Noise Impact Assessment

86-88 Tib Street, Manchester

Reference: 50-765-R1-3

Date: January 2026

NOISE IMPACT ASSESSMENT

86-88 Tib Street,
Manchester

Prepared for:

Baniprop Limited

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EXECUTIVE SUMMARY

BACKGROUND

Site Address	86-88 Tib Street, Manchester, M4 1LG
National Grid Reference	E 384528 N 398583
Proposed Development	Proposed erection of a five-storey building, with Use Class E to the ground floor and 4 apartments to the upper floors.
Report Objectives	The objectives of this report are to: • Identify, measure and assess the potential impact of any existing noise sources in the immediate vicinity of the Site upon proposed residential receptors. • Consideration is also given to potential noise sources associated with the development impacting upon existing and proposed receptors. The report follows current and relevant British Standards in order to provide a robust assessment.

ASSESSMENT

Surveys Completed	An unattended weekday and weekend background and ambient sound survey has been conducted to quantify noise levels from road traffic along Tib street, the surrounding commercial properties and pedestrian noise.
Assessments	An assessment has been made based on the measured noise levels captured at the site. Internal noise assessments have been assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019, using the simplified method.
Mitigation Requirements	The assessment has shown higher specification glazing is required for first floor apartments on the western elevation. Standard thermal double glazing is sufficient for all other apartments. A whole dwelling ventilation system recommended for all apartments as when windows are open for ventilation internal noise levels are not acceptable. An overheating assessment is required and must assume bedroom windows are closed at night.

CONCLUSIONS

The assessment has shown that noise from all surrounding sources can be suitably controlled with the ventilation and glazing requirements detailed within this report. Plant noise limits have been set to protect existing and proposed residents from excessive plant noise emissions.

Consideration has been given to the Class E usage below the proposed apartments and recommendations to reduce noise breakout from the Class E unit given. Criteria has been given for the requirements of sound insulation between the Class E usage and residential apartments.

As such, this report has provided sufficient detail to discharge conditions 4 and 14 set by Manchester City Council. Therefore, noise need not be a determining factor in the determination of the application as long as the recommendations within this report are followed and included in the design.

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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Robert Spavin, on behalf of RJS Design, to undertake a Noise Impact Assessment to satisfy planning condition 4 and 14, set by Manchester City Council. This is for a proposed erection of a five-storey building, with Use Class E to the ground floor and 4 residential apartments to the upper floors at 86-88 Tib Street, Manchester to be referred to hereafter as '*the Site*'.

This assessment looks to determine the key noise sources in the immediate vicinity of the Site and to assess their impact, if any, upon proposed commercial and residential receptors and to specify mitigation measures, where required.

Plant noise emissions limits will also be set to protect existing noise sensitive receptors from adverse impact of the proposed development.

1.2. PROPOSED DEVELOPMENT

The client intends to erect a five-storey building, with mixed commercial and residential usage.

The key source of sound impacting upon the front of the Site is road traffic associated with Tib Street and nearby commercial properties such as bars and cafes.

This assessment has been undertaken in accordance with the following supplied drawings:

- Proposed Site Plan 25001,(0-)19A.
- Proposed G.F. & F.F. Plans 25001,(0-)20D.
- Proposed S.F. & T.F. Plans 25001,(0-)21D.
- Proposed F.F. & Roof Plans 25001,(0-)22D.

1.3. LIMITATIONS

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.

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.

2. ASSESSMENT METHODOLOGY

2.1. NATIONAL PLANNING POLICY FRAMEWORK

To prevent unacceptable risks from pollution, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be considered.

The national planning policy framework states that planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development.
- Mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions.
- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established.
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

2.2. NATIONAL PLANNING PRACTICE GUIDANCE

Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.

Local planning authorities' plan-making and decision-making should take account of the acoustic environment and in doing so consider:

- Whether or not a significant adverse effect is occurring or is likely to occur.
- Whether or not an adverse effect is occurring or is likely to occur.
- Whether or not a good standard of amenity can be achieved.

