

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

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Moho Manchester

External noise ingress survey and report

London, Manchester, Edinburgh, Birmingham, Leeds, Bristol

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Summary

Sandy Brown has been commissioned to provide an assessment and subsequent follow-up measurements of noise ingress in relation to the replacement facade works at Moho building, 42 Ellesmere Street, Manchester.

Internal unattended noise monitoring was carried out by Sandy Brown in a living room and a bedroom between 17 – 19 June 2025.

The maximum average internal ambient noise levels measured during the survey were $L_{Aeq,16h}$ 38 dB in the living room during the day and $L_{Aeq,8h}$ 35 dB in the bedroom at night.

The measured L_{Aeq} levels are indicated to be up to 3 dB above the MCC noise ingress criteria during the day in the living room and up to 5 dB during the night in the bedroom.

L_{Amax} 'not normally exceeded' values also exceeded the criterion by up to 4 dB.

Based on the measurement undertaken and observations made on site the cladding indicated no inherent acoustic weakness.

No benchmark internal noise measurements or external survey works were taken before the replacement facade works it is therefore not possible to draw a conclusion as to the performance enhancements the new cladding has provided for these spaces.

The measurement results indicate that the internal noise criteria as set by MCC has not been achieved in either the living or bedroom. However, this is not deemed due to the replacement facade works, which were designed to provide an equivalent sound insulation standard to the previously installed cladding.

BS8233 which sets out the recommended guidelines for environmental noise ingress to apartments (and this forms the basis of the MCC criteria), suggests that a 5 dB relaxation is reasonable for internal noise levels in locations where development is deemed necessary or desirable. In addition, measurement tolerances of 1-2 dB would typically be applicable in practice and noise levels are expected to reduce further once the rooms are fully furnished. Therefore, the measured minor exceedances of the MCC stipulated criteria should be acceptable to MCC subject to their review.

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1 Introduction

Sandy Brown has been commissioned to provide measurements of noise ingress in relation to the replacement facade works at Moho building, 42 Ellesmere Street, Manchester.

Internal unattended noise monitoring carried out in an apartment bedroom and living room by Sandy Brown between 17 – 19 June 2025

The purpose of the noise monitoring was to determine the levels of environmental noise ingress via the recently completed facade replacement works. A visual inspection of the facade elements was carried out in the room where the equipment was installed.

The measurement results have been used to carry out a comparison of internal noise levels from environmental noise ingress against the typical Manchester City Council (MCC) criteria.

This report provides details of the noise survey, including measurement results, and provides recommendations.

2 Site description

2.1 The site and its surroundings

The site location in relation to its surroundings is highlighted in blue in Figure 1.



Figure 1 Aerial view of site (courtesy of Google Earth Pro)

2.2 Measurement location

Unattended noise monitoring equipment was installed in a living room (position 1) and a bedroom (position 2) of apartment 211. These are indicated in Figure 2.

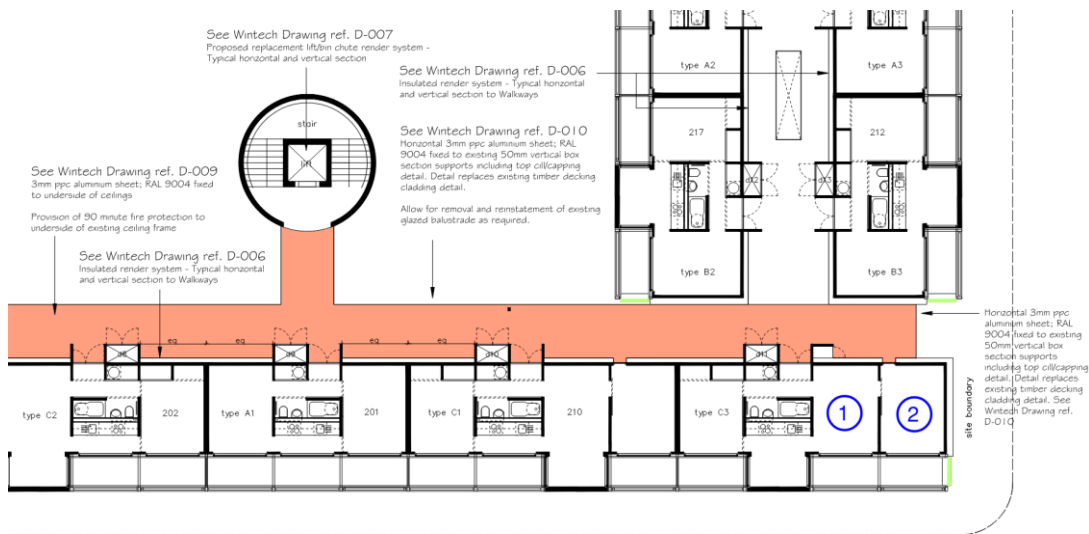


Figure 2 Internal measurement locations

This apartment overlooks Arundel street to the east and Ellesmere Street to the south and is therefore located on the noisiest facade of the development. The facade replacement works recently completed for apartment 211 include new cladding. It is understood that the glazed doors to the balcony have been retained.

