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Plot 9B, First Street, Manchester

Environmental Noise Study

November 2024

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Flint Glass Works, 64 Jersey Street, Manchester, M4 6JW

0161 605 0905

info@fisheracoustics.co.uk

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AUTHOR	MATT FISHER, BENG (HONS) CENG MIOA
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1.0 SUMMARY

Fisher Acoustics Ltd has been commissioned by Vita Student Limited to compile an environmental noise report relating to a proposed student residential development at Plot 9B, First Street, Manchester.

Surveys of environmental noise have determined the typical environmental noise levels during the day and night at and around the site.

The recommended acoustic performance of windows, external wall and curtain wall elements to achieve the recommended internal noise levels within residential rooms has been determined.

Overall environmental noise limits have also been recommended for building services plant serving the development.

The implications of Approved Document O 'Overheating' of the Building Regulations are discussed. In particular, no reliance can be placed on the opening of studio windows during the night to mitigate overheating.

2.0 INTRODUCTION

Fisher Acoustics Ltd has been commissioned by Vita Student Limited to conduct an environmental noise study relating to a proposed student residential development at Plot 9B, First Street, Manchester. The proposed development will provide purpose-built student residential accommodation from Level 1 to Level 31 with communal amenities at Level 0 and Level 1.

The residential accommodation provides self-contained studios, each of which has an ensuite bathroom. A total of eight hundred and sixty one student bed spaces are to be provided.

This report examines the pre-existing environmental noise conditions at the site and advises on the required sound insulation performance of façade elements to habitable rooms to achieve recommended internal noise criteria. Appropriate environmental noise limits for building services plant are also identified.

In addition, this report advises on compliance with Approved Document O 'Overheating' of the Building Regulations.

The steps undertaken in compiling this study are as follows:

- Assessment of daytime and night time external noise survey data to determine the typical levels of noise at the site during daytime and night time periods
- Calculation of the required sound reduction index of windows, curtain wall and external wall elements to habitable rooms to allow the achievement of appropriate internal noise levels due to external noise sources.
- Determination of suitable overall noise limits for building services plant to safeguard residential amenity

3.0 DESCRIPTION OF SITE

General Site Description

The proposed development site is Plot 9B of the First Street Development Framework, Manchester.

Plot 9B is bounded by Hulme Street to the south, Medlock Street to the west, an office building currently under construction at Plot 9A to the north and the Plot 10A of First Street to the east. Plot 10A has planning approval for an office building.

Other uses around the site include residential buildings, a hotel, offices, the 'Home' arts centre and bars at the northern perimeter of the First Street development.

A main railway route into Manchester centre is located along the northern boundary of the overall First Street development site. Further to the south of the site lies the Mancunian Way (A57(M)).

The Mancunian Way (A57(M)) and Medlock Street are major roads that are heavily trafficked. River Street and Hulme Street are relatively lightly trafficked side streets that provide local access.

Figure 1 shows the site in the context of the surrounding roads and buildings.

