



**RESIDENTIAL DEVELOPMENT – DOMETT STREET, MANCHESTER
NOISE MITIGATION SCHEME**

On behalf of:

John Southworth Ltd



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NOISE MITIGATION SCHEME

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TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	ACOUSTIC CRITERIA	2
3.	NOISE SURVEY	4
4.	NOISE MITIGATION SCHEME	6
5.	SUMMARY	9
	FIGURE 1: SITE LOCATION & NOISE MEASUREMENT POSITION	10
	FIGURE 2: PROPOSED SITE LAYOUT & NOISE MITIGATION SCHEME	11
	APPENDIX A: ACOUSTICS UNITS & INDICES	12
	APPENDIX B: NOISE SURVEY RESULTS	14

1. INTRODUCTION

- 1.1 Hepworth Acoustics was commissioned by John Southworth Ltd to carry out a noise impact assessment in connection with the approved residential development consisting of four new flats within a two-storey building on land off Domett St, Manchester M9 8DG.
- 1.2 Outline planning permission was granted for the residential development of the site on August 2023, planning reference 137733/FO/2023.
- 1.3 Due to the significant distance and screening from existing buildings from site, the nearest public house, identified as ‘Ye Golden Lion’, would not cause a significant noise impact. Therefore, the road traffic along Old Market Street is considered the primary source of noise.
- 1.4 The site is currently an active construction site and is in operation between 08:00 and 16:30. It is bounded by Old Market Street to the north, Domett Street to the east, residential dwellings to the south and commercial properties to the west. The site location is shown in **Figure 1**.
- 1.5 This assessment has been based on the site layout provided by John Southworth Ltd named “105 - Proposed Site Plan_NMA Rev15” and dated March 2025, as shown in **Figure 2**.
- 1.6 Condition 15 requires a scheme of noise mitigation to be provided for the proposed development to be submitted and approved to the local planning authority.
- 1.7 The noise assessment has included:
 - An inspection of the site and environs;
 - Measurement of road traffic noise levels on the site over a 24 hour period;
 - Recommending noise mitigation and sound insulation measures where appropriate.
- 1.8 The various acoustics indices referred to in this report are described in **Appendix I**. All noise levels in the text have been rounded to the nearest decibel as fractions of a decibel are imperceptible.

2. ACOUSTIC CRITERIA

Planning Condition

2.1 Condition 15 of the outline planning approval reference 137733/FO/2023 states;

“Before above ground development commences, a scheme for acoustically insulating the residential accommodation against noise from Old Market Street and neighbouring public house shall be submitted to and approved in writing by the City Council as Local Planning Authority”

Manchester City Council Planning & Noise Technical Guidance 2022

2.2 This document provides guidance for assessing the potential impact on residential developments and recommends the following noise limits or acoustic design criteria:

- Bedrooms (night time - 23.00 - 07.00) 30 dB $L_{Aeq,T}$ (individual noise events should not normally exceed 45 dB $L_{Amax,F}$ by more than 10 times)
- Living Rooms (daytime - 07.00 - 23.00) 35 dB $L_{Aeq,T}$
- Gardens and terraces (daytime) 55 dB $L_{Aeq,T}$

2.3 These noise levels correspond to guidance set out in British Standard 8233: 2014, ‘Guidance on sound insulation and noise reduction for buildings’ and ‘ProPG: Planning & Noise – New Residential Development’ (2017).

Approved Document O of the Building Regulations (2021 Edition)

2.4 Requirement O1(2)(a) of ADO is reproduced below:

“O1 Overheating mitigation

(1) Reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel (“residences”) to –

- a. Limit unwanted solar gains in summer;*
- b. Provide an adequate means to remove heat from the indoor environment.*

(2) In meeting the obligations in paragraph (1) –

- a. Account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence; and***
- b. Mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.”*

“In the Secretary of State’s view, requirement O1(2)(a) is met in a new residential building if the building’s overheating mitigation strategy for use by occupants takes account of all of the following.

- a. Noise at night – paragraphs 3.2 to 3.4. [Emphasis added]***
- b. Pollution – paragraph 3.5.*

- c. Security – paragraphs 3.6 and 3.7.
- d. Protection from falling – paragraphs 3.8 to 3.10.
- e. Protection from entrapment – paragraph 3.11.”

“3.1 The standards in this section may mean that the standards of the simplified method cannot be met. For example, if external noise is an issue, it is unlikely that windows would be opened by an occupant and therefore the minimum free areas of the simplified method cannot be met. In such cases, dynamic thermal modelling should be used.

3.2 In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).

3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40 dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).

b. 55 dB L_{AFmax} , more than 10 times a night (between 11pm and 7am).

3.4 Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants’ Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use.”

