123 Barlow Moor Road

Noise Verification Survey

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24056-R02-BT

Client: Marco Investments

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REVISION HISTORY

Revision	Date	Revision Details	Author	Checked
R02	22/06/2026	Original Issue	Ben Tomlin BSc MIOA	Susan Witterick BSc MIOA

1 INTRODUCTION

1.1 dBx Acoustics Ltd has been appointed by Marco Investments to carry out a noise verification survey to discharge planning conditions for the residential development at 123 Barlow Moor Rd, Manchester, M20 2TS.

1.2 Planning permission has been granted by Manchester City Council under reference 135315/FO/2022. Requirements regarding noise ingress are detailed in Condition 8.

1.3 The development comprises 2 new build houses.

1.4 The intent of this report is to present the results of a noise survey undertaken at the site to confirm the noise intrusion meets with Manchester City Council's planning condition.

1.5 A glossary of acoustic terminology has been supplied in Appendix A in order to assist the reader.

2 ACOUSTIC DESIGN CRITERIA

Local Authority Criteria

2.1 Planning Condition 8 relates to noise ingress, and is reproduced below.

"8) a) Before the development commences a scheme for acoustically insulating the proposed residential accommodation against noise from Barlow Moor Road shall be submitted to and approved in writing by the City Council as local planning authority. There may be other actual or potential sources of noise which require consideration on or near the site, including any local commercial/industrial premises.

The potential for overheating shall also be assessed and the noise insulation scheme shall take this into account. The approved noise insulation and ventilation scheme shall be completed before any of the dwelling units are occupied.

b) Prior to first occupation of the residential units, a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that the internal noise criteria have been met. Any instances of nonconformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria.

Reason - To secure a reduction in noise from traffic or other sources in order to protect future residents from noise disturbance and to reduce the potential for overheating, pursuant to Policy DM1 in the Manchester Core Strategy."

2.2 Planning condition 8a was addressed in dBx Acoustics' report ref *24056-R01A-SF* dated 29/10/2024.

2.3 MCC has adopted the following internal noise limits for residential properties:

- Bedrooms (night time 23:00-07:00h) 30dB$L_{Aeq,\ 8h}$ (individual noise events should not normally exceed 45dB$L_{Amax,\ F}$ more than 10 times);
- Living Rooms (daytime – 07:00-23:00h) 35dB$L_{Aeq,16h}$.
- Gardens and terraces (daytime) 55dB$L_{Aeq,\ 16h}$.

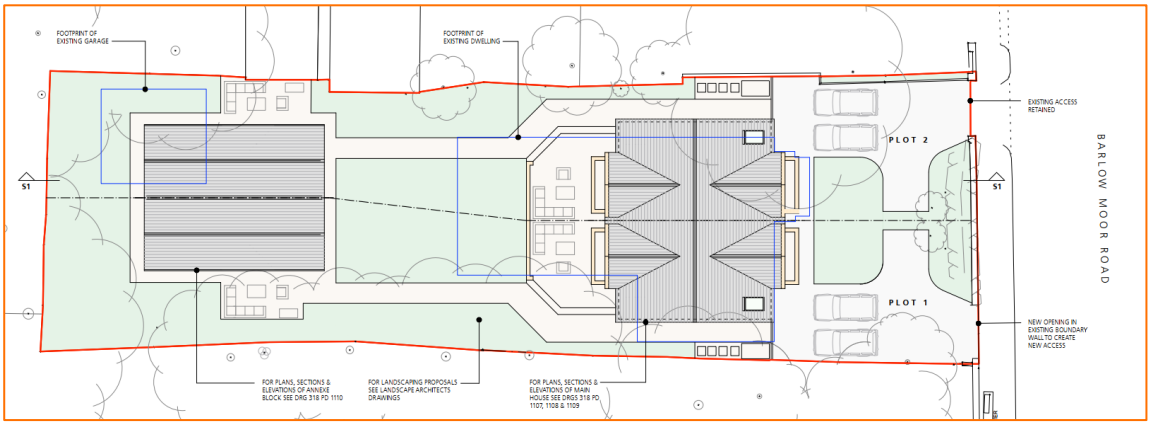
3 SITE DESCRIPTION

3.1 The proposed site is located at 123 Barlow Moor Road and at the time of the survey comprised 2 new build semi-detached houses.

3.2 At the time of testing, the final floor finishes (carpet) were not installed in any of the bedrooms. In the living rooms and kitchens, the final floor finish (timber) had been installed.

3.3 A site location plan is provided as **Error! Reference source not found.**1, below, illustrating the location of the site, the existing building, and the surrounding area.

Figure 1 – Site Plan



Noise Sources

3.4 The noise climate at the site is dominated by road traffic noise (RTN) from Barlow Moor Road. RTN at Palatine Road also contributes to the noise climate at the rear.

4 VERIFICATION NOISE SURVEY

4.1 Prior to commencing the survey, dBx Acoustics spoke to Sharon McAndrew, environmental health office at Manchester City Council, to agree the verification methodology.