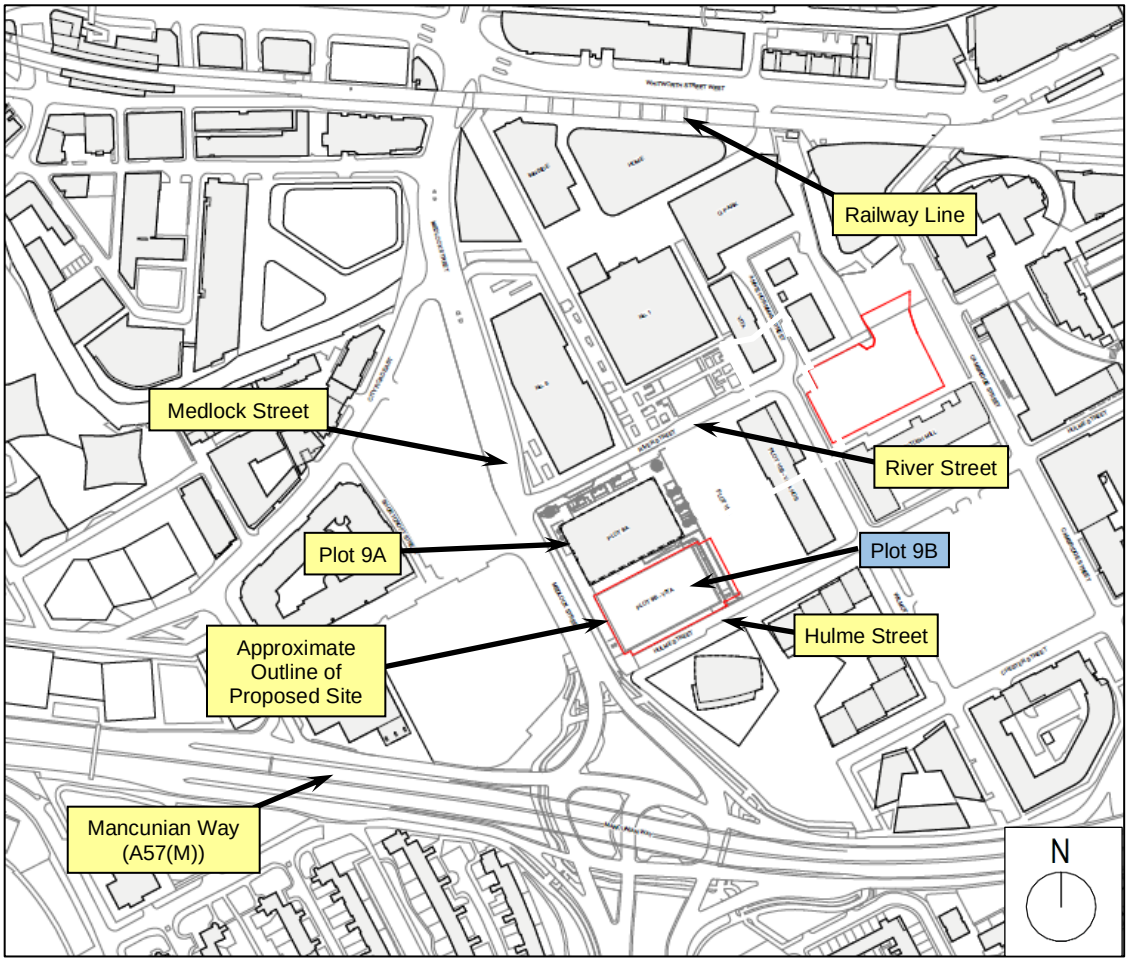


Figure 1: Site location plan – Plot 9B, First Street

Figure 2 shows the location of Plot 9B in relation to nearby planning-approved buildings and buildings under construction at the time of writing.

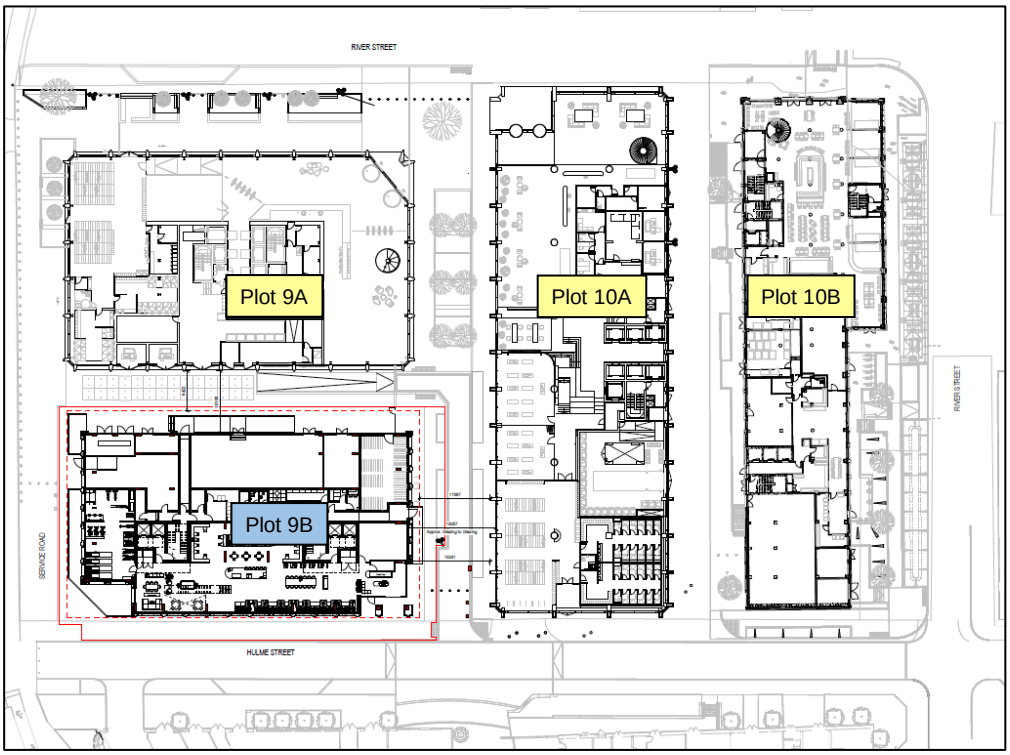


Figure 2: Site boundary plan – Plot 9B, First Street

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development provides purpose-built student residential accommodation from Level 1 to Level 31 with communal amenity space at Level 0 and Level 1.

The residential accommodation provides a total of eight hundred and sixty-one bed spaces.

The proposed uses within the building are as follows:

- Ground Floor: Reception, Hub, Gym, Staff Room, Back Office, FM Store, Cleaners Store, Parcel Room, BOH Kitchen, Comms, WCs, Laundry, Machine Store, Substation, LV Switch, Refuse Store, Life Safety Systems, Plantroom, Domestic Water Storage, Cycle Store
- Level 01: Residential Studios, Private Dining Rooms, Quiet Study, Group Study rooms
- Levels 2 to 31: Residential Studios, Cleaners Store
- Level 32 Roof: Internal Plantroom, external plant

5.0 RELEVANT GUIDANCE DOCUMENTS

NATIONAL PLANNING POLICY

The National Planning Policy Framework (NPPF), published in December 2023 by the Ministry of Housing, Communities and Local Government 'sets out the Government's planning policies for England and how these should be applied'.

Clause 180 of the National Planning Policy Framework states that 'Planning policies and decisions should contribute to 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'.