In line with the explanatory note of the NPSE, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase, where applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.

The “observed effect levels” are as follows:

- **Significant observed adverse effect level:** This is the level of noise exposure above which significant adverse effects on health and quality of life occur.
- **Lowest observed adverse effect level:** This is the level of noise exposure above which adverse effects on health and quality of life can be detected.
- **No observed effect level:** This is the level of noise exposure below which no effect at all on health or quality of life can be detected.

Table 2.1 summarises the noise exposure hierarchy, based on the likely average response.

TABLE 2.1 NOISE EXPOSURE HIERARCHY

PERCEPTION	EXAMPLES OF OUTCOMES	INCREASING EFFECT LEVEL	ACTION
Not Noticeable	No effect.	No observed effect	No specific measures required
Noticeable and Not Intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No observed adverse effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and Intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television, speaking more loudly, or having to close windows for some of the time because of the noise where there is no alternative ventilation. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed adverse effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and Disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion, having to keep windows closed most of the time because of the noise where there is no alternative ventilation. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant observed effect	Avoid
Noticeable and Very Disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening, loss of appetite, significant/medically definable harm (auditory and non-auditory).	Unacceptable adverse effect	Prevent

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any situation. These factors include the following:

- The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day. The adverse effect can also be greater simply because there is less background noise at night.
- For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise can be important.
- The spectral content of the noise and the general character of the noise. The local topology and topography should also be considered along with the existing and, where appropriate, the planned character of the area.

More specific factors to consider when relevant:

- Where applicable, the cumulative impacts of more than one source should be considered along with the extent to which the source of noise is intermittent and of limited duration.
- Consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases, a suitable alternative means of ventilation is likely to be necessary.
- If external amenity spaces are an intrinsic part of the overall design, then the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.3. MANCHESTER CITY COUNCIL – PLANNING & NOISE (MAY 2022)

Manchester City Council have produced a guidance note in relation to the assessment of planning and noise.

3.7.7.1 Residential Developments

The Council has adopted the following noise limits for residential properties:

• Bedrooms (night-time - 23.00 - 07.00) 30 dB L_{Aeq} (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}
• Gardens and terraces (daytime) 55 dB L_{Aeq}

These criteria have been adopted for the following reasons:

• BS 8233: 2014 recognises these levels as a good standard for resting/sleeping conditions.
• The WHO document 'Guidelines for Community Noise' recommends an internal LAeq of 30dB for optimal sleep conditions (and no more than 35dB for internal rooms during daytime).
• The performance of acoustic insulation schemes can often be below that specified, according to the quality of installation, materials, noise spectrum and deterioration / wear and tear of building elements. A high design specification introduces a 'safety margin' should building elements not perform as well as expected ('on-site'

performance).
• Performance specification for glazing does not usually take into account the detrimental effect of vents on the sound insulation. Even 'acoustic' vents will reduce the performance of the facade insulation, as they will inherently contain a free open area for air exchange.
• There is a general increase in urban noise levels, which can in the future be reasonably accommodated by these standards.
• The standards support the Local Authority corporate objective to prevent ill-health and improve local peoples' health and well being.

2.4. MANCHESTER CITY COUNCIL – SITE SPECIFIC PLANNING CONDITIONS

This document is intended to satisfy planning condition 4, set by Manchester City Council. The noise conditions required to be discharged are noted below.

The impact of any proposal will be based upon the noise hierarchy in the Planning Practice Guidance (PPG) Noise, included as Table 2 in this document.

4) An acoustic assessment under the requirements of paragraph 180 of the National Planning Policy Framework, (Core Strategy DM1 and Saved Unitary Development Plan Policy DC26) which provides details of the existing noise levels in the area including levels during daytime, night time and weekends along with an indication of noise levels that you propose to achieve within the accommodation and details of the acoustic glazing and acoustically treated ventilation you propose to use and what measures will need to be implemented on site to meet internal noise requirements. In terms of the proposed uses, the study should identify the acoustic treatment and measures that will limit the breakout of noise in accordance with a noise study of the premises. The scheme proposed shall include measures such as acoustic lobbies at access and egress points of the premises, acoustic treatment of the building structure, sound limiters linked to sound amplification equipment, and specified maximum internal noise levels (Core Strategy DM1 and Saved Unitary Development Plan Policy DC26).

