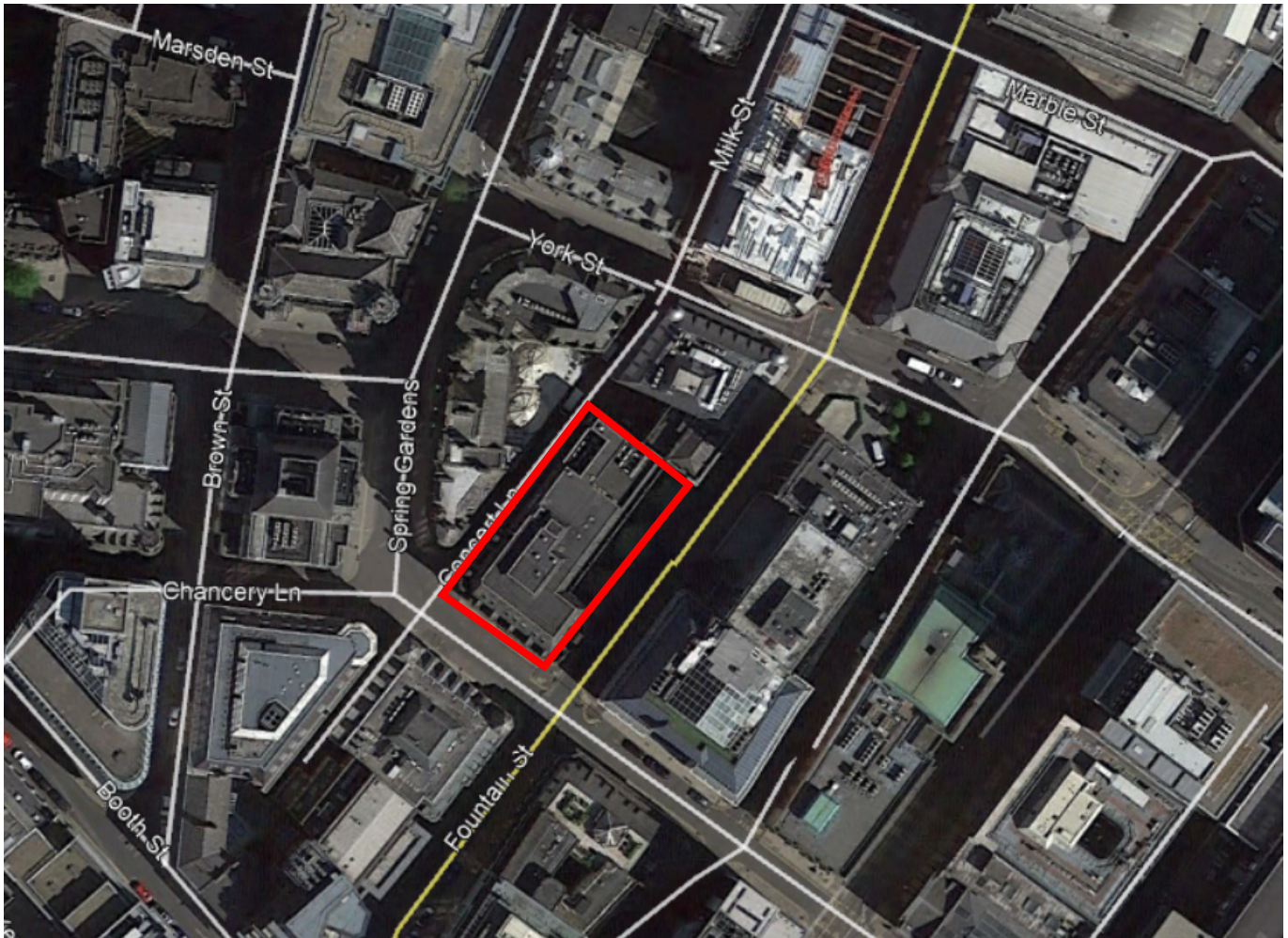


Figure 1 – Site location and approximate red line boundary (© 2021 Google)

3.2 February 2021 noise survey – external unattended measurements

3.2.1 Survey methodology

In order to assess prevailing levels of environmental noise affecting the development site, an unattended continuous noise survey was undertaken. The noise monitoring was carried out between approximately 11:00 hours on Friday 12 February to 14:30 hours Monday 15 February 2021.

