

ASSESSMENT OF INTERNAL AMBIENT NOISE LEVELS

Planning Condition 17 (Application Ref: 130100/FO/2021)

Residential Development

402 Wilmslow Road, Manchester, M20 3BN

REPORT REFERENCE NO. J005806-9509-CW-01

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This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.



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1.0 SUMMARY

PDA has been commissioned by Concorde No 1 Ltd to carry out an acoustic assessment of the internal ambient noise levels within the new build residential development at 402 Wilmslow Road in Manchester M20 3BN. The development comprises 18 no. plots in total across 6 storeys.

The results of the survey were used to evaluate the internal ambient noise levels and to assess compliance with the requirements Planning Condition 17.

The assessment has demonstrated that the measured internal ambient noise levels are compliant with the requirements of Planning Condition 17. On this basis we would recommend that the Condition may be discharged.

2.0 NOISE ASSESSMENT CRITERIA

2.1 Planning Condition 17 (application ref: 130100/FO/2021)

The following assessment has been undertaken to demonstrate compliance with Planning Condition 17 which stipulates:

“The development shall be acoustically treated and operated in accordance with mitigation measures set out in the Noise Impact Assessment Report prepared by Hann Tucker Associates reference 27494/NIA1.

Prior to occupation of the residential units, a verification report shall be submitted to and approved in writing by the City Council as local planning authority to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the 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 agreed noise criteria”.

We have reviewed the Acoustic Report prepared by Hann Tucker Associates as referenced in the planning condition. We note that the Hann Tucker assessment provides acoustic performance specifications for the glazing and ventilation elements based on achieving the internal noise criteria detailed in BS8233. A summary of BS8233 internal noise criteria is provided below.

2.2 BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

Section 7 of British Standard 8233:2014, *Guidance on Sound Insulation and noise reduction for buildings*, gives guidance on internal noise levels within dwellings, flats and rooms in residential use when unoccupied. The following criteria are for Living and Dining Rooms for daytime use and Bedrooms for night time.

Table 1. BS8233 recommended indoor ambient noise levels (residential use)

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 L _{Aeq,16hour}	–
Dining	Dining room/area	40 L _{Aeq,16hour}	–
Sleeping (daytime resting)	Bedrooms	35 L _{Aeq,16hour}	30 L _{Aeq,8hour}

The Hann Tucker assessment also considers individual events in terms of L_{Amax}. Noting that individual events should not typically exceed 45 dB L_{AFmax} more that 10 – 15 times during the night-time.

3.0 NOISE SURVEY DETAILS

3.1 Survey Times and Dates

Measurements within the development were conducted between 14:25 hours on Monday 27th and 10:10 hours on Tuesday 28th April 2026.

It is noted that mechanical ventilation is utilised throughout the development. During the survey period it is understood that the MVHR systems were installed within the apartments tested and were operating at their typical capacity providing background ventilation.

All measurements were made by Chris Wright BSc (Hons) MIOA of PDA Ltd.

3.2 Equipment Used

Throughout the survey measurements were undertaken with 2 no. NTi XL2 sound level meters. The meters are precision grade Class 1 sound level meters (as per BS EN 61672-1: 2002) for which current calibration certificates are held. The meters were set to A-Weighted and fast response. The meters were calibrated directly before any measurement took place and immediately afterwards and no significant drift was observed.

3.3 Measurement Locations

The development comprises 18no. plots in total. In addition, the Hann Tucker assessment indicates that there are 2 facade specifications throughout the development one for plots overlooking Wilmslow Road to the south east and another for those to the rear of the building overlooking the carpark / Wellington Road.

On this basis it was agreed with the Local Authority that measurements should be undertaken within at least 2 plots amounting to a sample size of 10% with one measurement to the front and rear covering both facade specifications.

For the purposes of this assessment, we were provided with access to Apartment 1 (rear) and Apartment 5 (front). Long term measurements were undertaken in the bedrooms capturing a full night-time period whilst short term sample measurements were taken within the living rooms.

It should be noted that within Apartment 1 there was no living room overlooking the rear elevation and as such, no measurement has been undertaken.