14) Ventilation, Extraction and odour - For the avoidance of doubt all equipment associated with extraction should be located internally within the building; if not currently shown in the submitted drawings - you will need to look at how fumes can be extracted without the need for an external flue i.e. using existing building services terminating at rooftop extraction. If this is not possible provide a full explanation of why - this can be provided in the Design and Access Statement.

The noise levels that would be generated from the proposed equipment and the acoustic attenuation measures proposed to reduce the equipment's noise output externally. Please note that any externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location.

2.5. BUILDING REGULATION: APPROVED DOCUMENT PART F – VOLUME 1: DWELLINGS (JUNE 2022)

Approved document F Volume 1: Dwellings (ADF) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to means of ventilation within dwellings. The ventilation strategy specified within the ADF are as follows.

1.9 The ventilation strategy in this approved document relies on a combination of all of the following.

a. Extract ventilation from rooms where water vapour or pollutants are likely to be released (e.g. bathrooms and kitchens), to minimise their spread to the rest of the building. Ventilation fans may be either intermittent operation or continuous operation.

b. Whole dwelling ventilation to provide fresh air to the building and to dilute, disperse and remove water vapour and pollutants not removed by extract ventilation.

c. Purge ventilation to remove high concentrations of pollutants and water vapour. Purge ventilation is used intermittently and required only for pollutants produced by occasional activities (e.g. fumes from painting).

1.10 Ventilation may be delivered through natural ventilation, mechanical ventilation or a combination of both.

1.11 The ventilation systems in this approved document are examples of systems that comply with Part F of the Building Regulations. Other ventilation systems may be acceptable if they can be shown to meet an equal level of performance.

Within the ADF there are three system specific ventilation systems that can be utilised to provide sufficient ventilation. These methods are as follow.

1.Natural ventilation with background ventilators and intermittent extract fans (guidance suitable only for less airtight dwellings) - Ventilation provided by thermal, wind or diffusion effects through doors, windows or other intentional openings without the use of mechanically driven equipment. For the purposes of this approved document, natural ventilation refers to a ventilation strategy using background ventilators and intermittent extract ventilation.

2.Continuous mechanical extract ventilation - Mechanically driven ventilation that continuously extracts indoor air and discharges it to the outside.

3. Mechanical ventilation with heat recovery - A mechanically driven ventilation system that both continuously supplies outdoor air to the inside of the dwelling and continuously extracts indoor air and discharges it to the outside. For the purposes of this approved document, the guidance for mechanical ventilation with heat recovery applies to centralised or decentralised supply and extract systems, with or without heat recovery.

2.6. BUILDING REGULATIONS: APPROVED DOCUMENT PART O – OVERHEATING (JUNE 2022)

Approved document O - Overheating (ADO) provides guidance set by the Department for Levelling Up, Housing and Communities, that relates to the mitigation of overheating. In relation to noise the ADO provides the following guidance.

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. 40dB LAeq,T, averaged over 8 hours (between 11pm and 7am).
b. 55dB LAFmax, 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.

NOTE: Guidance on reducing the passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants' Acoustics, Ventilation and Overheating: Residential Design Guide (2020)

2.7. APPROVED DOCUMENT PART O NOISE GUIDE (2024)

This guide sets out a method to demonstrate compliance to the Building Control Body of the noise constraints in AD-O. This guide aims to provide clarity for practitioners and regulators so that assessments can be carried out consistently, and the outcome is repeatable and reliable.

Any assessment of overheating, in relation to noise, follows this guidance. Importantly, the guide, based on research and typical assumptions, provides the resulting outside-to-inside level difference for window openings necessary to satisfy the simplified method of AD-O which are expected to be:

- 5 dB for 'high risk' locations; and
- 10 dB for 'medium risk' locations.