The approximate measurement position (MP) is shown in Figure 2 overleaf.

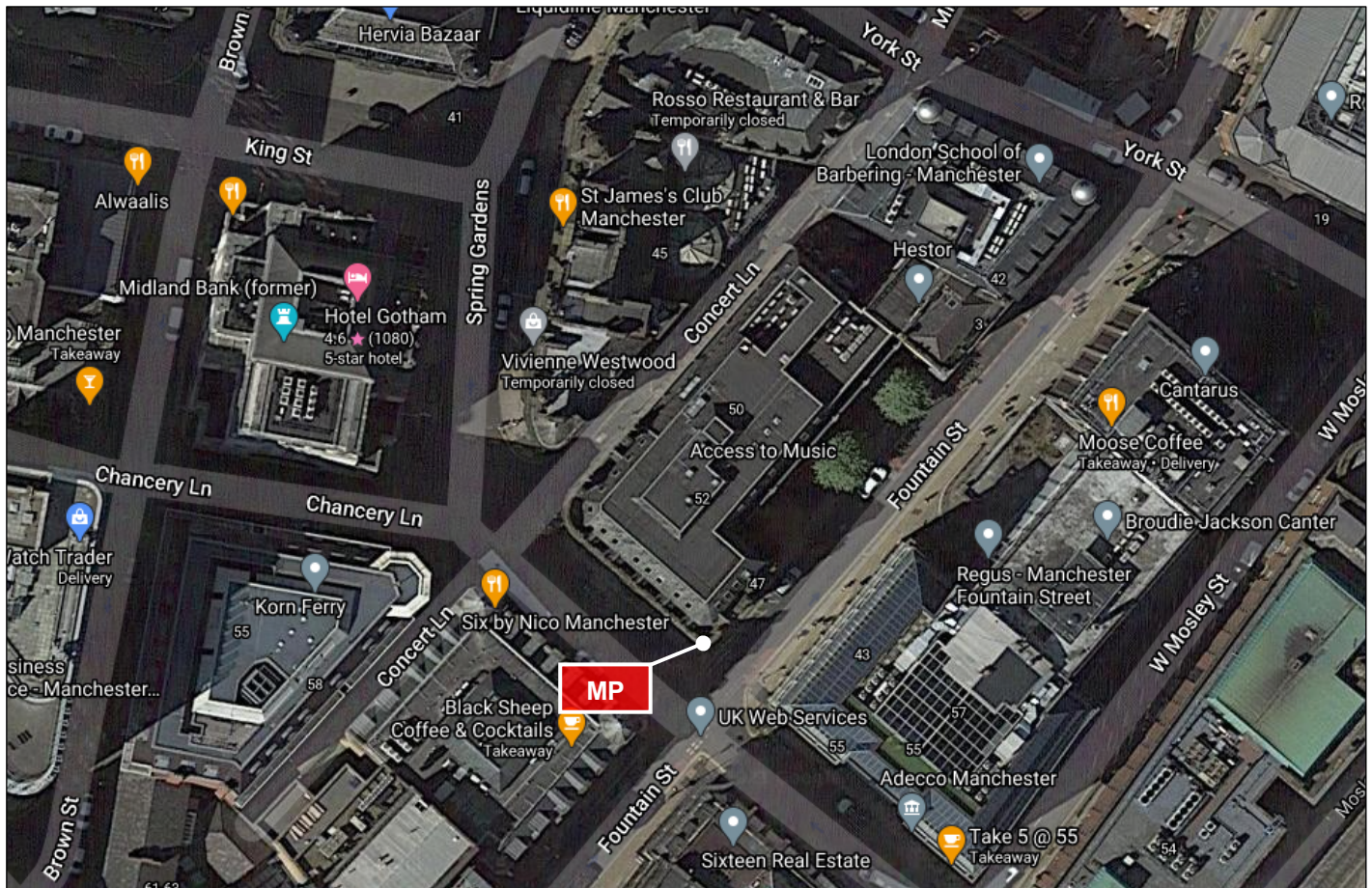


Figure 2 – Survey measurement position (google.com/maps Map data ©2021)

The measurement position was selected to overlook the primary sources of noise incident on the proposed development site; road traffic on Spring Gardens and Fountain Street. The position was located at 2nd Floor level approximately 9m above ground and approximately 1m from the façade.

