Post Completion Noise Testing Report – Plot 3

Site: CDN/24/0603 Laystall Street, Manchester
Reference: 51-814-R1-1
Date: August 25



E3P

Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

+ 44 (0) 161 707 9612
https://e3p.co.uk

Registered in England
CRN: 08725262

QUALITY ASSURANCE

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WRITTEN BY	QUALIFICATIONS	POSITION
Lee Faulkner	BSc (Hons) MIEnvSci MIOA	Associate Director

REVIEWED BY	QUALIFICATIONS	POSITION
Melissa Bailey	BEng (Hons) AMIOA	Consultant

AUTHORISED BY	QUALIFICATIONS	POSITION
Lee Faulkner	BSc (Hons) MIEnvSci MIOA	Associate Director

EXECUTIVE SUMMARY

Site Address	Laystall Street, Manchester M1 2JZ
National Grid Reference	E 384970, N 398283.
Background	Post completion acoustic testing is required in order to discharge a planning condition (CDN/25/0532) in relation to the residential development at the above address.
Surveys Completed	E3P have undertaken unattended measurements inside a worst-case living room and bedroom of plot 3, second floor apartment, during a typical weekday period. As mechanical ventilation was installed with no trickle vents, windows were not required to be opened for this and, as such, a 24-hour survey was conducted with windows closed.
Assessments Completed	Measured internal noise levels have been corrected to allow for unfurnished rooms and then compared to BS 8233 and WHO guidelines for internal habitable rooms. The surveys determined compliance with the applicable criteria in Plot 3.
Remedial Mitigation Measures	Due to the outcome of the survey, no remedial measures are required. All currently installed mitigation are as recommended in the original Noise Assessment.

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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by McCauls Kellen Homes to undertake Post Completion Noise Testing for Plot 3 of the Laystall Street Development comprising four residential apartments, to be referred to hereafter as 'the Site'.

Following submission of the application, planning permission was granted with the following condition applied:

> *Condition 11 -*
>
> *(c) Prior to occupation a post completion report to verify that all of the recommended mitigation measures have been installed and effectively mitigate any potential adverse noise impacts*
>
> *in the residential accommodation (within at least 10% of the apartments) shall be submitted and agreed in writing by the City Council as local planning authority. Prior to occupation any non*
>
> *compliance shall be suitably mitigated in accordance with an agreed scheme.*
>
> *Reason - To secure a reduction in noise in order to protect future residents from noise nuisance, pursuant to policies SP1, H1 and DM1 of the Core Strategy.*

1.2. REPORT OBJECTIVES

The objectives of this report are as follows.

- Establish and measure the existing sound levels within affected rooms during typical weekday periods.
- Assess internal noise levels in accordance with criteria given in BS 8233.
- Verify any mitigation measures, where required.

2. ASSESSMENT METHODOLOGY

2.1. BRITISH STANDARD BS 8233:2014+A1:2019 – GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

The scope of this standard is the provision of recommendations for the control of noise in and around buildings including residential dwellings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

The standard suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 1.

Table 1 BS 8233:2014 Recommended Internal Noise Levels

Criterion	Typical situation	Design criterion, $L_{Aeq,t}$ (dB)
Suitable resting and sleeping conditions	Living Room	35
	Bedroom	30

3. SURVEY RESULTS

It was noted at installation that mechanical ventilation was installed and, as such, no vents/windows were required to be opened for ventilation. The system was active for the duration of the test to inform a worst-case assessment.

The rooms were unfurnished and so a correction to the measured values is required, as shown below:

Picture 1 Living Room



Picture 2 Bedroom



The rooms were unfurnished and so a correction to the measured values is required, as follows:

$L_{Aeq,furnished} = L_{Aeq,unfurnished} - 10 \times \log (R_{T,unfurnished} / R_{T,furnished})$.

Where R_T is reverberation time.

A measurement of reverberation time in the room was not possible at the time. As such, a standard reverberation time of 0.5 seconds is applied for the furnished room.

To calculate the R_T of the unfurnished room, E3P have used Sabine formula and internal layouts to calculate this based on the following formula:

$T = 0.161 V / A$

Where V is the volume of the room in m^3; and
A is the total absorption in the room

For 'A' an absorption coefficient for each element is used to calculate the total absorption. An absorption coefficient of 0.07 is applied for the wooden parquet floor on concrete and 0.05 for the plastered walls and ceiling.

This results in the following corrections:

- Living Room = -6.4 dB correction to measured values.
- Bedroom = -5.6 dB correction to measured values.

3.1. PLOT 3

3.1.1. LIVING ROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted an internal sound survey within the living room with all windows and doors closed. The survey was conducted during the following periods:

- 12:00 Wednesday 20th to 12:00 Thursday 21st August 2025.

The following noise measurement position was chosen for the Noise Survey:

- Noise Measurement Position 1 (NMP1): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be road traffic on Laystal Steet and the distant Great Ancoats along with sound from the ventilation system.

A summary of the hourly measured sound pressure levels inside the living room are presented in Table 2.

Table 2 Living Room – Unfurnished – Plot 3

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)
20/08/2025 12:00	53.5*
20/08/2025 13:00	37.3
20/08/2025 14:00	37.5
20/08/2025 15:00	37.2
20/08/2025 16:00	37.5
20/08/2025 17:00	37.2
20/08/2025 18:00	37.2
20/08/2025 19:00	37.3
20/08/2025 20:00	37.1
20/08/2025 21:00	37.0
20/08/2025 22:00	37.0
20/08/2025 23:00	37.0
21/08/2025 00:00	37.0
21/08/2025 01:00	36.9
21/08/2025 02:00	36.9
21/08/2025 03:00	36.9
21/08/2025 04:00	37.0
21/08/2025 05:00	37.0
21/08/2025 06:00	37.0
21/08/2025 07:00	37.2

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)
21/08/2025 08:00	37.4
21/08/2025 09:00	37.4
21/08/2025 10:00	37.3
21/08/2025 11:00	37.2
21/08/2025 12:00	42.4*

*Includes surveyor during installation.