With reference to paragraph 3.3 of AD-O, this implies the following limiting external free-field levels above which external noise precludes the use of the simplified method, and dynamic thermal modelling should be used to demonstrate compliance.

The guide also recommends that LAmax,fast measurement and assessment should be based on a sampling period of 2 minutes.

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

2.8.1. NOISE CRITERIA LIMITS

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 2.2.

TABLE 2.2 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

BS 8233 goes on to recommend noise levels for gardens:

> *It is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors might be warranted.*

BS 8233 goes on to say:

> *In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.*

3. SURVEY RESULTS

3.1. AMBIENT SOUND MEASUREMENT – 86-88 TIB STREET

E3P have undertaken an ambient sound survey during a typical weekday and weekend period in order to establish ambient and maximum noise levels incident upon the east facing façade representative of sound sources along Tib Street.

The survey was undertaken during the following period:

- 13:00 Friday 16th December to 10:00 Monday 19th December 2022.

Although the survey works were completed in 2022 and the report is updated in December 2025, it is considered that the sound climate at this location is unchanged with road traffic, including bus movements and pedestrians remains relevant.

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

- Noise Measurement Position 1 (NMP1): Located above the wooden security fencing on the western boundary of the site. The microphone was located at a height of 2.5 m above ground level and in free field conditions elevated above the existing fence with line of sight to the road. Sound sources consisted of road traffic along Tib Street and general city centre sound from people talking, shouting, etc.

FIGURE 1 NOISE MEASUREMENT POSITION



Table 3.1 details the measured ambient sound levels. The daytime levels correspond to the $L_{Aeq,16hr}$ and the night-time levels to the $L_{Aeq,8hr}$.

TABLE 3.1 MEASURED AMBIENT SOUND PRESSURE LEVELS

DATE	TIME PERIOD	MEASURED AMBIENT SOUND LEVELS, $L_{Aeq,T}$ (dB)	10th HIGHEST MEASURED MAXIMUM SOUND LEVELS, $L_{Amax,fast}$ (dB)
Friday 16th December 2022	Day (13:00-23:00)	63.4	-
	Night (23:00-07:00)	**60.1**	80.5
Saturday 17th December 2022	Day (07:00-23:00)	**63.6**	-
	Night (23:00-07:00)	59.0	**80.9**
Sunday 18th December 2022	Day (07:00-23:00)	59.7	-
	Night (23:00-07:00)	55.0	76.5
Monday 19th December 2022	Day (07:00-10:00)	61.2	-
	Night (23:00-07:00)	N/A	N/A

A table containing the complete data can be found in Appendix II.

During the survey, conditions remained dry and wind speeds rarely exceeded 5 m/s.

The equipment outlined in Table 3.2 was used for the noise survey.

TABLE 3.2 NOISE MEASUREMENT EQUIPMENT AND CALIBRATION DATES

MEASUREMENT POSITION	EQUIPMENT DESCRIPTION	MANUFACTURER & TYPE NUMBER	SERIAL NUMBER	CALIBRATION DUE DATE AT TIME OF SURVEYS
NMP1	Sound Level Meter	01dB Fusion	12039	30th June 2023
	Pre-amplifier	01dB Pre22	1805124	
	Microphone	GRAS 40CE	330832	
	Calibrator	01dB Cal31	87281	3rd February 2023

The sound level meter was field calibrated on site using the above-mentioned calibrators prior to and after noise measurements were taken. No significant drift was witnessed as noted above. Calibration certificates are available upon request.

4. NOISE IMPACT ASSESSMENT

4.1. ROAD TRAFFIC AND PATRON NOISE

For the purposes of this assessment, E3P has carried out hand calculations, to determine the impact of noise from road traffic and general activity such as patrons along Tib Street.