4.2 It was agreed that 5-minute measurements in a sample of rooms would be sufficient to demonstrate compliance. Measurements were to be taken in the rush hour period, as requested, to reflect a worst case.

Equipment

4.3 The equipment used during the environmental noise survey is detailed in Table 1, below.

Table 1: Equipment Used in the Environmental Noise Survey

Equipment	(Manufacturer & Part No./ Serial Number)	Serial Number
Meter	NOR 140	1403443
Pre-Amp	NOR 1209	12967
Microphone	NOR 1225	18437
Calibrator	B&K 4231	1821323

4.4 The sound level meters were calibrated before and after measurements, with no significant drift recorded. An accredited laboratory calibrated the equipment not more than two years prior to the measurements being made, except for the calibrator, which had been calibrated not more than one year prior to the survey.

Weather Conditions

4.5 Weather conditions during noise monitoring were very warm and dry. It was noted to be fairly windy, but as all measurements were conducted indoors, no measurements of wind speed were taken. The wind was observed however to contribute to noise levels.

5 ASSESSMENT

5.1 A summary of the measurements made is presented below.

5.2 For the bedrooms, the measured noise levels should be compared to the long-term environmental noise measurements made and reported in the planning noise impact assessment, and corrected for the difference between the daytime and night-time measurements. These are reproduced from the original report as Table 2, below.

5.3 In the bedrooms, where the carpets were not fitted, the reverberation time was measured, and corrected against the typical furnished reverberation time of 0.5s.

Table 2: Free-field Noise Levels Measured, 2024

Façade	Daytime Ambient Noise Level, $dB_{LAeq,16hour}$	Night-Time Ambient Noise Level, $dBL_{Aeq,8hour}$	Difference, dB
Front	56	50	-6
Rear	47	46	-1

5.4 It can therefore be seen that night-time noise levels are around 6dB lower at night than in the day at the front, and 1dB at the rear.

5.5 The window in the Plot 2 bedroom on the second floor was broken and could not be closed; measurements were therefore not taken in this room.

5.1 On this basis, a summary of the noise levels measured are presented in Table 3, below.

Table 3 – Assessment of Noise Levels

Location	Measured Noise Level, $dBL_{Aeq,5min}$	Measured RT, s	Design RT, s	RT Correction, dB	Day - night correction, dB	Correction IANLs, $dBL_{Aeq,T}$	Criterion, $dBL_{Aeq,T}$
Plot 2 bed rear 2nd floor	33.0	0.8	0.5	-2	-1	30.0	30
Plot 2 bed front 1st	34.9	1.3	0.5	-4	-6	24.8	30
Plot 1 Kitchen rear ground	30.2	-	-	-	-	30.2	35
Plot 1 living room front ground	34.3	-	-	-	-	34.3	35
Plot 2 living room front ground	36.1	-	-	-	-	36.1	35
Plot 2 living room front ground	35.8	-	-	-	-	35.8	35
Plot 1 bedroom front 1st	37.8	1.1	0.5	-3	-6	28.4	30
Plot 1 bedroom front 2nd	38.0	0.8	0.5	-2	-6	30.0	30

5.2 It can be seen that the required criterion was met in all rooms, other than the two living rooms, where a marginal exceedance of around 1dB was noted.

5.3 It should be stressed that the measurements were taken in the rush hour on a very warm Friday evening. Loud music was observed from open car windows on a number of occasions.

5.4 MCC's criteria are based on 16 hour (day)/8 hour (night) averages, which will be quieter than the rush hour period alone.

5.5 An analysis of the original long-term data indicates that noise levels in the rush hour are around 1-2dB louder than the overall 16-hour average. The values indicated above should therefore be corrected by at least 1dB to obtain an estimate of the actual 16-hour averages.

5.6 Additionally, none of the rooms were furnished. Once furnished, the reverberation times in the rooms would reduce significantly, and hence the noise levels would also reduce.

5.7 It is estimated based on the measured reverberation times that the noise levels measured in the living rooms (which had no absorption whatsoever, but timber floors and plasterboard walls/ceiling, and glazing) would reduce by at least 3dB once furnished.

5.8 On this basis, it is considered that the noise levels required by MCC have been met, and Planning Condition 8b can therefore be discharged.

6 CONCLUSION

6.1 dBx Acoustics Ltd has been appointed by Marco Investments to carry undertake verification noise measurements at 123 Barlow Moor Road, Manchester, M20 2TS.

6.2 Planning permission has been granted under reference 135315/FO/2022. Noise ingress requirements are detailed in Condition 8.

6.3 Noise levels were measured in a number of rooms during rush hour, as agreed with Manchester City Council (MCC). Measurements of reverberation time were made in bedrooms, where the proposed carpet had not been installed at the time of measurements.

6.4 Based on the noise levels measured, and corrections for reverberation time and the difference in daytime and night-time noise levels where appropriate, MCC's required noise levels were met in all rooms, other than the living rooms, where noise limits were exceeded by around 1dB.

6.5 However, when corrected for the 16-hour averages, and for furnishings, the required noise limits would also be met in these rooms.

