

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

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Chapman Street, Manchester

Acoustic planning report

London, Manchester, Edinburgh, Birmingham, Leeds, Bristol

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Summary

Sandy Brown has been appointed to provide an assessment of noise in relation to the proposed development at Chapman Street, Manchester, M18 8LZ.

An environmental noise survey has been carried out at the site. The noise survey was carried out between 13:00 on 4 November 2025 and 13:25 on 5 November 2025.

The average ambient noise levels measured during the survey were $L_{Aeq,16h}$ 65 dB during the day and $L_{Aeq,8h}$ 59 dB at night.

3D modelling has been carried out based on the noise levels measured during the survey to inform an initial assessment of noise ingress and facade sound insulation. This has been carried out to determine required acoustic performances for the facades and provide guidance on the ventilation strategy in line with the requirements of Manchester City Council.

Representative background sound levels measured during the survey were $L_{A90,5min}$ 57 dB during the day and $L_{A90,5min}$ 41 dB at night. Based on the requirements of Manchester City Council and on the results of the noise survey, all plant must be designed such that the cumulative noise level at 1 m from the worst affected windows of the nearby noise sensitive premises does not exceed $L_{Aeq,5min}$ 52 dB during the day and $L_{Aeq,5min}$ 36 dB during the night.

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1 Introduction

Sandy Brown has been commissioned by 3D Reid Ltd to provide an assessment of noise in relation to the proposed development at Chapman Street, Manchester, M18 8LZ.

An environmental noise survey has been carried out to establish:

- background sound levels around the site and by nearby noise sensitive premises
- ambient and maximum noise levels at the site.

The background sound levels measured during the survey are used as the basis for setting limits for noise emission from proposed building services plant. These limits are set in accordance with the requirements of Manchester City Council.

Ambient and maximum noise levels are used to assess building envelope sound insulation requirements to achieve appropriate internal noise levels for residences. These follow standards set in accordance with Manchester City Council guidelines.

This report provides details of the noise survey, including measurement results, and provides recommendations.

2 Site description

2.1 The site and its surroundings

The site location in relation to its surroundings is outlined in yellow in Figure 1. The site is bound by a pedestrian walkway to the north, Carfax Street to the west, Cross Lane to the

south, and Chapman Street to the east.



Figure 1 Aerial view of site (courtesy of Google Earth Pro)

2.2 Adjacent premises

The nearest noise sensitive premises are summarised below with respect to the mark-up shown in Figure 1.

- Residential dwellings on Cross Lane to the south, highlighted in red
- Residential dwellings on Chapman Street and Highmead Street to the east, highlighted in orange
- Residential dwellings on Chapman Street to the northeast, highlighted in light blue
- Residential dwellings on Ashkirk Street and Turner Street to the northwest, highlighted in blue
- Commercial premises at 8-10 Ashkirk Street to the west, highlighted in purple
- Shalom Church to the north highlighted in pink.

3 Development proposals

The new Chapman Street building is 2 storeys and comprises of rooms for residential purposes at ground floor and level 1 along with other ancillary spaces.

The ventilation strategy is currently under consideration. It is expected that background ventilation will likely be provided via mechanical ventilation with heat recovery, with openable windows to provide overheating control depending on the elevation.

Figure 1 presents a 3D image of the proposed building in context.



Figure 2 3D image of the proposed building

3.1 Potential noise sources

The potential noise source associated with the scheme is building services plant.

Limits have been set for noise egress associated with building services plant to mitigate the risk of noise disturbance to occupants of nearby noise sensitive receptors.

4 Assessment criteria

4.1 NPPF and NPSE

The National Planning Policy Framework, December 2024 (NPPF) sets out the UK government's planning policies for England. It supersedes previous guidance notes such as PPG24. No specific noise criteria are set out in the NPPF, or in the Noise Policy Statement for England (NPSE) to which it refers.

The NPPF, clause 198 states:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life.*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.'*

and clause 200 states:

'Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.'

The NPSE states that its aims are as follows:

'Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *Avoid significant adverse impacts on health and quality of life*
- *Mitigate and minimise adverse impacts on health and quality of life and*
- *Where possible, contribute to the improvement of health and quality of life.'*

As such, neither document sets out specific acoustic criteria for new residential developments, but they require consideration of the effect of existing noise on the new development and the effect of noise from the development on the surroundings.

