Azymuth Acoustics UK

Professional Acoustic Services

Noise Monitoring to Support Discharge of Planning Condition 10b Ref: Z57053.4

5no. Dwellings,
Varey Street, Gorton
Manchester

On behalf of

R&M Property Group
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1.0 Introduction

Azymuth Acoustics UK (henceforth Azymuth) has been appointed by R&M Property Group to undertake noise monitoring at a new build development site consisting of 5 no. dwellings located at the Varey Street / Cross Lane, Gorton, Manchester.

Noise monitoring has been instructed in order to assist with the discharge of Planning Condition 10b in relation to internal noise levels, as per the Planning Decision Notice for Application 136203/FO/2023.

1.1 Measurement Procedure

The instrumentation used for the acoustic testing consisted of 2no. SvanTek 971, 1no. SvanTek 977 and 1no. NTi XL2-TA type 1 precision sound level meters. The equipment was calibrated before and after measurements. The sound level meters measured A-weighted (fast response) noise levels as well as octave bands noise levels for all measurement record.

Measurements were taken in the bedroom Plot 1 Varey Street (on the corner of Cross Lane). This location was chosen as it would be deemed to be the dwelling room most affected by noise. The instrumentation measured the internal noise levels to be experienced by the apartments over a continuous time period taking into account rush-hour as well as night-time.

Measurements were undertaken over the below periods:

Plot	Room	Start Date – Time	End Date – Time
Varey Street (Corner of Varey Street and Cross Lane)			
1	Bedroom	31/03/26 – 14:23	01/04/26 – 14:28

Table 1 – Measurement durations

Full results of the noise levels recorded during the course of the survey are included in Appendix B of this report.

2.0 Assessment Criteria

In order to assess the extent of any measures required in order to comply with suitable conditions relating to potential noise sources, Azymuth has reviewed various guidance documents and standards, these include:

- British Standard 8233: 2014
- World Health Organisation Environmental Noise Guidelines 2018
- Manchester City Council Planning Application 136203/FO/2023 Condition 10b

2.1 British Standard 8233: 2014

"Guidance on sound insulation and noise reduction for buildings" (BS 8233) provides a code of practice for the sound insulation of a variety of building types affected by general environmental noise. It provides recommendations for control of noise in and around buildings and suggests appropriate internal ambient noise level criteria / limits for a variety of different situations including residential properties.

The following table summarises the noise limits suggested by BS 8233 applying to residential properties:

Activity	Room	Good Design Range $L_{Aeq,T}$ dB	
		07:00-23:00hrs	23:00-07:00hrs
Resting	Living Room	35	-
Dining	Dining Room / Area	40	-
Sleeping (daytime resting)	Bedroom (at night)	35	30

Table 2 – Noise Limits for Residential Properties Suggested in BS 8233

2.2 World Health Organisation Environmental Noise Guidelines 2018

The main purpose of the 2018 WHO guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from the following sources: transportation (road traffic, railway and aircraft), wind turbines and leisure activities.

The guidelines set out to define recommended exposure levels for environmental noise in order to protect population health. Exposure limits are average levels defined over a period of one year, measured outdoors in free field at the most exposed façade. It should be noted that the document does not provide guideline limit values for multiple noise sources in combination.

The Environmental Noise Guidelines (ENG) 2018 guidelines supersede the Community Noise Guidelines (CNG) from 1999. Nevertheless, the document recommends that all CNG indoor guideline values and any values not covered by the current guidelines should remain valid. As such, the following guidance would remain appropriate:

For protection against sleep disturbance inside dwellings, night-time noise levels should not exceed 30dB L_{Aeq} for continuous noise and 45dB L_{Amax} for typical single sound events (which are exceeded 15 times or more per night – see ProPG Appendix A.12 for more details).

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise (interpreted as noise from all sources combined) should not exceed 55dB L_{Aeq} on balconies, terraces and in outdoor living areas.

It should be noted that exposure levels defined in ENG and CNG are for guidance purposes as relates potential adverse health impacts and should not be interpreted as absolute limits or regulations.