The following method has been used for the calculations:

Western Elevations overlooking Tib Street -

- Highest measured 16-hour and 8-hour noise levels has been used for the daytime and night-time assessments for living rooms and bedrooms based on the data from NMP1.
- The 10th Highest $L_{Amax,fast}$ taken from NMP1 from the measured periods has been used to predict maximum noise levels incident upon the western elevations.

E3P have undertaken distance correction calculations based on the measured values to each floor. Due to the nature of the development only the western elevations will be exposed to noise from the surrounding sources of noise along Tib street. As such standard thermal double glazing will be sufficient for all other facades.

With regards internal noise levels, E3P has assumed that the existing sash windows are single glazed, 6 mm float glass, with a sound insulation performance in the order of 29 dB however this is for a pink noise spectrum. The same unit weighted for road traffic sound, $+C_{t,r}$, provides a reduction of 25 dB.

In order to determine any requirements for mitigation, E3P has added the reduction provided by the glazing (25 dB) to the relevant criterion for day (35 dB) and for night (30 dB). As such, any facades subject to noise levels higher than 60 dB during the day and/or 55 dB during the night will require higher specification glazing.

Internal maximum noise levels of 45 dB L_{Amax} should also not be exceeded. The sound insulation performance achieved by standard glazing (29 dB) has been added to the 45 dB maximum internal noise level limit. As, such facades subject to maximum noise levels above 74 dB will require higher specification glazing.

Table 4.1 details the predicted noise levels, from all sound sources, during daytime and night-time periods for floors with habitable rooms.

TABLE 4.1 PREDICTED EXTERNAL NOISE LEVELS

ELEVATION	FLOOR	PREDICTED NOISE LEVEL (dB)	EXCEEDANCE OF EXTERNAL CRITERION +/- (dB)	HIGHER SPECIFICATION GLAZING REQUIRED?
WESTERN	1st	60 $L_{Aeq,16hr}$	0	**Yes**
		57 $L_{Aeq,8hr}$	**+2**	
		75 $L_{Amax,fast}$	**+1**	
	2nd	59 $L_{Aeq,16hr}$	-1	No
		55 $L_{Aeq,8hr}$	0	
		71 $L_{Amax,fast}$	-3	
	3rd	57 $L_{Aeq,16hr}$	-3	No
		54 $L_{Aeq,8hr}$	-1	
		69 $L_{Amax,fast}$	-5	
	4th	56 $L_{Aeq,16hr}$	-4	No
		53 $L_{Aeq,8hr}$	-2	
		66 $L_{Amax,fast}$	-8	

The Table has shown that higher specification glazing is required for habitable rooms associated with the first-floor apartment. Section 5 details the required glazing specification. Standard thermal double glazing is sufficient across the rest of the development.

With regards opening windows, there is a requirement to consider the need to open windows for ventilation and the mitigation of overheating. At this stage, the assessment assumes that ventilation would be provided by way of extract fans in kitchens and bathrooms and openable windows.

4.2. VENTILATION CONDITION

When considering a partially open window for ventilation purposes, E3P has assessed whether the BS 8233:2014 internal criterion can be achieved with windows open for ventilation. Here ventilation is defined as:

> *To provide fresh air to the building and to dilute and disperse residual water vapour not dealt with by extract ventilation as well as removing other pollutants which are released throughout the building.*

Thermal comfort and overheating are considered in Section 4.2.2. Purge ventilation is provided by an open window regardless of the ventilation strategy.

As such, a comparison of predicted internal noise levels, with windows open, with the BS 8233:2014 criterion is required. This results in an allowable external noise level of 48 dB during the day and 43 dB during the night in order to achieve the internal criteria with windows open.

As can be seen from Table 4.1, western facades will experience an exceedance during the daytime and night-time periods, and as such, dwellings will require a whole dwelling ventilation system as, when windows are opened for ventilation, the internal ambient noise levels are not considered acceptable and exceed the required criterion.

Section 5.0 discusses the requirements and provides necessary advice.

The exact system will also be dependent on the outcome of the overheating condition below.