4.2 Noise egress

4.2.1 Standard guidance

BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* (BS 4142) provides a method for assessing noise from items such as building services plant against the existing background sound levels at the nearest noise sensitive premises.

BS 4142 suggests that if the noise level is 10 dB or more higher than the existing background sound level, it is likely to be an indication of a significant adverse impact. If the level is 5 dB above the existing background sound level, it is likely to be an indication of an adverse impact. If the level does not exceed the background sound level, it is an indication of having a low impact.

If the noise contains 'attention catching features' such as tones, bangs etc, a penalty, based on the type and impact of those features, is applied.

4.2.2 Local Authority criteria

Manchester City Council (MCC) provides guidance in relation to plant noise emissions in Planning and Noise Technical Guidance document dated October 2022 states the following in relation to plant noise egress:

‘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 (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location’

Corrections for tonal or attention catching characteristics would need to be applied to the rating level in accordance with BS4142: 2014.

4.3 Noise ingress

4.3.1 Local Authority requirements

Appropriate internal noise limits must be applied to control the noise break in from the external environment. These have been set with reference to the requirements of BS 8233 guidance and the typical requirements of Manchester City Council.

4.3.2 British Standard guidance

Guidance on acceptable internal noise levels in residential dwellings is given in BS 8233:2014 *Sound insulation and noise reduction for buildings*. The guidance limits are shown in Table 1.

These internal levels are based on annual average data and do not have to be achieved in all circumstances. It is normal to exclude occasional events, such as fireworks night or New Year’s Eve.

Table 1 Internal noise criteria for sleeping/resting

Internal space	Indoor ambient noise level, L_{Aeq} (dB)	
	Day (07:00 – 23:00)	Night (23:00 – 07:00)
Living rooms	35	-
Dining room	40	-
Bedrooms	35	30 ^[1]

[1] BS 8233 notes that individual noise events can cause sleep disturbance, and that a guideline value may be set depending on the character and number of events per night, although no specific limit is provided. For regular events, such as scheduled aircraft or passing trains, a guideline value may be set in terms of SEL or $L_{Amax,F}$. Sporadic noise events could require separate values.

The standard states that where development is considered necessary or desirable, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

For external amenity areas, such as gardens and patios, the standard states:

'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 recognized 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, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.'

4.3.3 ProPG

Internal noise ingress criteria in ProPG are the same as in BS 8233:2014 but additional guidance is provided. In relation to regular individual noise events the following additional guidance is provided:

'In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events.'

4.3.4 Approved Document O – Overheating

Approved Document O 2021 Edition (to the Building Regulations 2010) states the following in relation to noise ingress during overheating periods:

'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 (23:00-07:00 hours).

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

- a. $L_{Aeq,T}$ 40 dB average over 8 hours (between 23:00-07:00)
- b. L_{AFmax} 55 dB more than 10 times a night (between 23:00-07:00).'

The above applies to residential dwellings, institutional residential accommodation, and other types of residential accommodation, such as student accommodation.

4.3.5 Acoustics, ventilation and overheating

Guidance on external noise levels from transport noise sources and the assessment of risk in an overheating condition is given in the Association of Noise Consultants *Acoustics Ventilation and Overheating, Residential Design Guide* (AVO Guide). The guidance for internal noise levels during the night for an overheating condition set out in AVO Guide is superseded by the requirements set out in ADO2021 and therefore is provided for information only.

A Level 1 assessment comprises assessing the external free-field noise levels to guideline thresholds. External noise levels and the associated risk categories for a Level 1 assessment are adapted and summarised in Table 2, though consideration also has to be given the duration and frequency of any overheating periods.

Table 2 Guidance for Level 1 assessment of noise from transport sources relating to overheating condition

Risk category for Level 1 assessment	External free-field noise level	
	Day (07:00 – 23:00)	Night (23:00 – 07:00)
Negligible	$L_{Aeq} \leq 52$ dB	$L_{Aeq} \leq 47$ dB
Low	$L_{Aeq} > 52$ dB and $L_{Aeq} \leq 57$ dB	$L_{Aeq} > 47$ dB and $L_{Aeq} \leq 52$ dB
Medium	$L_{Aeq} > 57$ dB and $L_{Aeq} \leq 62$ dB	$L_{Aeq} > 52$ dB and $L_{Aeq} \leq 55$ dB
High	$L_{Aeq} > 62$ dB	$L_{Aeq} > 55$ dB

If a Level 1 assessment finds that the development falls into a ‘Medium’ or ‘High’ risk category a Level 2 assessment should be carried out, assessing the expected internal noise levels for an overheating condition and the associated risk of adverse effect. The Level 2 assessment would consider the following:

- Duration of period where additional ventilative cooling is required (to be assessed by others, typically part of a CIBSE TM59 assessment)
- How wide the external windows would need to be open to control overheating (to be assessed by others, typically part of a CIBSE TM59 assessment).