Clause 191 of the National Planning Policy Framework states:

> "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 impact 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; and
>
> c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

The National Planning Policy Framework document cross references the 'Explanatory Note to the Noise Policy Statement for England'. The 'Noise Policy Statement for England' (NPSE) was published by the Department for Environment Roof and Rural Affairs in March 2010.

The NPSE does not give suggested external noise criteria for commercial developments. In the absence of specific criteria, reference shall be made in this document to established guidance and principles, as established in British Standards and the local Planning policy.

National Planning Practice Guidance – Noise

'Planning Practice Guidance – Noise' is a web-based resource provided by the Ministry of Housing, Communities and Local Government (last revision date 22 July 2019) which gives guidance on Planning considerations in relation to noise.

The document identifies the subjective grading of noise and the recommended actions and different effect levels. Again, as Planning Practice Guidance – Noise' does not refer to objective criteria, reference shall be made in this document to established guidance and principles, as established in British Standards and the local Planning policy

LOCAL PLANNING POLICY

Manchester City Council's Core Strategy was adopted on 11th July 2012 and is the key Development Plan Document in the Local Development Framework (LDF).

Section 13.6 'Development Management' of the Core Strategy states that 'all new developments should follow the 'Development Principles' and accord with the design guidance set out in the Supplementary Planning Documents.

Policy DM 1, 'Development Management' of the Core Strategy states that:

- All development should have regard to the following specific issues for which more detailed guidance may be given within a supplementary planning document: Effects on amenity, including …..noise, vibration…. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.

'Planning & Noise, Technical Guidance', dated October 2022 has been issued by the Environmental Protection, Environmental Health and The Neighbourhoods Service sections of Manchester City Council. The document provides guidance to applicants and consultants concerning the assessment and prediction of environmental noise associated with a particular development. Reference is also made in the document to the relevant supporting information

and guidance documents that Developers are expected to refer to when submitting a planning application.

Internal noise criteria

Internal noise levels within the proposed living accommodation must be appropriate for the intended use.

With regard to noise ingress to residential dwellings, section 3.6 'National & International Standards' of the 'Planning & Noise, Technical Guidance' advises that Manchester City Council has adopted the internal noise limits for residential properties identified in Table 1.

Location	07:00 to 23:00	23:00 to 07:00
Living room	35 dB $L_{Aeq,16h}$	-
Bedroom	-	30 dB $L_{Aeq,8h}$ 45dB LAmax (ten excesses over 45dB LAmax allowed per night)

Table 1: Intrusive noise criteria

Building Services Noise

With regard to external noise due to building services plant, Section 3.7.1.5 of 'Planning & Noise, Technical Guidance' states:

- '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 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location'

BRITISH STANDARDS – INTERNAL NOISE IN DWELLINGS DUE TO EXTERNAL NOISE SOURCES

BS8233: 2014 'Guidance on sound insulation and noise reduction for buildings' provides appropriate criteria for acceptable levels of noise ingress within dwellings.

In particular, section 7.2.2 'Internal ambient noise levels in dwellings' of BS8233: 2014 states that 'In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values in Table 4'. Table 2 identifies the guideline values.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16h}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $LAeq_{,8h}$

Table 2: Intrusive noise criteria – BS8233:2014

Note 7 of section 7.2.2 states that: 'Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed up to 5 dB and reasonable internal conditions still achieved'.

With regard to maximum night time noise levels within bedrooms, BS8233: 2014 states 'regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or LAmax,f depending on the character and number of events per night. Sporadic noise events could require separate values'.

In the absence of a specific performance criterion within BS8233 for short-term noise maxima, reference can be made to guidance published by the WHO. In particular, the WHO publication 'Guidelines for Community Noise' (1999), from which the guidance given in BS8233: 2014 is itself derived, states that 'for a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LAmax more than ten to fifteen times per night'.

6.0 ENVIRONMENTAL NOISE SURVEY

In order to determine the prevailing ambient noise levels at and around the site, surveys of the existing noise environment at the Site were carried out by Fisher Acoustics Ltd between 11:10 am on Thursday 25 April 2024 and 11:55 am on Friday 26th April 2024.

The noise survey measurement locations were selected to determine prevailing levels of ambient, maximum and background noise due to road traffic movements on Medlock Street and the Mancunian Way at the proposed site. The measured noise levels can be used to assess the expected internal noise levels within the proposed development and also to determine acceptable levels of noise at the existing sensitive properties around the site due to building services plant at the proposed development.

The measurement locations were as follows:

- Location 1: 12.9 metres from the kerb of Medlock Street and 8.2 metres from the kerb of Hulme Street, at a microphone height of 15 metres above street level
- Location 2: At 3.3 metres from the kerb of Medlock Street, at a microphone height of 3.0 metres above street level

Full survey details are given in Appendix A. Appendix A also contains a summary of the results obtained from the surveys.

The measurement locations used for the surveys are identified on Figure 3.