4.3. OVERHEATING CONDITION

E3P has considered the requirements of ADO in relation to opening windows at night to mitigate the potential for overheating, which at this stage is assumed to be required. Therefore, external noise levels at affected facades apply. Any plots that experience noise levels below these limits will be able to have openable windows to mitigate any overheating. Those that exceed these limits will be subject to an Overheating Assessment by a suitably qualified professional.

It is noted that the site is within a high risk area and, as such, an outside-to-inside level difference for window openings for the simplified method is noted to be 5 dB (high).

As such, the allowable façade noise levels are 45 dB averaged over the 8 hour night time period and 60 dB $L_{Amax,fast,2min}$ during the night.

Table 4.2 below details the expected internal noise levels.

TABLE 4.2 PREDICTED INTERNAL NOISE LEVELS

FAÇADE ORIENTATION	HIGHEST PREDICTED FAÇADE LEVELS (dB)	OPEN WINDOW SOUND REDUCTION (dB)	INTERNAL NOISE LEVEL (dB)
NW – Daytime	60	5	55
NW – Night-time	57		**52**
NW - $L_{Amax,fast}$	75		**70**

Considering these levels in accordance with ADO, these levels are above the threshold values. As such, an overheating assessment must assume that bedroom windows are closed at night across the development.

4.4. FIXED PLANT NOISE LIMITS

Where fixed plant items are proposed as part of the development, i.e. externally mounted air conditioning units, etc, E3P Have set fixed plant noise emission limits based on the measured background sound level. As these could impact on the surrounding noise sensitive receptors, the lowest modal night-time background sound level has been used to inform decisions. The following limit should be applied:

- The rating level from any newly installed externally mounted fixed plant items should not exceed **39 dB at the closest residential receptor** which would be 5 dB below the lowest measured modal background sound level and ensure acceptable internal noise levels are achieved with windows open, even at night.

4.5. GROUND FLOOR - CLASS E USAGE

E3P understand that the ground floor level of the proposed development is to be of Class E usage. This class usage comprises of the following.

Class E more broadly covers uses previously defined in the revoked Classes A1/2/3, B1, D1(a-b) and 'indoor sport' from D2(e):

E(a) Display or retail sale of goods, other than hot food
E(b) Sale of food and drink for consumption (mostly) on the premises
E(c) Provision of:
E(c)(i) Financial services,
E(c)(ii) Professional services (other than health or medical services), or
E(c)(iii) Other appropriate services
E(d) Indoor sport, recreation or fitness (not involving motorised vehicles or firearms or use as a swimming pool or skating rink,)
E(e) Provision of medical or health services (except the use of premises attached to the residence of the consultant or practitioner)
E(f) Creche, day nursery or day centre (not including a residential use)
E(g) Uses which can be carried out in a residential area without detriment to its amenity:
E(g)(i) Offices to carry out any operational or administrative functions,
E(g)(ii) Research and development of products or processes
E(g)(iii) Industrial processes

At this stage the end user of the retail space is unknow so detailed assessment is not possible. However, based on the surrounding existing uses it is likely that the end usage will be of Class E(a) or Class E(b). Noise generated from this type of premises is patrons talking or amplified music.

To control noise breakout from the retail unit the following recommendations should be followed.

- Careful design of any proposed PA system to be installed within the retail unit is recommended to minimise noise levels at the entrance. This would include locating and orientating any loudspeakers away from the entrance.

- If loudspeakers are to be ceiling/wall mounted consideration should be given to vibration generated by the loudspeaker through the wall or ceiling and resilient anti-vibration mounts fitted where appropriate.

- The entrance doors should be fitted with effective seals and should not be pinned open during early morning/late evening time periods.

Consideration to sound insulation between the retail unit and above apartments should be given and the guidance within Approved Document E followed.

Table 0.1a, taken from the AD E details the performance standards for separating walls, floors and stairs that have a separating function. Table 4.3 below details the criteria relevant to the type of development proposed.