The guidance for suitable internal noise levels in order that noise ingress can be suitably controlled for an overheating condition are provided in AVO Guide. These are adapted and summarised in Table 3, though are not supposed to be taken as limits, rather guidelines to be assessed while also considering the adverse effect of any overheating (duration and severity).

The lowest observed affect level (LOAEL) and the significant observed affect level (SOAEL) for increased noise levels associated with controlling overheating are specific to each project as these depend on the magnitude of the increased internal noise levels and the duration for which they occur.

Table 3 Guidance for Level 2 assessment of noise from transport sources relating to overheating condition

Effect level	Internal noise level from transport sources		
	Day (07:00 – 23:00)	Night (23:00 – 07:00)	
LOAEL (noise can be heard, but does not cause any change in behaviour)	$L_{Aeq} \leq 35$ dB	$L_{Aeq} \leq 30$ dB	L_{AFmax} 45 dB not normally exceeded
SOAEL upper limit for longer overheating durations	$L_{Aeq} > 35$ dB and $L_{Aeq} \leq 40$ dB	$L_{Aeq} > 30$ dB and $L_{Aeq} \leq 35$ dB	-
SOAEL upper limit for shorter overheating durations	$L_{Aeq} > 40$ dB and $L_{Aeq} \leq 50$ dB	$L_{Aeq} > 35$ dB and $L_{Aeq} \leq 42$ dB	-
Exceeds SOAEL (noise causes a material change in behaviour)	$L_{Aeq} > 50$ dB	$L_{Aeq} > 42$ dB	L_{AFmax} 65 dB normally exceeded

The AVO Guide illustrates that there is a link between adverse effects, increasing internal ambient noise levels and the duration of exposure to noise for an overheating condition. These are indicated in Figure 3.

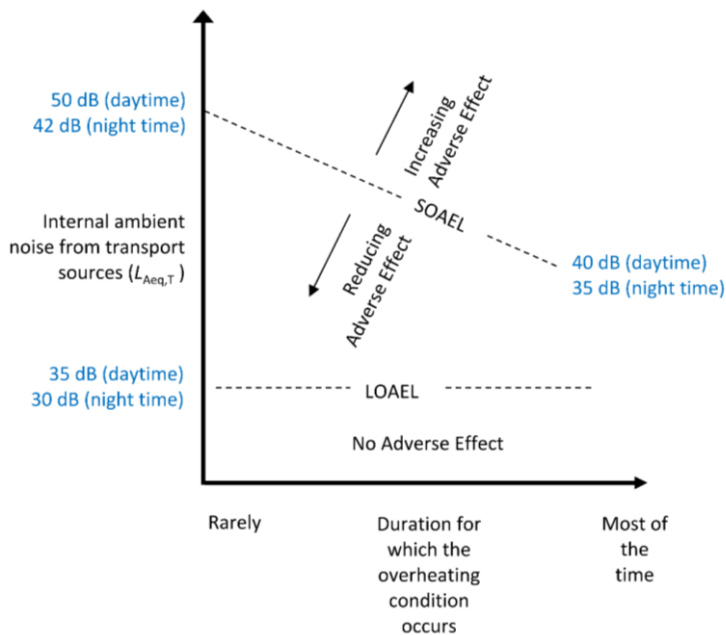


Figure 3 Internal ambient noise levels and increasing adverse effects for an overheating condition

When internal noise levels are above Significant Observed Adverse Effect Level (SOAEL), it is likely that there will be a high potential for an adverse outcome. These adverse outcomes will include:

- Material change in behaviour and/or attitude, eg avoiding certain activities during periods of intrusion
- Where there is no alternative ventilation, having to keep windows closed most of the time because of the noise
- Potential for sleep disturbance and difficulty in getting back to sleep
- Quality of life diminished.

As illustrated, the potential for adverse risk increases with the duration of exposure to noise, ie, a shorter exposure will result in a lower risk of adverse outcomes.