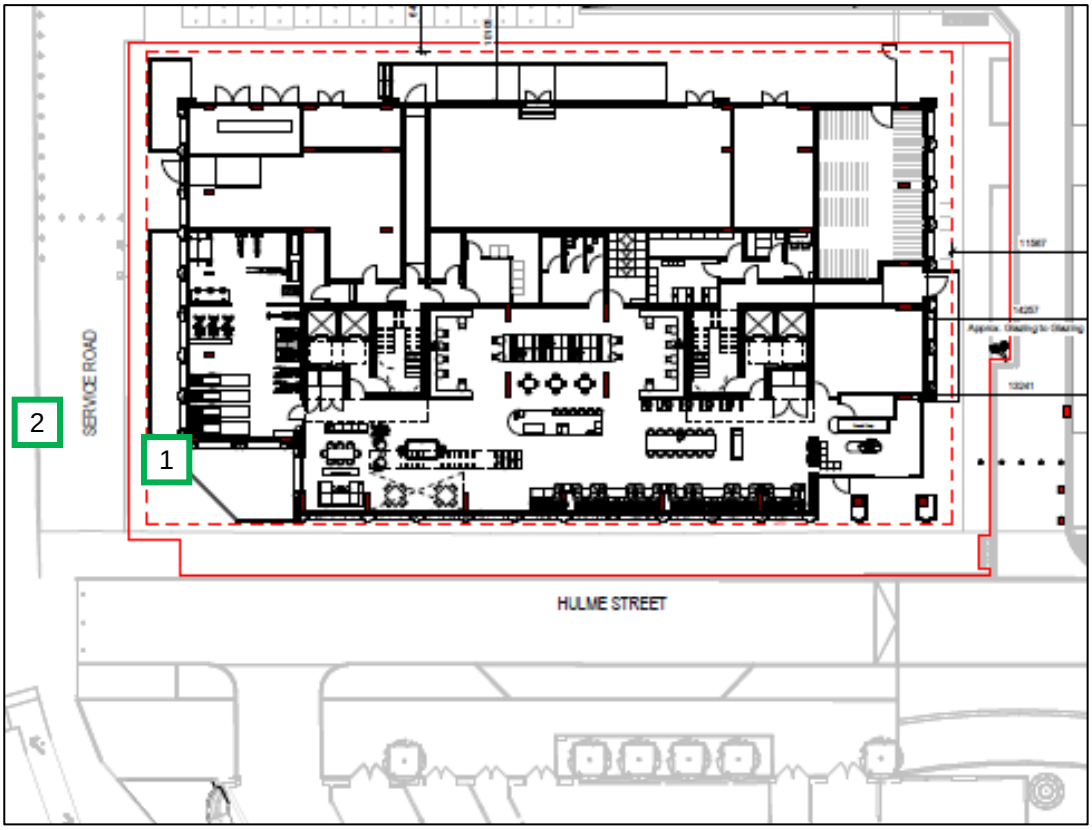


Figure 3: Noise survey measurement locations

The long-term noise environment around the Site is determined by road traffic on Medlock Street and the A57 Mancunian Way.

The noise levels measured during the noise surveys are summarised in Table 3.

Measurement Location	Measured Noise Level					
	Daytime (defined as 7 am to 11 pm)			Night time (defined as 11 pm to 7 am)		
	dB, L_{Aeq}	dB, L_{Amax}	dB, L_{A90}	dB, L_{Aeq}	dB, L_{Amax}	dB, L_{A90}
Location 1 - 25 April 2024	71	69 to 94	64 to 74	65	62 to 90	54 to 68
Location 1 - 26 April 2024	71	72 to 93	67 to 73	-	-	-
Location 2 - 26 April 2024	68	70 to 100	63 to 67	-	-	-

Table 3: Summary of measured environmental noise levels

The statistical noise levels ('LAmax' and 'LA90') given in Table 3 show the range of noise levels measured over the sample periods. The quoted average (LAeq) noise levels are the average noise levels measured over the full measurement periods in question at each measurement position and exclude periods of elevated noise due to short-term construction activity close to the measurement microphones.

7.0 NOISE INGRESS

By taking into account the measured levels of noise at the site, the areas of the façade elements to each residential room and the likely reverberation time of the rooms, the required sound insulation performance of the facade elements to achieve the target internal noise criteria can be calculated.

The residential rooms of the development are to be provided with continuously running mechanical supply and extract ventilation in order to achieve the background ventilation requirements of Approved Document F of the Building Regulations. Therefore, no passive trickle ventilators are required within the façade of the proposed habitable rooms. Purge ventilation is to be achieved via opening windows. The calculations of noise ingress assume that the windows are closed.

Design recommendations

Calculations of noise ingress have been carried out to determine the minimum required sound reduction index of the façade elements to achieve the internal noise criteria detailed in Section 5.0 of this report. The calculations are based upon the room sizes and layouts identified on the drawings submitted for Planning purposes.

WINDOWS AND VISION PANELS TO RESIDENTIAL ROOMS

The sound reduction index of windows and vision panels, including associated framing or support systems and details necessary to form junctions between the windows and other abutting elements, when measured in a laboratory in accordance with BS EN ISO 10140-2: 2021 and rated in accordance with BS EN ISO 717-1: 2020, must be not less than as stated in Table 4. The performance requirements relate only to residential rooms.

Windows	Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Type A (Approximately Rw 41)	28	27	30	38	42	44	53
Type B (Approximately Rw 36)	19	24	25	34	41	41	52

Table 4: Minimum sound reduction index of vision panels and windows to residential rooms

The locations of the vision panel and window specifications are illustrated in Figures 4 to 6.