When the survey was setup the weather conditions were calm and dry, with daytime temperatures on both days of setting up equipment around 1°C and wind speeds below 5 m/s. Weather data records show that conditions throughout the survey period were generally unchanged from this.

Noise measurements were made using a NTi XL2 (serial number A2A-16315-E0) precision sound level meter, in accordance with BS EN 60651:1994 and BS 7445:1993. The meter was field calibrated before and after with no significant drift witnessed. Calibration certificates for all equipment are available upon request.

Monitoring equipment was set up by competently trained Cundall staff. Subjective impressions from site were that the noise climate was generally dictated by surrounding road traffic noise.

3.2.2 Results summary

A summary of the ambient noise levels recorded is detailed within Table 2 overleaf. Values given are the logarithmically averaged L_{Aeq} , the maximum L_{AFmax} , the highest $L_{A01,1hour}$ and representative $L_{A90,15min}$ values measured. All values have been corrected for free-field conditions and rounded to the nearest integer value (as fractions of a decibel are imperceptible) and are given in dBA.

Date	Time Period	$L_{Aeq,T}$ (dB)	$L_{AFMax,T}$ (dB)	Highest $L_{A01,1hour}$ (dB)	Representative** $L_{A90,15min}$ (dB)
12 February 2021	Daytime (11:00 – 23:00 hrs)	60	95	76	55
12 - 13 February 2021	Night-time (23:00 – 07:00 hrs)	56	81	75	48
13 February 2021	Daytime (07:00 – 23:00 hrs)	59	94	76	52
13 - 14 February 2021	Night-time (23:00 – 07:00 hrs)	53	88	66	47
14 February 2021	Daytime (07:00 – 23:00 hrs)	58	94	71	52
14 - 15 February 2021	Night-time (23:00 – 07:00 hrs)	65*	105*	69	47
15 February 2021	Daytime (07:00 – 14:30 hrs)	61	87	71	55

* Elevated L_{Aeq} and L_{AFmax} levels observed to be attributable to intermittent, non-representative emergency sirens

** Existing background noise value based on modal $L_{A90,15min}$ value during noise survey

Table 2 – Noise level results summary

3.3 August 2021 noise survey - internal attended noise measurements

3.3.1 Survey methodology

Further attended noise measurements were undertaken on site on Wednesday 4 August 2021. Measurements were undertaken internally in order to assess the following:

- Suitability of existing glazing to be retained for control of noise intrusion; and
- Suitability of partially open windows as a ventilation solution (with windows slid up approximately 0.15m)

Unlike the February 2021 noise survey, these measurements were undertaken after the lifting of the majority of COVID-19 related lockdown restrictions. As such, the internal measurements are considered fully representative of post-COVID-19 noise levels.

The measurements were undertaken within the same room for which the window was used during the unattended external noise survey described above.

3.3.2 Results summary

A summary of the ambient noise levels recorded is detailed in the table below. Measurements were undertaken in each scenario for a period of 30 minutes between the hours of approximately 14:45 and 15:45. Values given are the $L_{Aeq,30min}$ and Noise Rating (NR dB) curve. All values have been rounded to the nearest integer value (as fractions of a decibel are imperceptible).

Description	L _{Aeq,T} (dB)	Noise Rating NR (dB)
Windows Closed	38	32
Windows slightly open (slid up approximately 0.15m)	50	45

Table 3 - August 2021 internal measurement results

4.0

Noise impact assessment

4.0 Noise impact assessment

4.1 Environmental noise model

In order to determine road traffic noise propagation across the proposed development site, a model has been produced using SoundPLAN 8.2 acoustic modelling software. The software is capable of accurately determining sound propagation, by taking into account variations in topography, barrier attenuation provided by existing landscaping and buildings, and distance attenuation.

Road traffic noise sources within the 3D model have been calibrated based upon the worst case daytime L_{Aeq} results obtained at each measurement position.

The resultant façade noise maps of the predicted daytime noise levels are presented below. Levels shown in these figures and referred to in the following sub-sections are 'free-field' $L_{Aeq,T}$ values at the façade i.e. they do not include additional contribution from acoustic reflections from the proposed building façade.