3 Cladding replacement works

The external cladding of the Moho building has recently been replaced.

A desktop assessment was undertaken by Sandy Brown - 21021-M001-B *External cladding assessment* dated 4 June 2021, which provided the minimum specifications to maintain the performance in comparison to the existing cladding system.

This was in line with the planning comments received at the time of the assessment from Manchester City Council (MCC) which is detailed below.

The acoustic properties of the proposed cladding in comparison with the existing cladding need to be provided to show that the proposed cladding would provide at least the existing level of noise insulation (which should be that approved under the original planning permission for the building).

4 Assessment criteria

4.1 Planning condition

Condition 5 received from Manchester City Council (MCC) relating to acoustics for the cladding replacement works is provided below:

5) a) The development shall be acoustically insulated in accordance with the External Cladding Assessment memo M001-B dated 4 June 2021 by Sandy Brown in order to secure a reduction in noise within the residential accommodation from the nearby road network and other additional noise sources (including any local commercial/industrial premises). The following noise criteria will be required to be achieved:

Bedrooms (night time - 23.00 - 07.00) 30 dB LAeq (individual noise events shall not exceed 45 dB LAmax,F by more than 15 times);

Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq.

b) When the development reaches practical completion a verification report shall be submitted to and approved in writing by the City Council as local planning authority, which is required to validate that the work undertaken conforms to the recommendations and requirements set out in part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. The verification report shall be submitted to the City Council as local planning authority no later than one calendar month following the practical completion of the development.

If there are instances of non-conformity during the verification stage, these shall be detailed along with mitigation measures required to ensure compliance with the relevant noise criteria. Any subsequent further mitigation measures shall be fully implemented in accordance with a timescale to be agreed with the City Council as Local Planning Authority and thereafter fully implemented, retained and maintained in situ.

Reason - To protect residents from noise nuisance, pursuant to policies SP1, H1 and DM1 of the Core Strategy.

4.2 British Standard guidance

Guidance on acceptable internal noise levels in residential dwellings is given in BS 8233:2014 *Sound insulation and noise reduction for buildings*. The guidance limits are shown in Table 1.

These internal levels are based on annual average data and do not have to be achieved in all circumstances. It is normal to exclude occasional events, such as fireworks night or New Year's Eve. These are in line with the planning condition provided by MCC.

Table 1 Internal noise criteria for sleeping/resting

Internal space	Indoor ambient noise level, L_{Aeq} (dB)	
	Day (07:00 – 23:00)	Night (23:00 – 07:00)
Living rooms	35	-
Dining room	40	-
Bedrooms	35	30 ^[1]

^[1] BS 8233 notes that individual noise events can cause sleep disturbance, and that a guideline value may be set depending on the character and number of events per night, although no specific limit is provided. For regular events, such as scheduled aircraft or passing trains, a guideline value may be set in terms of SEL or $L_{Amax,F}$. Sporadic noise events could require separate values.

The standard states that where development is considered necessary or desirable, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

5 Survey method

5.1 Noise survey method

The survey included unattended noise measurements which were undertaken at the site over 2 days. The measurements were taken over 15 minute periods between 11:25 on 17 June 2025 and 10:55 on 19 June 2025. These were carried out in apartment 211 as noted in Section 2.2.

The microphone for the sound level meter was installed on a tripod which was positioned centrally in both the living room and bedroom on a tripod, at least 1 m from any walls and approximately 1.2 m from the floor.

Building services were switched off for the duration of the measurement period with all windows and doors tightly closed. The rooms where the measurement equipment was installed were unfurnished.

The dominant noise sources observed at the site during the survey were from road traffic on Ellesmere Street. Secondary sources included pigeons on the balcony. Construction noise at the facade of the building was noted at the very start of the measurements but workers were told to stop any further works. These have been excluded from the measurement results.

The measurements and information provided in this report are in accordance with requirements of BS 7445, as referenced in Appendix A.

6 Measurement results

A graph showing the results of the unattended measurements is provided in Appendix B.

The average noise levels measured during the unattended survey are presented in Table 2.

Table 2 Ambient noise levels measured during the unattended survey (living room)

Date	Daytime (07:00 – 23:00)	Night (23:00 – 07:00) ^[2]
	$L_{Aeq,16h}$ (dB)	$L_{Aeq,8h}$ (dB)
Tuesday 17 June 2025	38 ^[1]	33
Wednesday 18 June 2025	38	34

^[1] Measurement not taken over a full 16 hour period

^[2] No night time criteria are set for the living room during the night, this data has only been presented for completeness

Table 3 Ambient noise levels measured during the unattended survey (bedroom)

Date	Daytime (07:00 – 23:00)	Night (23:00 – 07:00)
	$L_{Aeq,16h}$ (dB)	$L_{Aeq,8h}$ (dB)
Tuesday 17 June 2025	38 ^[1]	34
Wednesday 18 June 2025	39	35

^[1] Measurement not taken over a full 16 hour period.