Figure 4: Acoustic specification location plan, Level 1 – Studios

Key

Window/Vision panel Type A

Window/Vision panel Type B



Figure 5: Acoustic specification location plan, Level 2 to Level 12 – Studios

Key

Window/Vision panel Type A

Window/Vision panel Type B



Figure 6: Acoustic specification location plan, Level 13 to Level 31 – Studios

Key

Window/Vision panel Type A

Window/Vision panel Type B

EXTERNAL WALL

It is recommended that the sound reduction index of residential external walls within the non-curtain wall zones is not less than the values in Table 5 when measured in a laboratory in accordance with BS EN ISO 10140-2: 2021 and rated in accordance with BS EN ISO 717-1: 2020. The performance recommendations include the window reveal areas.

Non-Vision Panel Type/ Location	Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz
Brickwork, SFS system drylined internally	25	32	39	50	55	55	60
Aluminium Rainscreen cladding, SFS system drylined internally	19	28	39	50	55	55	55

Table 5: Minimum sound reduction index of external walls to residential rooms

NON-VISION PANELS OF UNITISED CURTAIN WALL

It is recommended that the sound reduction index of the drylined non-vision panels of the unitised curtain wall is no less than the values in Table 6 when measured in a laboratory in accordance with BS EN ISO 10140-2: 2021 and rated in accordance with BS EN ISO 717-1: 2020.

The performance requirements relate to the panels and associated framing or support systems and details necessary to form junctions between the non-vision panels and other abutting elements.

Non-Vision Panel Type/ Location	Sound Reduction Index (dB) @ Octave Band Centre Frequency (Hz)						
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz
Non-vision panel	20	32	40	50	55	55	55

Table 6: Minimum sound reduction index of non-vision panels to residential rooms

Roof

The principle acoustic elements of the proposed roof of the proposed building are a concrete slab and a ceiling that comprises a single layer of 12.5 mm wallboard fixed to a suspended metal frame. The expected minimum weighted sound reduction index of the roof construction is 60 dB Rw. This performance is fully commensurate with the achievement of the target internal noise levels within the proposed dwellings.

External noise ingress via MVHR ductwork

It is possible that in-line ductwork silencers would need to be introduced to some of the proposed MVHR systems to reduce external noise ingress via the atmosphere terminations (i.e. the intake and exhaust of the MVHR fans) and to achieve the applicable internal noise criteria.

As the detailed design progresses, the acoustic requirements of any in-line ductwork silencers will be assessed.

Conclusion

Compliance with the recommended sound insulation performances of the façade and roof elements is expected to allow full compliance with the daytime and night time 'average' noise level criteria identified in Section 5.0 above.

Given the recommended sound insulation performances given above for the façade and roof, compliance with the recommendations of Manchester City Council in relation to maximum (LAmax) night time noise levels in bedrooms is expected.

8.0 EXTERNAL NOISE LEVELS DUE TO BUILDING SERVICES

The measured background noise levels around the site can be used to establish the acceptable level of noise from plant serving the development. Final plant selections have not been made at this early design stage. In the absence of specific selection of plant items, overall plant noise limits can be provided.

With reference to the discussion in Section 5.0, the cumulative rating level due to all simultaneously operating non-emergency plant must be at least 5 dB lower than the typical pre-existing background noise level at the nearest residential receptors to the site.

Table 7 identifies the allowable combined free-field noise level at the nearest residential receptors to the development, due to all simultaneously-operating non-emergency building services plant and equipment.

Location	Rating noise level (dB L_{Aeq})	
	Daytime (07:00 hrs to 23:00 hrs)	Night time (23:00 hrs to 07:00 hrs)
Plot 9B	61	50
Plot 10B, House of Social	52	49
Square Gardens, First Street South, Phase A	52	49
Square Gardens, First Street South, Phase B	52	49

Table 7: Environmental noise limits for non-emergency building services plant

Emergency plant

If any emergency plant is required at the Development, it is expected that such plant would only operate during emergencies and during periodical test runs (perhaps test runs of thirty minutes every two months).

On this basis, it is not considered appropriate to require emergency plant to comply with the noise limits for continuously operating non-emergency plant. It is therefore suggested that the noise level from any emergency plant during periodic testing is no more than 10 dB(A) greater than the background noise level (measured as an LA90) at any residential receptor.

It is therefore recommended that the noise level at any residential façade during periodic testing of any emergency plant does not exceed the daytime noise levels given in Table 8.

Location	Daytime noise level (dB L_{Aeq})
Plot 9B	76
Plot 10B, House of Social	67
Downing Building Phase A	67
Downing Building Phase B	67

Table 8: Environmental noise limits for emergency building services plant when under test

The above noise limits for non-emergency and emergency plant must be forwarded to the project's Mechanical Engineer to allow the selection of appropriate equipment and any associated noise control hardware. Building services equipment must also be provided with appropriate vibration isolation to minimise the risk of disturbance to the building occupants by structureborne noise.

9.0 APPROVED DOCUMENT O, OVERHEATING

Approved Document O of the Building Regulations (Overheating) requires that 'reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel ("residences") to:

(a) limit unwanted solar gains in summer;
(b) provide an adequate means to remove heat from the indoor environment.