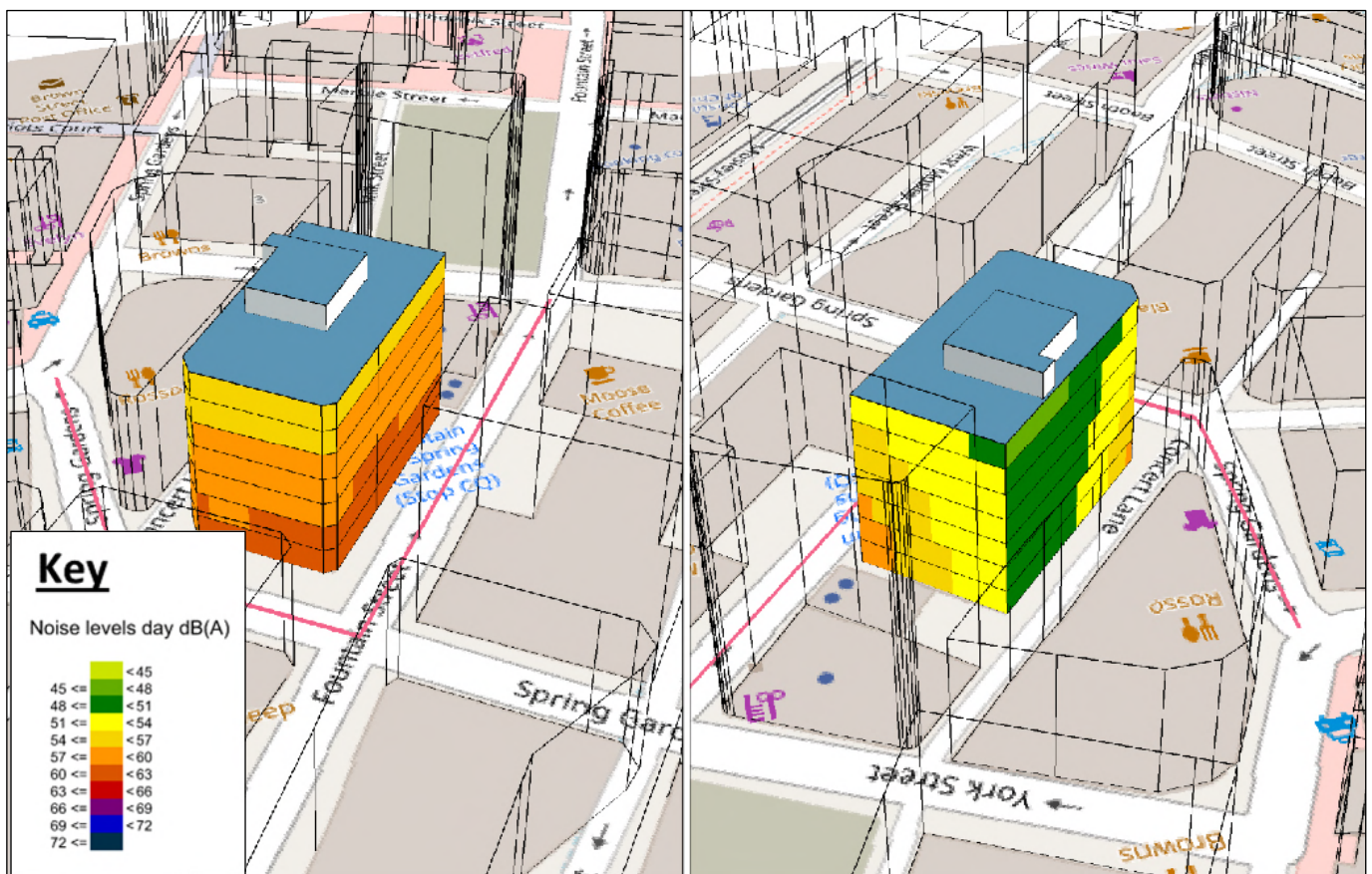


Figure 3 - Facade noise map

4.2 Glazing systems requirements for offices

The proposed ventilation strategy for the building is a mixed mode ventilation solution, hence both mechanical ventilation and openable windows will be utilised.

The specification of glazing is considered to be the primary factor in determining the internal ambient noise level within noise-sensitive areas due to noise ingress from outside.