TABLE 4.3 APPROVED DOCUMENT E – SEPARATING WALL AND FLOOR CRITERIA FOR PURPOSE BUILT DWELLINGS AND FLATS

	Airborne Sound Insulation $D_{nt,w} + C_{tr}$ dB (Minimum values)	**Impact Sound insulation $L'_{nT,w}$ dB (Maximum values)**
Purpose Built dwelling-houses and flats		
Walls	45	-
Floors	45	62

5. MITIGATION

5.1. FAÇADE INSULATION

The previous section determined that higher specification glazing would be required for habitable rooms on the first floor. Specifically, the following glazing specifications are required.

- 1st Floor Apartments (north western elevations) - 27 $R_w + C_{t,r}$ (minimum 30 R_w), Example glazing (6 mm glass / 6 to 16 mm air gap / 6 mm glass).

It is understood the above glazing would be installed as standard. Standard thermal double glazing would be sufficient across the remainder of the development. Whole dwelling ventilation is required for all apartments.

A whole dwelling ventilation system due to the impact of noise internally and ventilation requirements is recommended for all apartments. Furthermore, an overheating assessment is required and must assume bedroom windows are closed at night.

Additionally, background ventilators should satisfy the requirements of ADF and, in order to achieve the required internal ambient noise levels, must achieve a reduction of at least that of the glazing specified for each apartment, which is at most 27 dB $D_{n,e,w} + C_{tr}$ (minimum 30 $D_{n,e,w}$) in the open position. This level of reduction is likely to be achieved by a standard background ventilator.

6. CONCLUSION AND RECOMMENDATIONS

E3P were commissioned by RJS Design in order to undertake a Noise Impact Assessment for a proposed erection of a five-storey building, with Use Class E to the ground floor and 4 apartments to the upper floors at 86-88 Tib Street in Manchester.

An unattended weekday and weekend background and ambient sound survey has been conducted to quantify noise levels from road traffic along Tib street, the surrounding commercial properties and pedestrian noise.

Hand calculations have been carried out using the gathered data and assessed in accordance with the criterion, for day and night, given in BS 8233:2014+A1:2019.

The assessment has shown higher specification glazing is required for first floor apartments on the western elevation. Standard thermal double glazing is sufficient for all other apartments. A whole dwelling ventilation system recommended for all apartments as when windows are open for ventilation internal noise levels are not acceptable.

The assessment has shown that noise from all surrounding sources can be suitably controlled with the ventilation and glazing requirements detailed within this report. Plant noise limits have been set to protect existing and proposed residents from excessive plant noise emissions.

Consideration has been given to the Class E usage below the proposed apartments and recommendations to reduce noise breakout from the Class E unit given. Criteria has been given for the requirements of sound insulation between the Class E usage and residential apartments.

As such, this report has provided sufficient detail to discharge conditions 4 and 14 set by Manchester City Council. Therefore, noise need not be a determining factor in the determination of the application as long as the recommendations within this report are followed and included in the design.

END OF REPORT

APPENDIX I
GLOSSARY OF ACOUSTIC TERMINOLOGY

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 L_{Aeq}, L_{A90} 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 A1 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 A2 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.
$L_{Aeq, T}$	L_{Aeq} 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.
L_{Amax}	L_{Amax} is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the "fast" sound level meter response.
L_{10} and L_{90}	If a non-steady noise is to be described, it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the "average maximum level". Similarly, L_{90} is the "average minimum level" and is often used to describe the background noise. It is common practice to use the L_{10} 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.