The maximum L_{AFmax} (dB) values exceeded 15 times during the night period (23:00 to 07:00 hrs) in the bedroom were:

- L_{AFmax} 47 dB on Tuesday 17 June
- L_{AFmax} 49 dB on Wednesday 18 June.

7 Assessment

7.1 Comparison to MCC criteria

The measured L_{Aeq} levels are indicated to be up to 3 dB above MCC noise ingress criteria (stated above) during the day in the living room and up to 5 dB during the night in the bedroom. L_{Amax} 'not normally exceeded' values also exceeded the MCC criterion by up to 4 dB.

7.2 Discussion

Based on the measurements undertaken and observations made on site the installed replacement cladding indicated no inherent acoustic weakness.

No audible noise ingress was noted via the cladding which corresponds with the anticipated outcome in line with the assessment undertaken for part a of the planning condition (as per Sandy Brown document *21021-M001-B External cladding assessment dated 4 June 2021*).

There was no observed or measured difference between the bedroom and the living room (with more cladded areas).

The undertaken measurements are expected to be worst-case as they were undertaken on the corner of Arundel Street and Ellesmere Street (which includes glazed doors to the balcony). Areas further away from the roads are expected have lower levels of noise ingress.

It should be noted that the rooms assessed were unfurnished with laminate floors and no doors installed between the rooms. When the spaces are fully furnished, reverberation times within the rooms would typically decrease by up to 3 dB.

No benchmark internal noise measurements or external survey works were taken before the replacement facade works were undertaken. It is therefore not possible to draw a conclusion as to the performance enhancements the new cladding has provided within these spaces.

The measurement results indicate that the internal noise criteria as set by MCC has not been achieved in either the living or bedroom. However, this is not deemed due to the replacement facade works, as these were designed to provide equivalent sound insulation performance to the previously installed cladding.

BS8233 which sets out the recommended guidelines for environmental noise ingress to apartments (and this forms the basis of the MCC criteria), suggests that a 5 dB relaxation is reasonable for internal noise levels in locations where development is deemed necessary or desirable. In addition, measurement tolerances of 1-2 dB would typically be applicable in practice and noise levels are expected to reduce further once the rooms are fully furnished. Therefore, the measured minor exceedances of the MCC stipulated criteria should be acceptable to MCC subject to their review.

Appendix A

Survey details

Reference standards

- BS 7445 Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*
- BS 7445: Part 2: 1991 *Description and measurement of environmental noise, Part 2. Guide to the acquisition of data pertinent to land use.*

Equipment

The unattended noise measurements were taken using two Rion NL-52 sound level meters. Calibration details for the equipment used during the survey are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
NL-52 G - Bedroom				
Sound level meter	NL-52/01143564	Rion	12 Dec 26	TCRT24/1898
Microphone	UC-59/10153	Rion	12 Dec 26	TCRT24/1898
Pre-amp	NH-25/43581	Rion	12 Dec 26	TCRT24/1898
Calibrator	NC-74/34257023	Rion	12 Dec 26	TCRT24/1895
NL-52 L – Living room				
Sound level meter	NL-52/01010788	Rion	20 Sep 25	TCRT23/1666
Microphone	UC-59/20416	Rion	20 Sep 25	TCRT23/1666
Pre-amp	NH-25/11436	Rion	20 Sep 25	TCRT23/1666
Calibrator	SV30A/10559	Svantek	20 Sep 25	TCRT23/1665

Calibration of the meters used for the measurements is traceable to national standards. Calibration certificates for the sound level meters used in this survey are available upon request.

Calibration checks were carried out on the meters and their measurement chains at the beginning and end of the survey. No significant calibration deviation occurred.

Noise indices

Noise indices recorded included the following:

- $L_{Aeq,T}$ The A-weighted equivalent continuous sound pressure level over a period of time, T.
- $L_{AFmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a fast time weighting.
- $L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement period. Indicative of the background sound level.

Sound pressure level measurements are normally taken with an A-weighting (denoted by a subscript 'A', eg L_{A90}) to approximate the frequency response of the human ear.

A more detailed explanation of these quantities can be found in BS 7445: Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*.

Appendix B

Results of unattended measurements at Position 1

Moho Building, Manchester
Results of noise logging survey in Living room (1)
11:40 on 17 June 2025 and 10:55 on 19 June 2025



Results of unattended measurements at Position 2

Moho Building, Manchester
Results of noise logging survey in Bedroom (2)
11:40 on 17 June 2025 and 10:55 on 19 June 2025