5 Survey method

5.1 Noise survey method

The survey included unattended and attended noise measurements.

The measurements and information provided in this report are in accordance with requirements of BS 7445, as referenced in Appendix A.

5.1.1 Unattended measurements

Unattended noise monitoring was undertaken at the site over 1 day.

The measurements were taken over 5 minute periods between 13:00 on 4 November 2025 and 13:25 on 5 November 2025.

The microphone for the sound level meter was installed on a tripod which was installed on a pole approximately 3 m above the local ground level.

The measurement position is indicated in Figure 1, denoted by the letter 'L'. A photograph showing the measurement position is provided in Figure 4. This location was chosen to be reasonably representative of noise levels at the site and outside the nearest noise sensitive premises.



Figure 4 Photograph showing the unattended measurement position

Details of the equipment used and the noise indices measured are provided in Appendix A.

5.1.2 *Attended measurements*

Attended sample measurements were taken at 4 positions around the proposed site. These are indicated in Figure 1 as positions 1 to 4. The measurements were carried out on 4 November 2025. All measurements were 5 minutes in duration.

At each position the microphone was mounted on a tripod approximately 1.5 m above the ground level and at least 3.5 m from any other reflective surface.

Details of the equipment used and the noise indices measured are provided in Appendix A.

Dominant noise sources occurring during the measurements were noted.

Photographs of the measurement locations are shown in Figure 5.

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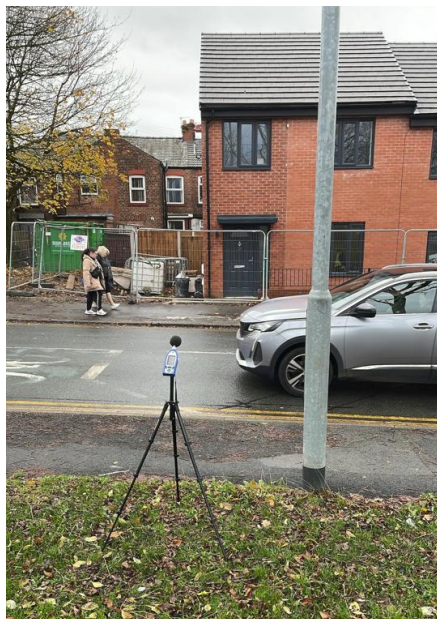


Figure 5 Photographs of attended measurement locations Pos 1 to 4 (Left to right)

5.2 Weather conditions

Weather conditions during the survey are described in Appendix A.

6 Measurement results

6.1 Observations

6.1.1 Noise

The dominant noise sources observed at the site during the survey were from road traffic on Cross Lane and Chapman Street.

Less significant noise sources included pedestrians passing by talking and light beeping from distant traffic.

6.2 Noise measurement results

6.2.1 Unattended measurement results

A graph showing the results of the unattended measurements is provided in Appendix B.

Ambient noise levels measured during the unattended survey are presented in Table 4.

Table 4 Ambient noise levels measured during the unattended survey

Date	Day (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
4 November 2025	64 ^[1]	59
5 November 2025	65 ^[1]	-
Average	65	59

^[1] Measurement not made over full period due to monitoring start and end time (the measurement on 4 November 25 was over 10 hours, and on 5 November 25 over 6 hours); not included in the average.

Analysis of night-time maximum noise levels indicates that the night-time maximum noise level not normally exceeded 10 times a night is L_{AFmax} 75 dB. In line with BS 4142:2014+A1:2019, representative background sound levels have been determined using statistical analysis of the continuous measurements.

Day and night statistical analysis of representative values for the site are given in Figure 6.