The measurement locations are highlighted within the following figures:

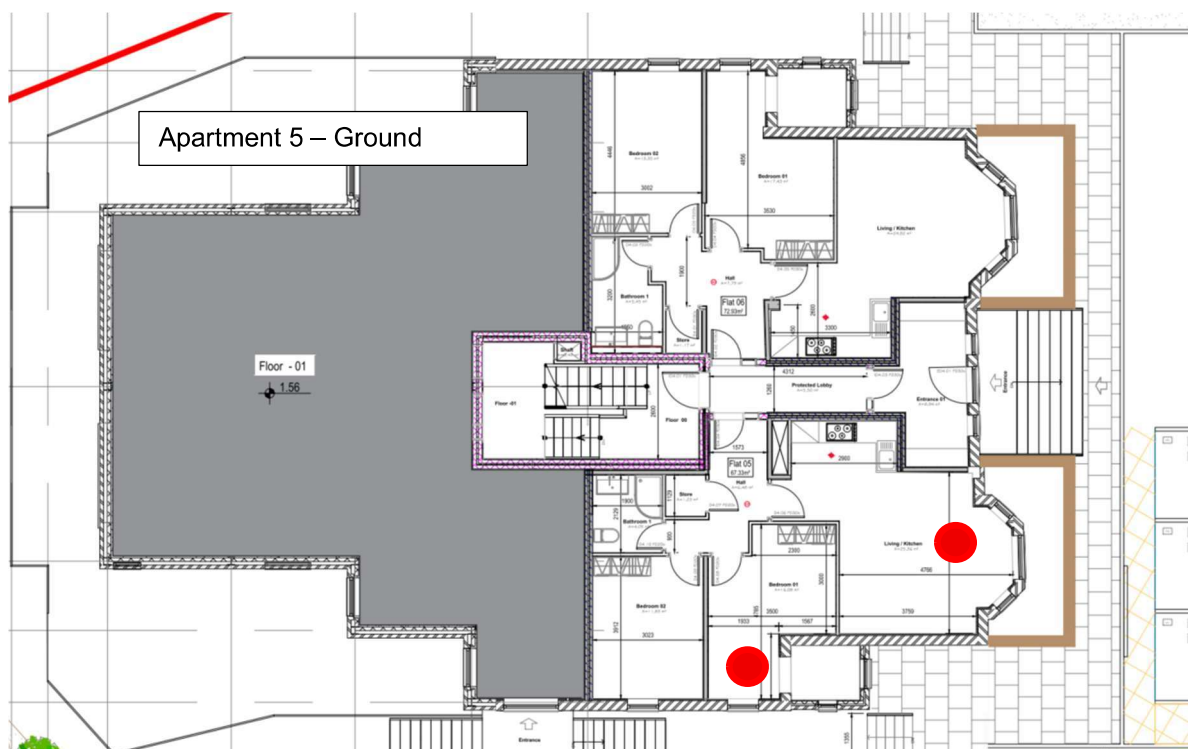
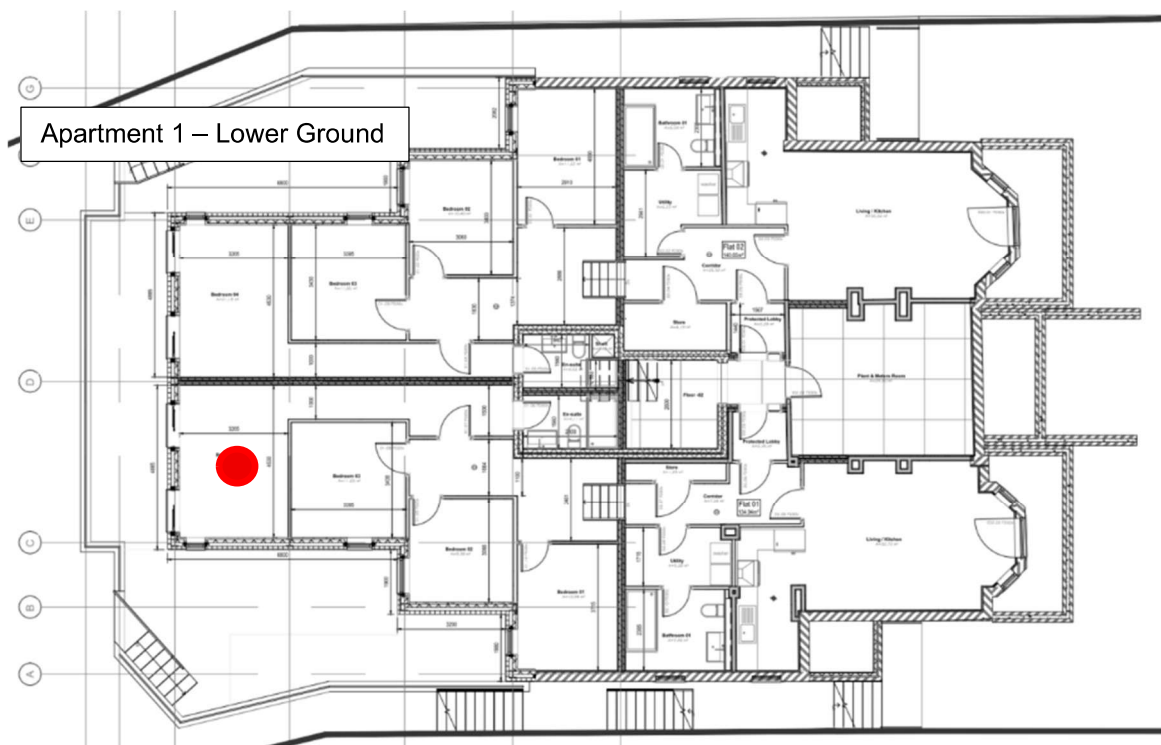


Figure 1 – Measurement Locations

3.4 Description of Noise Sources

During the measurement period road traffic on Wilmslow Road were deemed to be the dominant noise source across the site. No specific sources of noise were noted to the rear of the development which overlooks the resident's carpark and Wellington Road.