Based on meeting the requirements of BCO, the minimum façade sound reduction requirements identified for façades across the development are presented below, with calculation procedures for determining the glazing attenuation as follows:

$$R_w + C_{tr} = \text{External Façade Level dBA} - \text{Internal Design Target dBA}$$

Table 4 presents a summary of the highest daytime noise levels predicted at offices across the development as calculated by the noise model, as well as worst case daytime $L_{A01,1\text{hour}}$ measured during the noise survey. Modelling of $L_{A01,1\text{hour}}$ noise propagation / façade impacts has not been undertaken (as performing distance corrections on statistical noise indices is an inaccurate approach); however, the $L_{A01,1\text{hour}}$ values measured are considered to be representative of worst case values across the proposed development. Levels are presented with a comparison against the proposed BCO internal ambient noise level criteria.

Space type	Worst case daytime External façade noise level	BCO Internal noise criteria	Required sound insulation, dB $R_w + C_{tr}$
Offices	$L_{Aeq,T}$ 61 dB	$\approx L_{Aeq,T}$ 44 dB (NR 38)	17
	$L_{A01,1\text{hour}}$ 76 dB	$L_{A01,1\text{hour}}$ 55 dB	21

Table 4 – Summary of glazing conditions

Based on the above, the following table presents a glazing configuration capable of achieving the minimum required facade sound reduction index values detailed above:

Minimum required glazing sound reduction index - $R_w + C_{tr}$ (dB)	Example suitable glazing specification
≥ 21	6 mm pane 6 to 20 mm airgap 4 mm pane Rated at $R_w + C_{tr}$ 28 dB*
*Based on values given in 'BS EN 12354-3:2000 Building acoustics. Estimation of acoustic performance in buildings from the performance of elements. Airborne sound insulation against outdoor sound'	

Table 5 – Minimum glazing sound insulation performance requirements

It should be noted that the above is a preliminary assessment only, applying to office spaces across the developments i.e. excluding retail unit requirements. It is intended as an approximate guideline as supposed to a detailed assessment, which will be undertaken as further investigative works are made and more detailed calculations undertaken.

To control noise break-in from outside, it is considered good practice for the external wall construction to provide a sound reduction at least 10 dB above that of the glazing values given above.

All glazing should be well sealed when closed. It is imperative that frames / non-glazed curtain walling components do not compromise the performance of the glazing. No gaps should be visible around the frame from the exterior.

4.3 Opening windows assessment

As stated in Section 2.3, BCO guidance states that it may be appropriate to accept a relaxation of noise intrusion levels of +5 dB when windows are open to provide fresh air as part of a mixed-mode ventilation solution. It is widely accepted that open windows can provide attenuation from outside noise sources of approximately 10 dB. As such, the table below indicates the suggested maximum permissible noise levels at building façades when considering this relaxation in criteria.

Description	Noise levels
-------------	--------------

BCO internal noise criterion	$L_{Aeq,T}$ 44 dB (NR 38)
Natural vented relaxation	+ 5 dB
Open window attenuation	+ 10 dB
Maximum suggested external façade noise level to maintain BCO compliance with opening windows	$L_{Aeq,T}$ 59 dB

Table 6 - Maximum facade noise levels for naturally ventilated solution

Using the limit indicated above, the existing façade noise maps have been split into categories above and below this 59 dB $L_{Aeq,T}$ external façade limit, hence indicating where open windows would result in exceedance or compliance with the suggested BCO internal noise criterion.