In meeting the obligations stated above, account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence, including in relation to noise. The document also states that mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.

With regard to noise, the document states:

- where external noise may be an issue, the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am)
- Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits:
    a. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).
    b. 55dB LAFmax, more than 10 times a night (between 11pm and 7am).

Given the measured external noise levels at the site, the windows to all bedrooms within the building must be closed between 11pm and 7am to comply with Approved Document O. This must be taken into account as the building design progressions and mitigation measures in relation to overheating are developed.

Part O does not include requirements or recommendations relating to internal noise targets due to the opening of windows during the daytime. Therefore, from a Building Regulations perspective, windows to all apartment rooms could be opened as required to achieve appropriate internal temperatures.

APPENDIX A: NOISE SURVEY DETAILS AND SUMMARY RESULTS

LOCATION

Plot 9B, Hulme Street, Manchester

DATES AND TIMES

11:10 am on Thursday 25 April 2024 to 11:55 am on Friday 26th April 2024

WEATHER DURING SURVEYS

Thursday 25 April 2024 (Daytime)	1/8 cloud cover, 3 m/s wind, no rain, 17°C
Thursday 25 April 2024 (Night time)	1/8 cloud cover, 2 m/s wind, no rain, 15°C
Friday 26 April 2024 (Daytime)	1/8 cloud cover, 2 m/s wind, no rain, 15°C

PERSONNEL PRESENT DURING SURVEY

Matt Fisher – Fisher Acoustics

INSTRUMENTATION

Norsonic Type 118 IEC 60651 Type 1 Integrating-Averaging Sound Level Meter (serial no. 31498)
Norsonic Type 140 IEC 60651 Type 1 Integrating-Averaging Sound Level Meters (serial no. 1406387)
Norsonic Type 140 IEC 60651 Type 1 Integrating-Averaging Sound Level Meters (serial no. 1403193)
Norsonic Type 1251 IEC 60942-1997 Class 1 Sound Calibrators (x2) (serial nos. 31971, 27878)

MEASUREMENT METHODOLOGY

Before and after the noise survey the sound level meters were check calibrated to an accuracy of ±0.3dB using the Norsonic Type 1251 Calibrators - no drift in sensitivity was detected. The measurement microphones were installed at the locations identified in this report. All survey measurements were in 'free field' conditions.

Figure A1 identifies the free-field noise levels measured at Position 1 at the Site. Tables A1 and A2 identify the free-field noise levels measured at Position 2 at the Site. Measurement locations are shown in Figure 3 and described below.

The measurement locations were as follows:

- Location 1: At location of façade of the Proposed Development to Medlock Street 12.9 metres from the kerb and 8.2 metres from the kerb of Hulme Street, at a microphone height of 15 metres above street level
- Location 2: At 3.3 metres from the kerb of Medlock Street, at a microphone height of 3.0 metres above street level