3.5 Reverberation Time Within Spaces

All measurements were undertaken within unoccupied rooms that were generally unfurnished and did not include soft furnishings such as bedding, curtains, etc. Acoustic theory would indicate that noise levels are directly related to the amount of absorption within the space. As the room was not fully furnished, we have applied a correction to account for the additional absorption that would be present under normal, furnished conditions.

4.0 MEASURED RESULTS

A summary of the noise survey results is given below.

The levels presented in the tables have been rounded to the nearest decibel, L_{Aeq} levels are the logarithmic average of all the measurements within that space.

Table 2. Summary of Internal Noise Measurements

Room	Description	Time Period (hh:mm)	Measured $L_{Aeq, T}$ (dB)	Night-time L_{AFmax} (dB)
Apartment 1 (Bedroom)	Daytime	14:25 – 23:00 / 07:00 – 10:05	23	n/a
	Night-time	23:00 – 07:00	21	40
Apartment 5 (Bedroom)	Daytime	14:30 – 23:00 / 07:00 – 10:10	26	n/a
	Night-time	23:00 – 07:00	21	37
Apartment 5 (Living Room)	Daytime	13:30 – 13:50 / 10:20 – 10:45	32	n/a

4.1 Discussion of Results

It should be noted that the glazing and ventilation specifications given in the Hann Tucker report and as referenced in Planning Condition 17 were based on achieving the internal noise criteria given in BS8233 and the WHO Guidelines. On this basis, where suitable internal noise levels have been achieved it may be inferred that the installed glazing and ventilation is performing as expected.

British Standard 8233:2014, Guidance on Sound Insulation and noise reduction for buildings indicates that internal ambient noise levels within habitable rooms should not exceed:

- 35 dB L_{Aeq} during the daytime (07:00 – 23:00)
- 30 dB L_{Aeq} in bedrooms during the night-time (23:00 – 07:00)

In addition, the WHO Guidelines for Community Noise recommends that the indoor sound pressure levels should not exceed approximately 45dB L_{Amax} more than 10 – 15 times during the night.

Based on the measured levels in Table 2 it can be seen that the internal ambient noise levels are between 23 – 32 dB L_{Aeq} during the daytime and 21 dB L_{Aeq} during the night-time respectively with 40dB L_{AFmax} exceeded no more than 10 times during the night. As such, the guidelines levels given in BS8233 and WHO have been comfortably achieved. This would suggest that the glazing and ventilation installed



at the development is suitable to control noise ingress to an acceptable level. On this basis we would consider that Planning Condition 17 may be discharged.

APPENDIX A – DEFINITION OF ACOUSTIC TERMS

The decibel

This is the basic unit of noise, denoted dB.

A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A) L_{eq} or 50 dB L_{Aeq} . Both mean the same thing. (See below for a definition of L_{eq}). The dB(A) level can be regarded as the overall level perceived by human beings.

L_{eq} and $L_{eq(s)}$

This is the equivalent continuous noise level which contains the same acoustic energy as the actual time-varying sound. In other words it is a kind of average noise level. It is denoted dB L_{eq} or, for A-weighted figures dB(A) L_{eq} or dB L_{Aeq} . It can also be expressed in terms of frequency analysis (see later). $L_{eq(s)}$ is the sample L_{eq} level.

L_n

This is the level exceeded for n% of the time. It is denoted dB L_n or, for A-weighted figures dB(A) L_n or dB L_{An} . It can be expressed in terms of frequency analysis (see later). L_{90} is the level exceeded for 90% of the time and is a measure of the lowest level typically reached. L_{10} is the level exceeded for 10% of the time and is the highest level typically reached. L_{50} is the level exceeded for 50% of the time and, mathematically, it is the median.

L_{max}

This is the maximum level reached during a measurement period. The “time constant”, or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. “Fast”, “Slow”, etc. It is denoted dB L_{max} or, for A-weighted figures dB(A) L_{max} , dB L_{Amax} , etc. It can also be expressed in terms of frequency analysis.

Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g. L_{eq} , L_{90} , L_{max} etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.