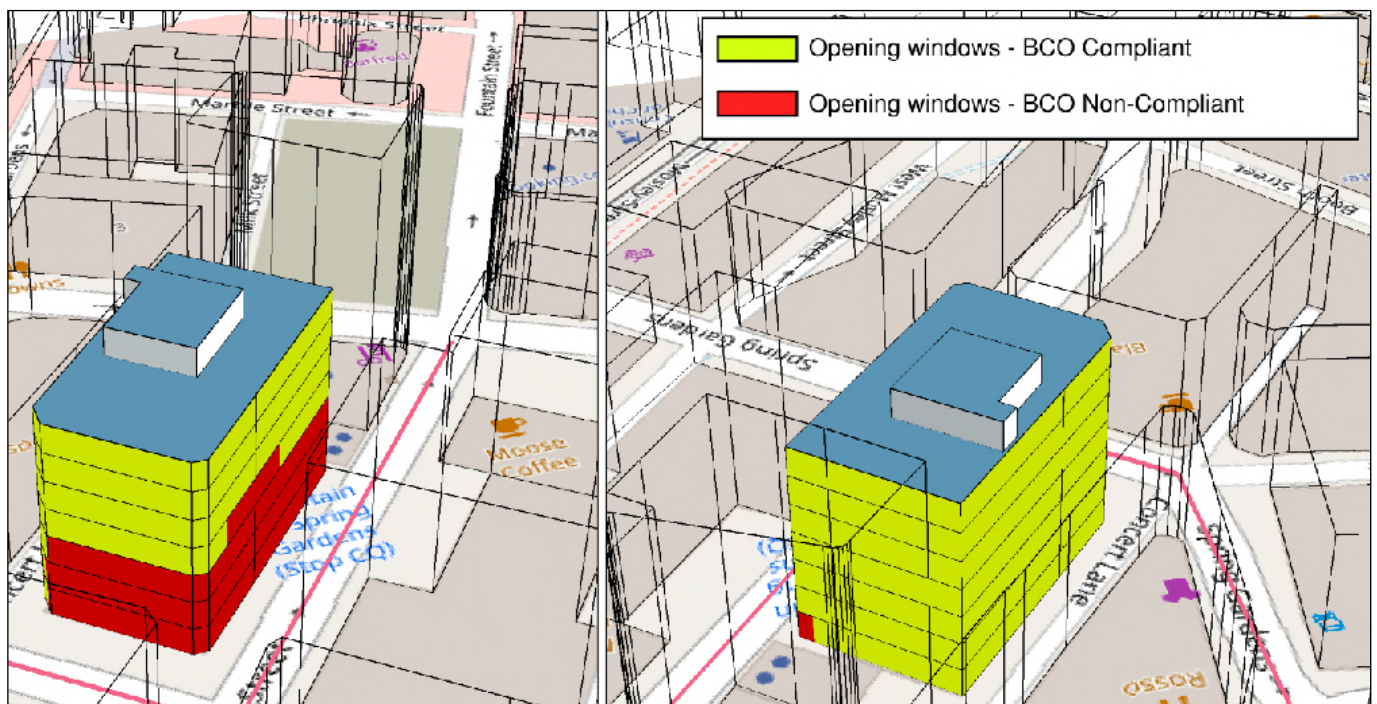


Figure 4 - BCO natural ventilation compliance study

The highest incident noise levels on the façade have been calculated to be 62 dB L_{Aeq} . This therefore means that for the worst-case non-complaint exceedances at 'red' BCO non-compliant facades would be +3 dB L_{Aeq} . This magnitude of exceedance would typically be noticeable by occupants but may not be considered overly significant. However, internal noise levels would not be BCO / BREEAM Hea 05 compliant in all areas where windows are opened, and this item should be therefore considered by the design team in further detail.

4.4 August 2021 assessment

As detailed in Section 3.3, additional noise measurements were undertaken on site on Wednesday 4 August 2021. Measurements were undertaken internally in order to assess the following;

- Suitability of existing glazing to be retained for control of noise intrusion
- Suitability of openable windows as a ventilation solution (with windows slid up approximately 0.15m)

The results measured have concluded the following;

- With windows closed, internal levels were measured to be NR 32 dB. This indicates a comfortable compliance with the BCO internal noise criterion of NR 38 dB in the measurements room location.

- The noise modelling from the previous survey indicates that worst case levels on the development are up to 2 dB greater than those measured at the second-floor survey location. Since the distance attenuation from noise sources remains unchanged between the surveys, it can be assumed worst case levels will be 2 dB greater than those measured at the second floor location
- It is therefore estimated that with the existing glazing, worst case internal noise levels would be NR 34 dB, which is still comfortably compliant with BCO internal noise criterion.
- Measurements with partially open windows to provide necessary ventilation rates (slid open 0.15m – see pictures from site below) found that internal noise levels were NR 45 dB. This is a 2 dB exceedance of the recommended BCO guidance when windows are open (i.e. NR 38+5 criterion) to provide fresh air as part of a mixed-mode ventilation solution.
- Similarly to the above, worst case levels are likely to be 2 dB greater than those measured in this location, and as such it assumed worst case levels with open windows will be NR 47 dB, which is a 4 dB exceedance of the recommended BCO guidance.
- This magnitude of exceedance would typically be noticeable by occupants but may not be considered overly significant. However, internal noise levels would not be BCO / BREEAM Hea 05 compliant in all areas where windows are opened and this item should be therefore considered by the design team in further detail.
- It is also noted that measurements were undertaken immediately adjacent to open windows. A large portion of an open plan office floor plate is likely to have large areas which would be BCO compliant, even when windows are open at facades most exposed to road traffic noise.