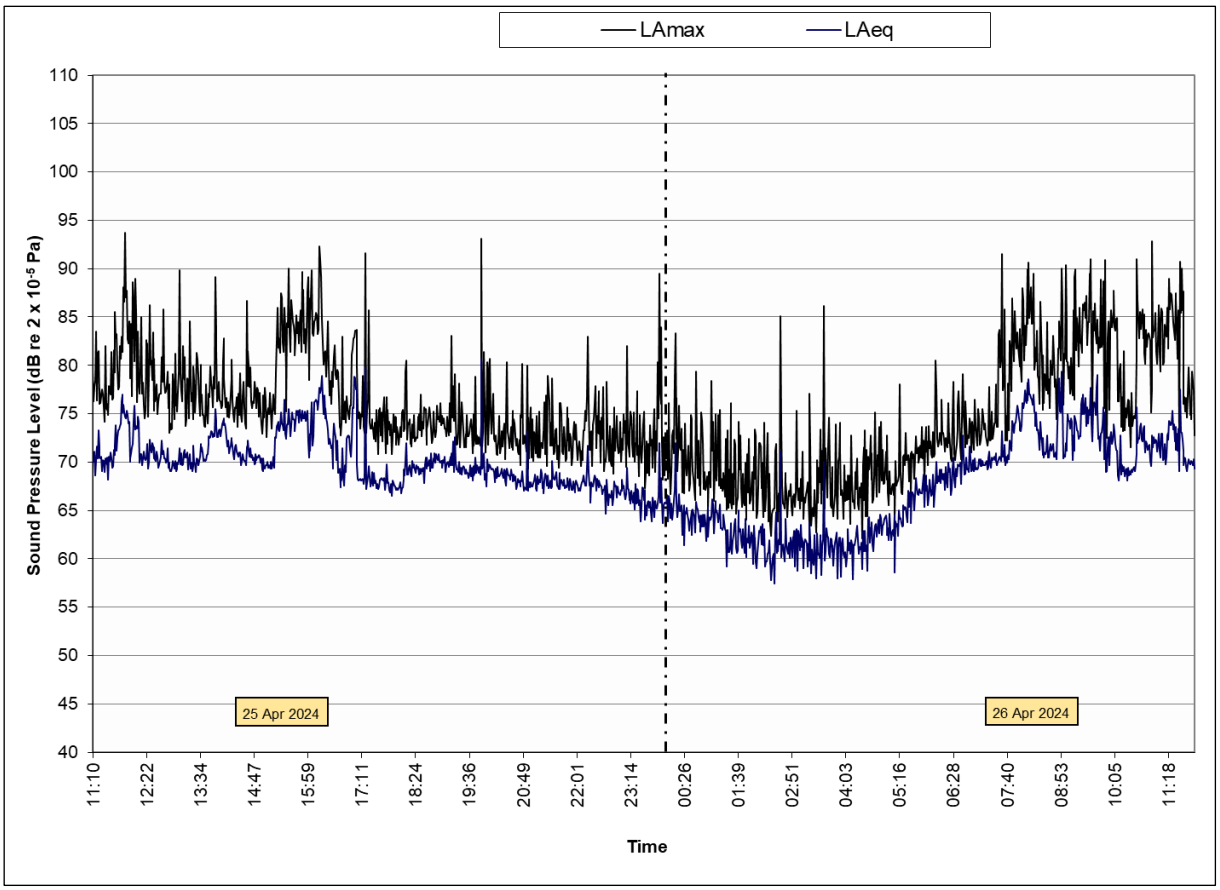


Figure A1: Position 1 daytime noise measurements, Thursday 25 April 2024 to Friday 26 April 2024 – 1-minute maximum (LAmax), average (LAeq) and background (LA90) noise levels

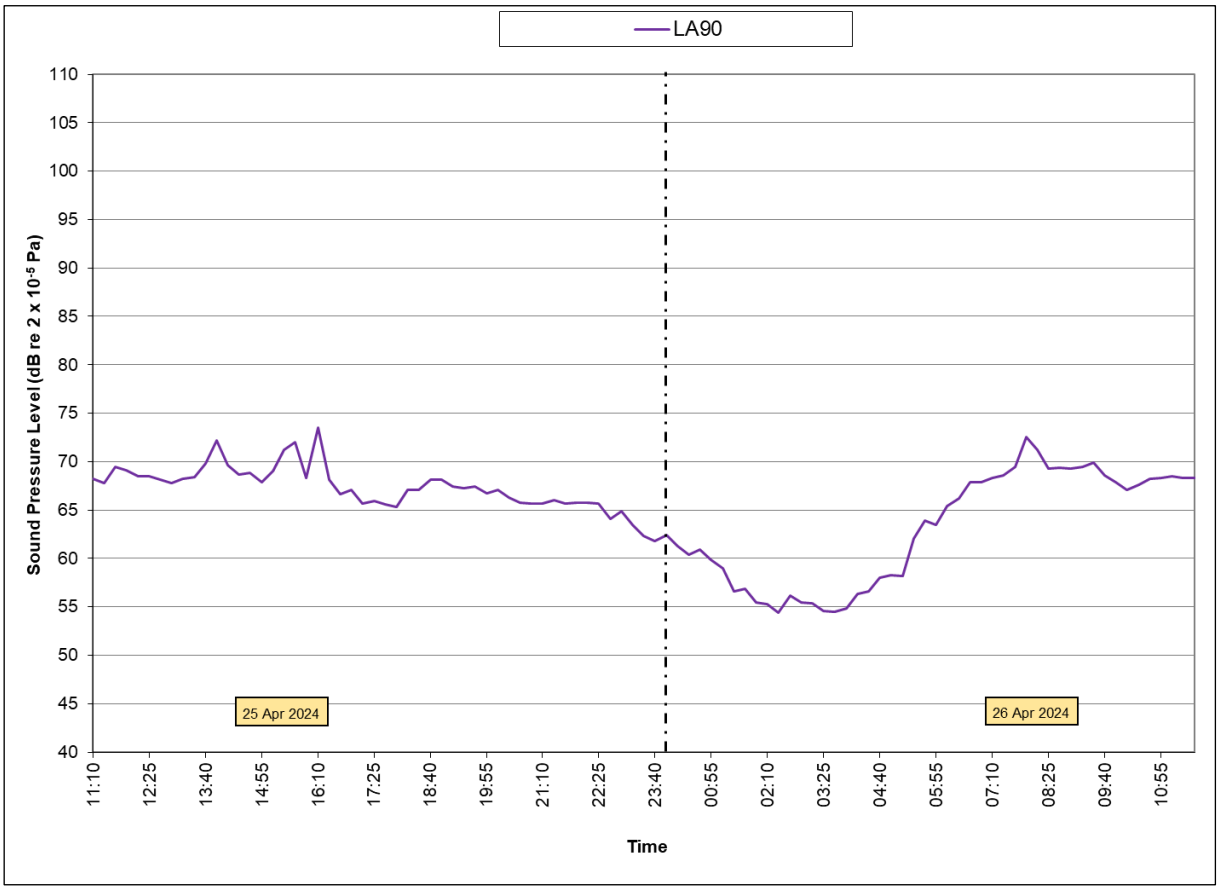


Figure A2: Position 1 daytime noise measurements, Thursday 25 April 2024 to Friday 26 April 2024 – 15-minute background (LA90) noise levels