6.6 On this basis, Planning Condition 8b can be discharged.

APPENDIX A – GLOSSARY OF ACOUSTIC TERMINOLOGY

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (Lp) the reference quantity is 2x10-5 N/m2. The sound pressure level existing when microphone measured pressure is 2x10-5 N/m2 is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (L_p) or Sound Power Level (L_w).
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
A-weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of L_p actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
$L_{n,T}$	L_p which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
L_{Fmax}	The instantaneous maximum sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
L_{AFmax}	The instantaneous maximum A weighted sound pressure level which occurred during the measurement. F indicates that the fast time-weighting is used.
$L_{Ar,Tr}$	The rating level: the equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise.
Reverberation Time, T	The time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped. The descriptor *T,* often includes other nomenclature to describe the type of reverberation time measurement or if the reverberation time is an average taken for specific frequencies. For example, a T_{mf} is the mid-frequency reverberation time.
Absorption Coefficient, α	The fraction of reverberant sound energy absorbed by a material. It is expressed as a value between 1.0 which equates to perfect absorption and 0 which equates to zero absorption.
Acoustic Class, A - E	Classification of sound absorbers into Sound Absorption Classes A-E, according to BS EN ISO 11654, including frequencies 200-5000 Hz
NRC	A single-number rating system used to compare the sound-absorbing characteristics of building materials. A measurement of the acoustical absorption performance of a material, calculated by averaging its Sound Absorption Coefficients at 250, 500, 1000 and 2000 Hz
STI	**Speech Transmission Index**, Metric ranging between 0 and 1 representing the transmission quality of speech with respect to intelligibility by a speech transmission channel
R	**Sound Reduction Index,** the laboratory measured sound insulation properties of a material or building element in octave or third octave bands.
R_w	**Weighted Sound Reduction Index**, a single number which represents the sound reduction of a material. It is derived by plotting the sound reduction index against a set of reference curves. The curves are shifted until a best-fit is established and the curve which best fits the sound reduction spectrum is used to represent the single figure value.
D_w	**Weighted Level Difference**, the weighted level difference between a pair of rooms, stated as a single figure.
D_{nT}	**Standardised Level Difference,** a frequency-dependent measurement of airborne sound insulation, calculated using the following formula: $D_{nT} = L_1 - L_2 + 10\log(T/T0)$ dB Where: L_1 is the energy-averaged sound pressure level due to the pink noise source measured in the source room using a sweep technique. L_2 is the energy-averaged sound pressure level measured in the receiving room using a sweep technique.

	T is the mean receiving room reverberation time (derived from T_{30} measured in seconds). T_0 is the reference reverberation time (= 0.5s for dwellings).
$D_{nT,w}$	**Weighted Standardised Level Difference,** a single-figure value of airborne sound insulation performance, derived according to procedures in BS EN ISO 717-1, based on the D_{nT} values at different frequencies (100-3150 Hz third octave bands).
D_{nFw}	**Weighted, Normalised Flanking Level Difference, t**he normalised, weighted difference in sound level between a pair of rooms via a flanking element, such as mullion or ceiling detail. The level difference in octave bands is first normalized to a reference amount of absorption and then plotted against a set of reference curves to establish a single figure value.
D_{ne}	**Normalised Element Level Difference**, The normalised difference in sound level between a pair of rooms via a small element such as a trickle ventilator. The level difference in octave bands is normalized to a reference amount of absorption.
D_{new}	**Weighted, Normalised Element Level Difference**, The normalised, weighted difference in sound level between a pair of rooms via a small element such as a trickle ventilator, stated as a single figure. The level difference in octave bands is normalized to a reference amount of absorption and then plotted against a set of reference curves to establish a single figure value.
C_{tr}	**Spectrum Adaptation Term** , a correction term applied to the sound insulation single-number values (R_w, D_w, and $D_{nT,w}$) in accordance with BS EN ISO 717-1. Applying the C_{tr} penalises a construction's performance if its low frequency performance is poor in relation its performance at higher frequencies.
Impact Sound	The noise generated by an impact on a structure. This is normally used to describe the noise created by people walking or moving furniture on a floor structure.
L_{nT}	**Standardised Impact Sound Pressure Level,** a frequency dependent measurement of impact sound insulation, calculated using the following formula: $L_{nT} = L_1 + 10\log(T/T0)$ dB Where: L1 is the mean sound pressure level due to the tapping machine measured in the receiving room using a sweep technique. T is the mean receiving room reverberation time (derived from T30 measured in seconds). T_o is the reference reverberation time (0.5s for dwellings)
$L'_{nT,w}$	**Weighted Standardised Impact Sound Pressure Level,** a single-figure value (@ 500 Hz) of impact sound insulation, performance, derived according to BS EN ISO 717-2, based on the L_{nT} values at different frequencies (100Hz- 3150 Hz third octave bands).
Insertion Loss, IL	The reduction of noise level due to the presence of a noise control device such as an attenuator, excluding any regeneration noise created by its presence.
NR	The **Noise Rating level**. This is a single figure value derived by plotting a noise spectrum against a set of curves. The curve under which the spectrum fits is the resulting NR level.

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