APPENDIX II
MEASURED AMBIENT SOUND PRESSURE LEVELS

TABLE A1: HOURLY AMBIENT AND BACKGROUND SOUND LEVEL DATA – NMP1

PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	MAXIMUM NOISE LEVEL, $L_{AMax,fast}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
16/12/2022 13:00	61.0	78.9	51.3
16/12/2022 14:00	59.6	74.0	51.7
16/12/2022 15:00	62.1	83.9	52.6
16/12/2022 16:00	70.5	92.7	52.0
16/12/2022 17:00	60.5	80.0	52.8
16/12/2022 18:00	60.7	75.7	52.0
16/12/2022 19:00	61.1	76.1	51.9
16/12/2022 20:00	60.9	75.4	53.5
16/12/2022 21:00	61.2	80.4	52.0
16/12/2022 22:00	59.6	78.8	51.8
16/12/2022 23:00	60.6	81.1	51.4
17/12/2022 00:00	60.5	79.3	52.0
17/12/2022 01:00	61.5	87.8	49.7
17/12/2022 02:00	62.4	83.2	48.8
17/12/2022 03:00	59.8	80.6	46.2
17/12/2022 04:00	56.1	74.3	44.1
17/12/2022 05:00	56.7	79.7	44.1
17/12/2022 06:00	56.9	78.6	46.0
17/12/2022 07:00	59.9	83.3	46.5
17/12/2022 08:00	59.6	78.6	49.6
17/12/2022 09:00	61.8	82.7	49.8
17/12/2022 10:00	60.4	74.0	49.9
17/12/2022 11:00	61.3	86.2	51.4
17/12/2022 12:00	61.6	81.2	53.4
17/12/2022 13:00	60.8	79.5	51.3
17/12/2022 14:00	62.7	83.5	52.3
17/12/2022 15:00	66.1	85.1	54.4
17/12/2022 16:00	61.8	80.3	53.4
17/12/2022 17:00	66.7	85.1	53.9
17/12/2022 18:00	63.0	81.6	52.8
17/12/2022 19:00	64.5	86.4	54.5
17/12/2022 20:00	61.1	76.3	52.6



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	MAXIMUM NOISE LEVEL, $L_{AMax,fast}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
17/12/2022 21:00	69.3	96.7	53.4
17/12/2022 22:00	60.2	80.2	52.8
17/12/2022 23:00	61.2	82.7	51.5
18/12/2022 00:00	60.1	79.4	50.9
18/12/2022 01:00	59.5	76.5	49.4
18/12/2022 02:00	58.6	77.1	48.7
18/12/2022 03:00	58.2	74.9	47.0
18/12/2022 04:00	58.5	78.0	45.3
18/12/2022 05:00	57.0	76.7	43.7
18/12/2022 06:00	53.5	76.0	43.9
18/12/2022 07:00	56.3	80.7	44.3
18/12/2022 08:00	55.8	74.3	45.0
18/12/2022 09:00	59.2	83.8	46.2
18/12/2022 10:00	60.1	83.5	48.5
18/12/2022 11:00	59.6	75.5	49.4
18/12/2022 12:00	58.9	78.0	49.5
18/12/2022 13:00	61.1	83.8	53.2
18/12/2022 14:00	60.8	76.6	52.4
18/12/2022 15:00	60.5	75.2	51.6
18/12/2022 16:00	61.1	74.7	51.5
18/12/2022 17:00	61.8	75.5	53.3
18/12/2022 18:00	59.7	74.8	50.9
18/12/2022 19:00	59.5	80.1	49.4
18/12/2022 20:00	60.5	82.1	49.7
18/12/2022 21:00	59.3	79.5	49.6
18/12/2022 22:00	56.7	75.9	47.5
18/12/2022 23:00	58.7	79.3	49.0
19/12/2022 00:00	54.4	72.8	46.5
19/12/2022 01:00	52.9	73.4	45.5
19/12/2022 02:00	51.8	71.5	44.0
19/12/2022 03:00	52.3	72.6	42.9
19/12/2022 04:00	52.8	73.4	43.2
19/12/2022 05:00	55.2	75.8	45.6



PERIOD START	AMBIENT SOUND LEVEL, $L_{Aeq,1hr}$ (dB)	MAXIMUM NOISE LEVEL, $L_{AMax,fast}$ (dB)	BACKGROUND SOUND LEVEL, $L_{A90,1hr}$ (dB)
19/12/2022 06:00	59.7	79.1	47.2
19/12/2022 07:00	61.2	76.8	48.7
19/12/2022 08:00	61.4	78.6	49.7
19/12/2022 09:00	60.9	83.5	49.8