2.5 It is considered, to satisfy **Requirement O1(2)(a)** of ADO, noise ingress under overheating mitigation conditions needs to be considered at the Building Control application stage, taking into account the effects of the overheating mitigation strategy on noise ingress and the indoor limits in **Table 1** need to be achieved.

Table 1: Requirement O1(2)(a) Indoor Noise Limits

Description	Limits
Average night-time noise level (23:00-07:00)	40 dB $L_{Aeq,8h}$
Maximum noise levels exceeded no more than 10 times a night (23:00-07:00)	55 dB L_{AFmax}

2.6 The O1(2)(a) noise limits **only apply in bedrooms** (i.e. only rooms specifically intended for use as a bedroom in the design) during the **night-time (23:00-07:00)** whilst the **overheating mitigation strategy** is in use (e.g. windows open to provide passive ventilative cooling).

3. NOISE SURVEY

- 3.1 A noise survey was carried out between 10:55 on Wednesday 23 April 2025 and 11:05 on Thursday 24 April 2025, using automated monitoring equipment.
- 3.2 The purpose of the noise survey was to quantify the prevailing noise levels upon the proposed development land.
- 3.3 Noise levels were measured at a location representative of the boundary of the proposed site at the northern boundary facing Old Market Street as shown in **Figure 1** and described below:
- **Location A:** Approximately 4m from Old Market Street at the northern boundary.
- 3.4 Road traffic noise on Old Market Street was found to be the main sources of noise on site. However, initial ground works are currently taking place on the development site and therefore extraneous construction noise has been excluded from measurements.
- 3.5 As set out in the Manchester City Council Planning & Noise Technical Guidance document “a noise survey for a residential development lying near a busy road should consider the noise levels around the development site during rush hour, during the day, and during the night”. Therefore, as construction works predominately influenced the noise levels between approximately 08:00 to 16:30 hours, the rush hour periods (i.e. 07:00-08:00 and 17:00-18:00 hours) have been considered in this assessment.
- 3.6 The automated measurements at Location A were carried out using Nti Audio XL3 ‘Class 1’ sound analyser and associated environmental kit, with the microphone fitted with a windshield and tripod mounted.
- 3.7 The calibration level of the meter was checked before and after the measurements with no calibration deviation observed.
- 3.8 The noise measurements were taken in consecutive 5-minute and 2-minute periods in ‘free-field’ conditions and at microphone heights of approximately 1.4m above the ground. Frequency analysis was carried out, and audio was also recorded in order to assist in identifying significant sources of noise contributing to the noise climate.
- 3.9 Weather conditions during the survey were suitable for the purposes of the survey and subsequent assessment.
- 3.10 The results from the automated measurements have been used to calculate the rush hour values $L_{Aeq,1hr}$ and night-time $L_{Aeq,8hour}$ values based on the logarithmic average of all 5-minute measurements over these periods, The 10th highest L_{AFmax} value for the 23:00 – 07:00 night-time period has been calculated based on the data measured in 2-minute periods.

3.11 On this basis, the noise exposure values are as follows:

Table 2: Summary of daytime & night-time noise exposure values at Locations A (dB)

Location	Daytime $L_{Aeq,1hr}$		Night-time	
	07:00-08:00 hrs	17:00-18:00 hrs	10 th highest L_{AFmax}	$L_{Aeq,8hr}$
A – 4m from Old Market St	67	65	79	60

3.12 Full survey details and results are provided in **Appendix II**.

4. NOISE MITIGATION SCHEME

External Amenity Areas/Gardens

- 4.1 The external amenity areas for the proposed apartments are set back from Old Market Road to the rear of the building and will be enclosed by a proposed fence/wall.
- 4.2 If the gardens had an unobstructed view of the road then the resulting noise level would be above the adopted 55 dB $L_{Aeq,16hr}$ noise criterion. Therefore, it is recommended that the proposed fence/wall should be 2 metres in height and is acoustic such that it is imperforate (i.e. have no holes or gaps) and have a surface mass no less than 10 kg/m². If of timber construction it should be at least 20mm thick and have double-rebated boards; cover strips; and gravel boards at the base.
- 4.3 Suppliers of proprietary acoustic fences include Jacksons Fencing (jacksonsfencing.co.uk), Guardian Fencing (guardianfencing.com) and Ransford's (ransfords.co.uk).
- 4.4 A solid brick wall with no gaps of the same height would be a suitable alternative.
- 4.5 Therefore, we recommend for the garden identified in **Figures 2** that a 2m high proprietary acoustic barrier is installed.
- 4.6 The acoustic barrier fencing must be imperforate (i.e. have no holes or gaps) and have a surface mass no less than 10 kg/m². If formed of timber it should be at least 20mm thick and have double-rebated boards; cover strips; and gravel boards at the base. Gates, where necessary, in the fencing would be acceptable as long as they are built to the same standard as the acoustic fencing.
- 4.7 Suppliers of proprietary acoustic fences include Jacksons Fencing (jacksonsfencing.co.uk), Guardian Fencing (guardianfencing.com) and Ransford's (ransfords.co.uk).
- 4.8 A solid brick wall with no gaps of the same height would be a suitable alternative.
- 4.9 Therefore, with the installation of the proposed acoustic fence/wall the adopted noise criterion of 55 dB $L_{Aeq,16hrs}$ will be achieved.