Measurement Position	Start Time	Measured Noise Levels, dB1minute			Noise sources
		L_{Aeq}	L_{Amax}	L_{A90}	
2	11:38	68.9	81.3	63.9	Road traffic on Medlock Street
2	11:39	67.4	71.6	65.3	“
2	11:40	67.3	72.8	64.3	“
2	11:41	68.5	73.3	65.6	“
2	11:42	67.5	76.0	64.8	“
2	11:43	67.0	74.8	64.0	“
2	11:44	67.0	74.1	62.7	“
2	11:45	68.6	74.6	64.8	“
2	11:46	68.5	75.4	66.3	“
2	11:47	67.3	71.5	65.3	“
2	11:48	67.2	72.6	65.7	“
2	11:49	71.1	82.9	64.9	“
2	11:50	68.3	78.7	64.9	“
2	11:51	67.7	77.9	64.5	“
2	11:52	68.1	77.5	65.1	“
2	11:53	67.0	72.3	63.5	“
2	11:54	67.6	71.0	65.6	“
2	11:55	66.7	70.3	64.5	“
2	11:56	66.8	71.8	64.9	“
2	11:57	67.2	76.1	65.3	“
2	11:58	69.1	75.1	67.1	“
2	11:59	68.1	78.7	64.6	“
2	12:00	68.2	75.8	65.2	“
2	12:01	68.8	77.4	65.2	“
2	12:02	69.1	79.5	65.8	“
2	12:03	85.3	99.9	65.2	Emergency siren, road traffic
2	12:04	68.3	78.0	65.0	“
2	12:05	67.5	72.1	64.6	“
2	12:06	67.5	72.1	65.0	“
2	12:07	67.9	73.2	64.6	“
2	12:08	69.2	75.6	66.3	“
2	12:09	66.7	73.5	64.3	“
2	12:10	68.1	72.4	65.7	“

Table A1: Summary Statistical Noise Levels, Daytime, 26th April 2024

Measurement Position	Start Time	Noise Level, dB $L_{Aeq,1min}$	Sound Pressure Level (dB) @ Octave Band Centre Frequency (Hz)						
			63	125	250	500	1k	2k	4k
2	11:38	68.9	72.1	65.8	67.2	64.7	65.6	60.9	52.8
2	11:39	67.4	70.2	64.0	65.1	63.1	64.6	58.6	50.1
2	11:40	67.3	67.9	64.0	64.2	62.9	64.5	59.1	51.5
2	11:41	68.5	69.3	65.0	65.0	63.7	65.6	60.7	52.1
2	11:42	67.5	68.7	64.9	62.9	62.7	64.5	60.1	51.0
2	11:43	67.0	69.1	65.0	63.0	62.7	64.0	58.9	52.1
2	11:44	67.0	68.6	63.5	61.9	62.5	64.2	59.0	50.7
2	11:45	68.6	69.8	65.6	64.5	65.6	65.2	60.5	53.0
2	11:46	68.5	71.3	64.7	63.3	63.4	65.7	61.1	52.8
2	11:47	67.3	70.6	65.0	62.6	62.9	64.7	58.8	51.6
2	11:48	67.2	67.3	64.6	63.0	62.7	64.4	59.2	51.3
2	11:49	71.1	69.2	68.6	67.8	69.1	66.7	63.0	56.2
2	11:50	68.3	69.9	65.5	64.2	63.5	65.3	60.6	52.4
2	11:51	67.7	68.9	64.5	62.9	62.6	64.8	59.9	53.8
2	11:52	68.1	68.1	64.1	63.3	63.8	64.9	60.5	52.8
2	11:53	67.0	68.6	66.0	64.8	62.6	64.0	58.6	49.3
2	11:54	67.6	72.0	67.7	63.7	63.3	64.7	59.1	50.7
2	11:55	66.7	70.2	64.6	62.9	62.1	64.1	58.1	49.3
2	11:56	66.8	70.1	64.5	64.2	62.2	63.7	59.0	51.9
2	11:57	67.2	69.5	63.8	63.4	62.6	64.1	59.8	52.0
2	11:58	69.1	71.1	67.3	66.0	63.7	65.2	62.9	54.5
2	11:59	68.1	69.4	65.5	63.7	62.8	64.4	61.8	54.8
2	12:00	68.2	69.8	65.6	64.8	64.0	64.9	60.5	54.2
2	12:01	68.8	70.0	67.3	65.5	65.0	65.3	61.1	54.9
2	12:02	69.1	68.8	65.7	63.2	63.0	66.0	62.9	51.6
2	12:03	85.3	69.5	65.1	64.4	64.2	82.4	80.4	64.5
2	12:04	68.3	70.5	66.5	65.4	64.4	64.9	60.4	53.1
2	12:05	67.5	69.8	66.9	64.7	63.6	64.4	59.2	50.8
2	12:06	67.5	70.8	65.7	64.2	63.5	64.6	59.4	50.8
2	12:07	67.9	69.6	66.8	64.6	64.2	65.0	59.2	51.1
2	12:08	69.2	69.5	64.7	63.9	63.7	66.3	62.2	53.7
2	12:09	66.7	70.3	66.1	63.6	62.7	63.9	58.2	49.2
2	12:10	68.1	68.3	64.9	63.9	64.1	65.0	60.1	52.1

Table A2: Summary Statistical Noise Levels, Daytime, 26th April 2024