2.3 Manchester City Council Planning Application 136203/FO/2023

2.3.1 Condition 10b

'b) Prior to the 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 non-conformity 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 pursuant to policies SP1 and DM1 of the Core Strategy for the City of Manchester'

3.0 Assessment of Results

3.1 Summary of Measurement Results

3.1.1 Plot 1 Cross Lane Bedroom

The following table summarises the noise measurement data for the Bedroom of Plot 1 Varey Street over the 31/03/26 to 01/04/26 measurement period.

Location	Period	L_{Amax}	L_{Aeq}	L_{A10}	L_{A50}	L_{A90}
Bedroom	Day	44.4	31.6	34.3	26.4	22.4
Bedroom	Night	38.6	25.3	25.5	21.0	19.5

Table 4 – Summary of daytime and night-time noise levels Plot 1 Cross Lane Bedroom

- 15th highest night-time L_{Amax} value = 43.6dB inside Bedroom of Plot 1 Cross Lane

Full results of the noise levels recorded during the course of the survey are included in Appendix B of this report.

3.2 Assessment with Respect to Planning Conditions

The following table details the target indoor ambient and measured noise levels for Plot 1 at the Varey Street site with respect to Planning Condition 10b.

Plot.	Room	Target Indoor Ambient Noise Level	Measured Ambient Noise Level	Compliance
1 Varey Street	Bedroom	≤30dB $L_{Aeq, night}$ ≤45dB L_{Amax} 15th highest	25.3dB $L_{Aeq, night}$ 43.6dB $L_{Amax, night}$ 15th highest	**Passes**

Table 7 – Assessment of results

3.2.1 Comments / Room Finishes

At the time of testing all plots were finished in terms of walls, floors and windows etc. but fully unfurnished. Hence mineral wool absorbent material was distributed around the room on the floor in order to simulate the presence of normal carpet and general furnishing items such as a bed and curtains etc that would normally be present in a dwelling.

4.0 Summary

Azymuth has been appointed by R&M Property Group to undertake noise monitoring at a new build development consisting of 5no. houses located at Cross Lane/Varey Street, Gorton, Manchester.

In the Planning Decision Notice for Application 136203/FO/2023 Planning Condition 10b was issued by Manchester City Council which stated a verification report shall be required to validate that the relevant internal noise level targets have been met.

The internal noise level targets (or lower) for bedrooms are as follows:

- Average bedrooms noise level (night-time - 23.00 - 07.00) 30dB L_{Aeq}
- individual noise events shall not exceed 45dB $L_{Amax,F}$ by more than 15 times)

Plot 1 Varey Street

The night-time noise levels in the Bedroom of Plot 1 Varey Street were measured to be 25.3dB $L_{Aeq, 8hr}$. The 15th highest night-time L_{Amax} value was measured to be 43.6dB. The measured noise levels are fully compliant with the target criteria.

Appendix A – Glossary of Acoustic Terms

Decibel (dB)
This is the unit used to measure sound. The human ear has an approximately logarithmic response to acoustic pressure over a very large dynamic range (typically 20 micro Pascal to 100 Pascal).

dB (A)
This is a measure of the overall noise level of sound across the audible spectrum with a frequency weighting (i.e. A-weighting) to compensate for the sensitivity of the human ear to sound of different frequencies. The A-weighting curve is implemented in sound level meters using an electronic filter that approximately corresponds to the frequency response of the ear.

Octave Band Noise Level
The human ear is sensitive to sound over a range of frequencies between approximately 20Hz to 20kHz. The ear is also generally more sensitive to medium and high frequencies than to low frequencies. In order to define the frequency content of a noise, the spectrum can be divided into frequency bands. The most commonly used frequency bands are octave bands, in which the mid-frequency of each band is twice that of the band below it.

L_{Aeq}
This is the equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over a given time period.

Reverberation Time (RT or sometimes T_{30} or T_{60})
This is the time taken for the reverberant sound energy in an enclosure to decay one millionth of its equilibrium value, i.e. by 60dB, after the source has been switched off. The reverberation time is frequency dependent and it is customary to measure its value in octave or one-third octave bands. Reverberation occurs when sound waves are repeatedly reflected from each surface of the room.

Sound Reduction Index (SRI)
Difference measured between the amount of energy flowing towards the wall in the source room and the total amount of energy entering the receiving room (usual range 100 - 3150Hz for one third octave band values). The SRI varies with frequency and is measured in a laboratory in either octave or one-third octave bands.