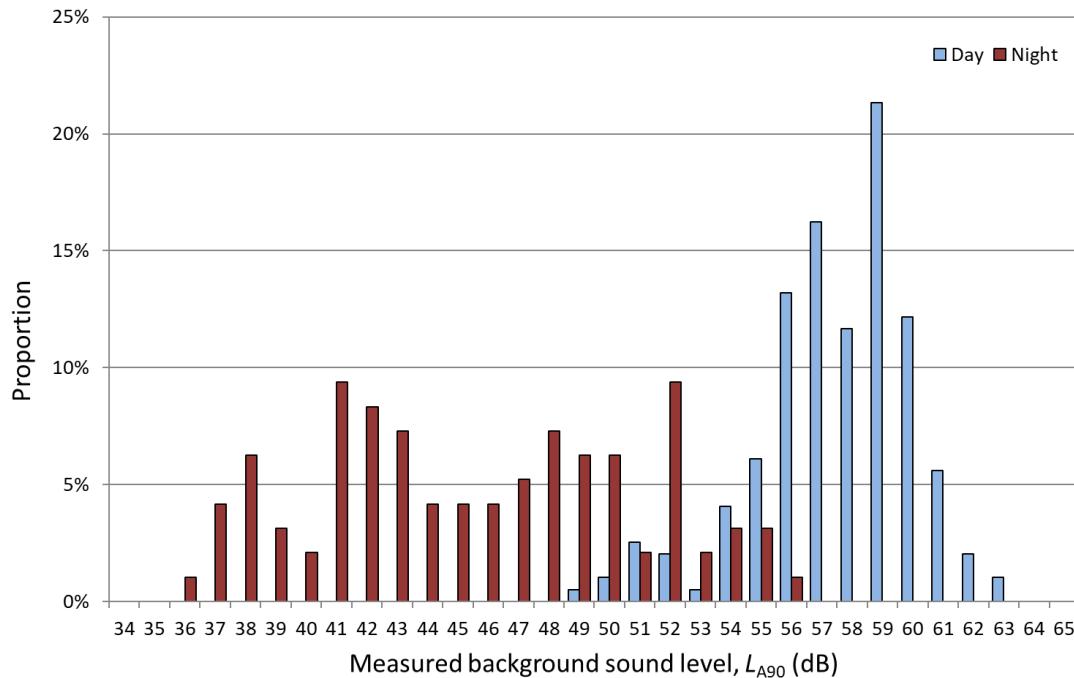


Figure 6 Statistical analysis of background sound levels

From this analysis, the representative background sound levels measured during the survey were $L_{A90,5min}$ 57 dB during the day and $L_{A90,5min}$ 41 dB at night.

6.2.2 Attended measurement results

Noise levels and key sources recorded during the attended measurements are summarised in Table 5. All measurement results are free-field measurements.

Table 5 Attended measurement results

Position	Start time	Sound pressure levels (dB)			Noise sources
		$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{A90,5min}$	
1	13:35	55	64	51	Dominated by road traffic on Chapman Street with contributions from pedestrians passing talking, aircraft overhead and distant siren
	13:40	56	69	51	As above
	13:45	55	63	51	As above

Position	Start time	Sound pressure levels (dB)			Noise sources
		$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{A90,5min}$	
2	14:15	55	68	52	Dominated by road traffic on Chapman Street with contributions from pedestrians passing talking, aircraft overhead, and car amplified music
	14:20	55	63	52	As above
	14:25	56	71	52	As above, max due to road traffic
	13:35	55	64	51	Dominated by road traffic on Chapman Street with contributions from pedestrians passing talking, aircraft overhead and distant siren
	13:40	56	69	51	As above
	13:30	56	64	51	Dominated by cars passing on Cross Lane, 2 car passing by aircraft overhead, distant traffic light beeping
	13:35	58	72	50	As above, aircraft overhead, car passing by and max caused by distant pedestrians talking loudly
	13:40	57	71	52	Dominated by road traffic on Cross Lane, car passing with amplified music, max pedestrian
	14:01	55	70	51	Dominated by road traffic on Cross Lane
	14:06	57	70	51	As above, car passing by, distant siren, distant car with amplified music, distant traffic light beeping, max due to car pass on Cross Lane
3	14:11	59	72	51	As above, cement truck on Cross Lane caused max and cars passing
	13:15	65	78	59	Dominated by cars passing by, cars passing with amplified music, cars idling, car engine start, traffic lights beeping noise for pedestrian to cross, max cars passing

Position	Start time	Sound pressure levels (dB)			Noise sources
		$L_{Aeq,5min}$	$L_{Aeq,5min}$	$L_{A90,5min}$	
4	13:20	64	75	56	As above, max car passing on Cross Lane
	13:25	65	77	58	As above, max due to cars passing
	13:46	64	76	57	Cars/bus passing on Cross Lane, max due to highway maintenance truck passing, traffic light beeping
	13:51	67	90	55	As above, max due to car horn while passing by
	13:56	63	73	55	Dominated by road traffic on Cross Lane, distant traffic light beeping, bus and truck passing
	13:15	69	88	57	Dominated by road traffic on Chapman Street with contribution from traffic light beeping and distant siren. Max due to bus on Chapman Street.
	13:20	65	75	57	As above, max due to lorry on Chapman Street.
	13:25	68	86	60	As above, max due to pedestrian talking loudly while passing by
	13:55	65	77	56	Dominated by road traffic on Chapman Street. Max level due to traffic light beeping.
	14:00	65	73	54	As above, max due to distant siren.
	14:05	66	80	58	As above, max due to pedestrian passing by talking with raised voice.