The resultant 16-hour noise level is noted to be 37 dB applicable to the unfurnished room. With the furnished correction applied, noise levels are expected to be 31 dB $L_{Aeq,16hr}$.

This falls below the criterion by 4 dB.

3.1.2. BEDROOM – INTERNAL SOUND MEASUREMENT

E3P has conducted a full 24-hour survey within the bedroom with all windows and doors closed. The survey was conducted during the following periods:

- 12:00 Wednesday 20th to 12:00 Thursday 21st August 2025.

The following noise measurement position was chosen for the Noise Survey:

- Noise Measurement Position 1 (NMP1): Located in the centre of the living room at a height of 1.5 m above floor level. Noise sources were noted to be road traffic on Laystal Steet and the distant Great Ancoats along with sound from the ventilation system.

A summary of the hourly measured sound pressure levels inside the bedroom are presented in Table 3.

Table 3 Bedroom – Unfurnished – Plot 3

Measurement Start Time	Measured ambient noise level, $L_{Aeq,T}$ (dB)	10th Highest maximum noise level, $L_{Amax,fast,2mins}$ (dB)
20/08/2025 12:00	52.5*	N/A
20/08/2025 13:00	37.1	
20/08/2025 14:00	37.8	
20/08/2025 15:00	37.0	
20/08/2025 16:00	37.4	
20/08/2025 17:00	36.9	
20/08/2025 18:00	37.1	
20/08/2025 19:00	37.1	
20/08/2025 20:00	36.8	
20/08/2025 21:00	36.7	
20/08/2025 22:00	36.6	
20/08/2025 23:00	36.3	47.1
21/08/2025 00:00	36.3	
21/08/2025 01:00	36.2	
21/08/2025 02:00	36.1	
21/08/2025 03:00	36.1	
21/08/2025 04:00	36.1	
21/08/2025 05:00	36.2	
21/08/2025 06:00	36.2	
21/08/2025 07:00	36.7	N/A
21/08/2025 08:00	37.2	
21/08/2025 09:00	37.0	
21/08/2025 10:00	36.9	
21/08/2025 11:00	36.8	

*Includes surveyor in the room

The resultant 16-hour noise level is noted to be 37 dB and the 8-hour night-time noise level is 36 dB. The 10th highest maximum noise level during the night-time period was also measured and noted to be 47 dB. All applicable to the unfurnished room.

With the corrections for a furnished room applied, the following is expected:

- Bedroom = 31 dB $L_{Aeq,16hr}$, 30 dB $L_{Aeq,8hr}$ and 41 dB $L_{Amax,fast}$.

All of which fall below the relevant criteria when rounded to the closest whole number in accordance with BS 8233.

Weather conditions during the survey were calm and dry.

The equipment outlined in 3 was used for the noise survey.

Table 4 Noise Measurement Equipment and Calibration Dates

Measurement position	Equipment description	Manufacturer & type number	Serial number	Calibration due date
NMP1	Sound Level Meter	Svan SV958A	97701	2nd August 2026
NMP2	Sound Level Meter	Nor 145	14529152	16th June 2027
	Pre-amplifier	Nor 1209	22293	
	Microphone	Nor 1227	332220	
	Calibrator	Nor 1255	125525208	16h June 2026

The sound level meters were field calibrated before and after measurements with no significant drift witnessed.

END OF REPORT

APPENDIX I
LIMITATIONS



GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.
3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.
4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

NOISE AND VIBRATION IMPACT ASSESSMENTS

5. Where a noise or vibration survey is required to inform an assessment, E3P will endeavour to ensure that all noise and vibration measurements taken are robust, representative and reliable in order to inform an accurate assessment.
6. Where mitigation measures are specified in this report, it should be noted that these measures are relative to a specific sound or vibration source, both in terms of the measured sound pressure and vibration level and the character of the sound source. Where either the sound pressure level or the character of the sound varies following completion of the sound survey, E3P cannot be held responsible for any subsequent variations in the proposed mitigation performance.
7. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.
8. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.
9. E3P does not warrant work/data undertaken/provided by others.

APPENDIX II
GLOSSARY



NOISE

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. The most widely used weighting mechanism that best corresponds to the response of the human ear is the "A"-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or LAeq, LA90 etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective but, as a general guide, a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 5 Typical Sound Pressure Levels

SOUND PRESSURE LEVEL	LOCATION/EXAMPLE
0	Threshold of hearing
20-30	Quiet bedroom at night
30-40	Living room during the day
40-50	Typical office
50-60	Inside a car
60-70	Typical high street
70-90	Inside a factory
100-110	Burglar alarm at 1 m away
110-130	Jet aircraft on take off
140	Threshold of pain

ACOUSTIC TERMINOLOGY

Table 6 Terminology

DESCRIPTOR	EXPLANATION
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
LAeq, T	LAeq is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
LAmax	LAmax is the maximum A-weighted sound pressure level recorded over the period stated. LAmax is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the "fast" sound level meter response.
L10 and L90	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L90 is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Fast	A time weighting used in the root-mean-square section of a sound level meter with a 125-millisecond time constant.
Slow	A time weighting used in the root-mean-square section of a sound level meter with a 1000-millisecond time constant.
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2E-05 Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. "A" weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.