SRI = L1 - L2 + 10 log (S/A), where:
L1 = Noise level in the source room
L2 = Noise levels in the receiving room
S = Surface area of test specimen
A = Equivalent acoustic absorption area in the receiving room

Weighted Sound Reduction Index (R_w)
This is a weighted single figure descriptor of the sound insulation performance of a partition measured under laboratory conditions. The procedure used to quantify the R_w is to compare the sound reduction index (SRI) in each of the one-third octave bands from 100Hz to 3150Hz against a set of standard reference curves.

Appendix B – Graphical Representation of Noise Survey Data

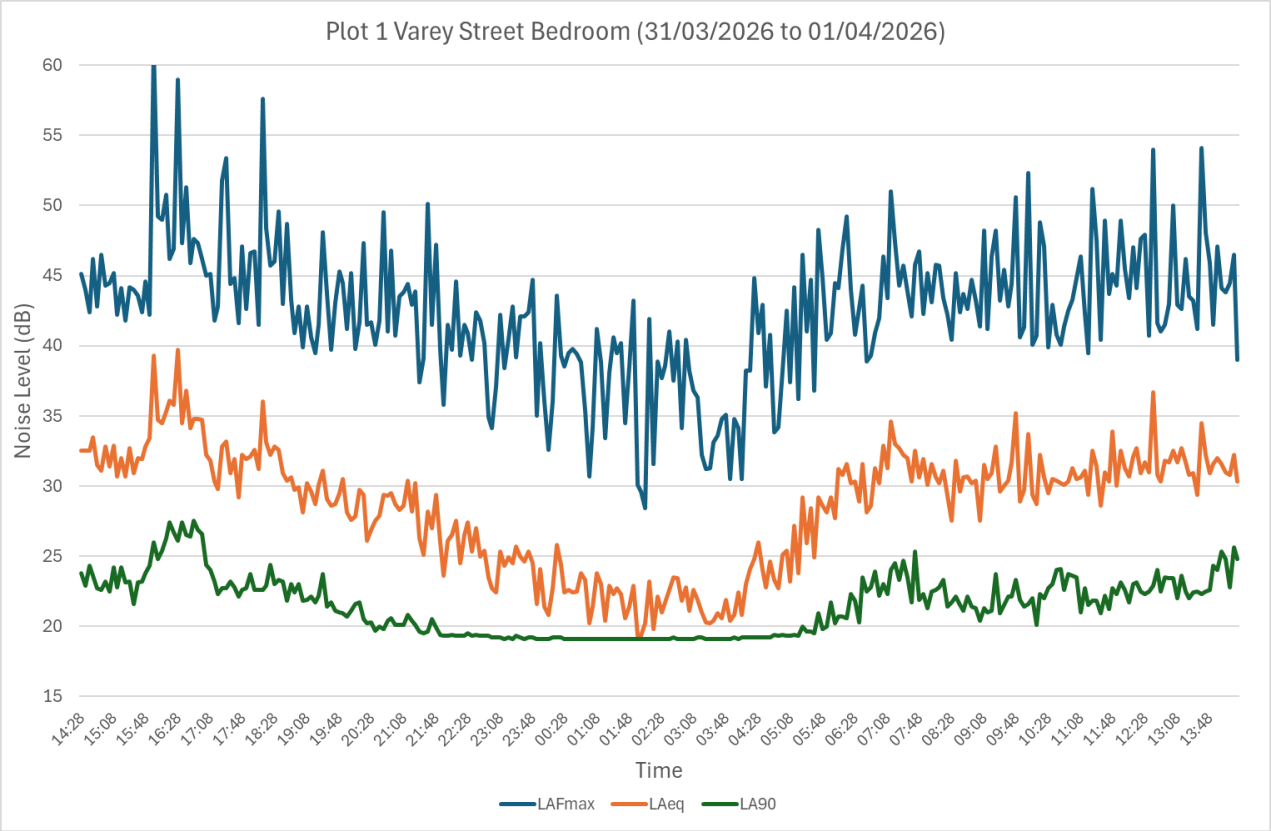


Table B1 – Varey Street Plot 1 Bedroom graphical noise data