Glazing

- 4.10 Windows of standard well-sealed thermal double glazing (4mm glass - nominal (12-20mm) cavity - 4mm glass) would provide a typical sound reduction performance of 25 dB $R_w + C_{tr}$. Therefore, where façade noise levels are below 60 dB $L_{Aeq,16hr}$ during the daytime and/or 55 dB $L_{Aeq,8hr}$ and/or 70 dB $L_{Amax,F}$ at night, no specific sound insulation measures are warranted.
- 4.11 As road traffic noise exceeds these levels outside some bedrooms on the development, specialist sound insulation is warranted. For windows of bedrooms as indicated in **Figure 2**, a glazing with a minimum laboratory airborne sound insulation performance of 33 dB R_w

+ C_{tr} is recommended. This could typically be achieved with a double-glazing specification of:

- 10mm glass - nominal (12-20mm) cavity – 6mm glass.

4.12 For all other bedrooms, and living rooms, on the development, we recommend standard double glazing of 4mm glass - nominal (10-16mm) cavity - 4mm glass (25 dB R_w + C_{tr}).

4.13 For all living rooms and bedrooms on the development acoustically treated means of ventilation, instead of standard window frame slot vents, is required to achieve the internal noise criteria. Suitable examples include:

- Aereco EHA2 Acoustic Trickle Ventilator with acoustic canopy and sleeve (44 dB $D_{n,e,w}$); or
- Rytons AAC125HP Super Acoustic Controllable LookRyt AirCore Ventilator (43 dB $D_{n,e,w}$); or
- Another ventilation system with a good acoustic performance (i.e. above 40 dB $D_{n,e,w}$).

4.14 Ventilation proposals will need to be agreed with the Council.

External Walls

4.15 The exact construction of the external walls is not known at this stage however it is assumed that the sound insulation performance of the wall construction will not be less than 50 dB R_w .

Commercial premises

4.16 Following comments from Manchester City Council Environmental Protection it is requested that consideration is given to “*potential noise impacts from external plant and deliveries associated with the commercial premises directly to the west of the site*”.

4.17 The commercial premises is a parade of mainly retail shops and services providers. Deliveries would likely be small vans and occur on the street outside or on the site street on the other side of the building and well screened from the proposed development.

4.18 The nearest habitable rooms are set back from the Old Market Street such that if deliveries did occur on outside the convenience store Old Market Street the apartments would not have a line of sight to the activities.

4.19 There is some fixed plant units to the rear of the parade building, however the proposed apartments have no line of sight to this equipment.

4.20 Nevertheless, due to the dominant noise of road traffic the proposed scheme of mitigation would nevertheless control any potential noise from deliveries or fixed plant.

Approved Document O Assessment

- 4.21 The noise survey results have been used to determine which bedroom windows can remain open whilst still achieving the ADO indoor noise limits. The relevant threshold values are shown in Table 3.

Table 3: External Noise Threshold Categories

Description	Night-time (23:00-07:00 hours)	
	dB $L_{Aeq,8hr}$	dB L_{AFmax}
Windows can be modelled as open	≤50	≤65

1: Based on a nominal sound attenuation of 10dB through an open window for a ‘moderate risk’ area as per the ADO Section 1: Simplified Method.

- 4.22 Therefore, windows will need to remain closed as part of the strategy to mitigate overheating in bedrooms.

5. SUMMARY

- 5.1 A noise impact assessment to discharge condition 15 of planning permission 137733/FO/2023 for a residential development consisting of four new flats within a two-storey building on land off Domett St, Manchester M9 8DG.
- 5.2 A noise survey has been carried out to quantify the road traffic noise levels on the development site.
- 5.3 The results of the noise survey have indicated that road traffic noise levels on the site are moderate and some noise mitigation measures are warranted.
- 5.4 An ADO assessment has indicated that windows will need to be closed as part of the strategy to mitigate overheating in bedrooms.