Below are photographs of the extent of the opening of windows during the noise survey.



Figure 5 - Site Photo 1



Figure 6 - Site Photo 2

5.0

External plant noise limits

5.0 External plant noise limits

Manchester City Council stipulate the following criteria with respect to noise emissions from new building services plant installations:

“Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.”

The nearest existing noise-sensitive residential building is understood to be apartments at Hotel Gotham to the west of the development site.

Table 7 below summarises the existing background noise levels measured at the site along with limiting noise levels for all new items of services plant, when measured at 1 m from the nearest noise sensitive receptors.

Time period	Representative background noise level* dB L_{A90}	Plant noise rating level not to be exceeded at 1 m from nearest noise-sensitive receptor dB $L_{A,r,T}$
Daytime (07:00 – 23:00 hrs)	55	50
Night-time (23:00 – 07:00 hrs)	51	46
* Existing background noise value based on modal measured $L_{A90,15min}$ value during noise survey		

Table 7 – Limiting rating noise levels for building services plant

The above limit is applicable to the cumulative noise level from all new items of plant when running under normal operation. Where applicable, acoustic feature corrections should be applied to the specific plant noise level to account for any distinguishable acoustic characteristics (e.g. tonality, impulsivity, intermittency).

6.0

Entertainment noise limits

6.0 Entertainment noise limits

6.1 Basement gym music breakout

In the event that proposed gym area at basement level features a PA system, it will be necessary to see that amplified music break-out impacts will be suitably controlled.

In accordance with MCC entertainment noise policy (see Section 2.6) noise impacts associated with any amplified music in these external areas *“should be controlled to 10 dB below the background noise level (LA90) without the entertainment noise present, in each octave band at the nearest noise sensitive location.”*

The modal measured $L_{A90,15min}$ in each octave band over the course of the survey have been used to define these limits. The following noise limits are proposed which are not to be exceeded at 1 m from the façade of the noise-sensitive receptors:

	Octave band centre frequency (Hz)						
	63	125	250	500	1k	2k	4k
Daytime & Evening (07:00 – 23:00)							
Existing background level, dB	62	57	55	55	51	43	36
MCC noise limits, dB	52	47	45	45	41	33	26
Night-time (23:00 – 07:00)							
Existing background level, dB	58	52	54	48	45	39	26
MCC noise limits, dB	48	42	44	38	35	29	16

Table 8 – Limiting entertainment noise levels

To see that amplified music noise levels do not exceed the above criteria at the nearest sensitive receptors, it will be necessary to install a suitable octave-band sound limiter within any amplified music systems at the development.

6.2 Terrace noise impact

It is understood the terrace areas may be used by potential office occupants.

The nearest existing noise-sensitive building is understood to be Hotel Gotham to the west of the development site. Due to the reasonably high levels of existing ambient noise associated with road traffic, it is anticipated that music (up to a level of 70dB(A) when measured on the proposed terrace during daytime hours) will not lead to undue impacts at this receptor.

In the event that that any external music aside from background music during daytime hours is proposed, compliance measurements should be undertaken at the nearest noise-sensitive receptors to demonstrate that appropriate noise limits as per Table 8 settings have been applied to satisfy the MCC noise policy requirements.

7.0

Conclusions

7.0 Conclusions

Prevailing noise levels at the proposed development site have been measured, and an assessment of the site has been made in accordance relevant technical guidance and good practice techniques, local and national planning policies, and extensive previous experience of similar projects..

Based on predicted façade noise impacts at the proposed development, an initial glazing strategy feasibility study has been undertaken based on achieving internal ambient noise levels compliant with the proposed internal ambient noise level criteria for office and retail spaces.

Further noise measurement undertaken post COVID-19 restriction on non-essential travel have determined that BCO compliant internal noise level criteria are achievable with the current glazing system when windows are closed. When open windows are used as part of the mixed mode ventilation strategy, it is estimated that a worst-case exceedance of NR 4 dB will occur in some areas of the building. It is also noted that large portions of the open office plan are likely to be compliant as the exceedance is an absolute worst-case scenario, and that the BCO guidance is not mandatory and should be used as guidance only.

Limiting noise levels have been provided for external noise impacts at existing nearby noise-sensitive receptors.

The assessment has concluded that noise impacts on the proposed development and surrounding areas can be mitigated to meet the relevant standards and guidelines.

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