Do not scale from this figure

- Key:
- Approximate Site Boundary
 - Noise Measurement Location



Project: P25-136
Ref: **Figure 1**
Title: Site location & noise measurement position

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APPENDIX A: ACOUSTICS UNITS & INDICES

Sound and the decibel

A sound wave is a small fluctuation of atmospheric pressure. The human ear responds to these variations in pressure, producing the sensation of hearing. The ear can detect a very wide range of pressure variations. In order to cope with this wide range of pressure variations, a logarithmic scale is used to convert the values into manageable numbers. Although it might seem unusual to use a logarithmic scale to measure a physical phenomenon, it has been found that human hearing also responds to sound in an approximately logarithmic fashion. The dB (decibel) is the logarithmic unit used to describe sound (or noise) levels. The usual range of sound pressure levels is from 0 dB (threshold of hearing) to 120dB (threshold of pain).

Due to the logarithmic nature of decibels, when two noises of the same level are combined together, the total noise level is (under normal circumstances) 3 dB(A) higher than each of the individual noise levels e.g. 60 dB(A) plus 60 dB(A) = 63 dB(A). In terms of perceived 'loudness', a 3 dB(A) variation in noise level is a relatively small (but nevertheless just noticeable) change. An increase in noise level of 10 dB(A) generally corresponds to a doubling of perceived loudness. Likewise, a reduction in noise level of 10 dB(A) generally corresponds to a halving of perceived loudness.

The ear is not equally sensitive to sound at all frequencies. It is less sensitive to sound at low and very high frequencies, compared with the frequencies in between. Therefore, when measuring a sound made up of different frequencies, it is often useful to 'weight' each frequency appropriately, so that the measurement correlates better with what a person would actually hear. This is usually achieved by using an electronic filter called the 'A' weighting, which is built into sound level meters. Noise levels measured using the 'A' weighting are denoted dB(A) or dBA.

Frequency and Hertz (Hz)

As well as the loudness of a sound, the frequency content of a sound is also very important. Frequency is a measure of the rate of fluctuation of a sound wave. The unit used is cycles per second, or hertz (Hz). Sometimes large frequency values are written as kiloHertz (kHz), where 1 kHz = 1000 Hz.

Young people with normal hearing can hear frequencies in the range 20 Hz to 20 kHz. However, the upper frequency limit gradually reduces as a person gets older.

Glossary of Terms

When a noise level is constant and does not fluctuate, it can be described adequately by measuring the dB(A) level. However, when the noise level varies with time, the measured dB(A) level will vary as well. In this case it is therefore not possible to represent the noise climate with a simple dB(A) value. In order to describe noise where the level is continuously varying, a number of other indices can be used. There are also a number of ways to describe sound insulation performance.

The indices used in this report are described below:

- $L_{Aeq,T}$** **A-weighted Equivalent Continuous Sound Level:** An average of the total sound pressure measured over a specified time period (T). In other words, $L_{Aeq,T}$ is the level of a steady sound which has the same total A-weighted sound pressure as the real fluctuating noise, measured over the same time period. It is increasingly being used as the preferred parameter for most forms of environmental noise.
- L_{AFmax}** **Maximum A-weighted Sound Level with Fast Time-weighting:** The maximum A-weighted sound pressure level during the measurement period, using the Fast time-weighting of 125ms. L_{Amax} used in this report refers throughout to L_{AFmax} with the Fast time weighting, denoted L_{AFmax} or $L_{Amax,f}$ in other documents but L_{Amax} in BS 8233:2014 standard notation.
- $L_{A90,T}$** **A-weighted 90 Percentile Level:** The A-weighted sound level exceeded for 90% of a measurement time period (T). $L_{A90,T}$ is generally used as a measure of Background Sound Level.
- C_{tr}** **Transport Noise Spectral Adaptation Term:** A term used with single figure broadband sound insulation metrics (e.g. R_w , $D_{n,e,w}$ or $D_{nT,w}$) to account for the spectral composition of typical transport noise sources.
- $D_{n,e,w}$** **Weighted Element Normalised Level Difference:** A frequency weighted single figure laboratory value quantifying the sound insulation performance of a building element, such as an air vent.
- R** **Sound Reduction Index:** A laboratory measure of the sound insulation performance of a building element or construction arrangement (e.g. a wall) in a stated frequency band.
- R_w** **Weighted Sound Reduction Index:** A single figure frequency weighted laboratory sound insulation performance metric of a building element or construction arrangement (e.g. a wall).

APPENDIX B: NOISE SURVEY RESULTS

Date(s)	Wednesday/Thursday 24/25 April 2025
Equipment	NTi Audio XL3-TA ‘Class 1’ sound analyser (s/n: A3A-01451-F0) with associated calibrator and environmental outdoor monitoring kit
Weather	Daytime: 17 °C, partially overcast, dry, wind <3 m/s Night-time: 8 °C, partially overcast, dry, wind <3 m/s

Chart(s) overleaf