7 Plant noise egress

7.1 Limits

Based on the above criteria and the measurement results, the cumulative noise level from the operation of all new plant should not exceed the limits set out in Table 6.

The limits apply at 1 m from the worst affected windows of the nearest noise sensitive premises and are presented as facade levels.

Table 6 Plant noise limits at 1 m from the nearest noise sensitive premises

Time of day	Maximum sound pressure level at 1 m from noise sensitive premises, $L_{Aeq,5min}$ (dB) ^[1]
Day (07:00-23:00)	52
Night (23:00-07:00)	36

^[1] The limits set out in Table 6 do not include any attention catching features. The penalty corrections for attention catching features may be significant, and will need to be considered as the building services design progresses. This is discussed in Appendix C.

7.2 Assessment

All building services plant will be designed to achieve the noise limits set out above, including any corrections for attention catching features. At this stage, it is understood that up to four ASHPs are currently proposed. Low noise selection will be required along with a detailed assessment of the mitigation needed to ensure compliance with the limits set out above.

8 Facade sound insulation – noise ingress

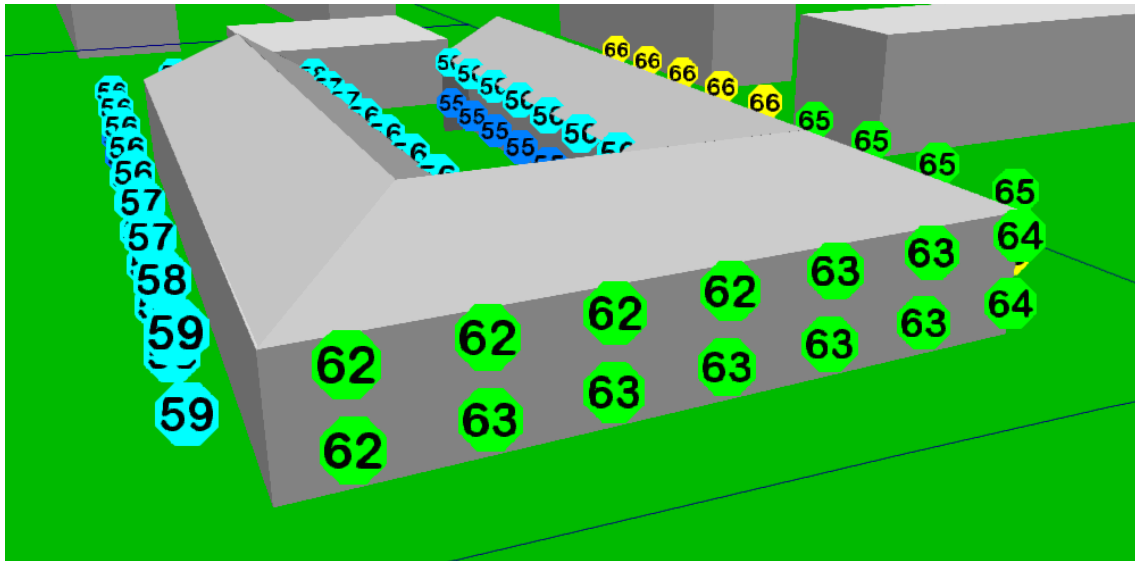
This section describes an assessment of facade sound insulation to control noise ingress. The required facade specification largely depends on the external noise levels and the internal noise criteria.

The following assessment is based on achieving the internal noise levels recommended in BS 8233 and by the Manchester City Council, which are set out in Section 4.2.

8.1 External noise levels

A 3D environmental noise model of the proposed site has been generated using CadnaA software by Datakustic. This allows assessment of noise ingress to incorporate the screening that the proposed development will provide when it is completed.

A screenshot of the 3D acoustic model is presented in Figure 7.



The predicted external noise levels at the facades of the proposed development have been grouped into zones, as shown in Figure 8.

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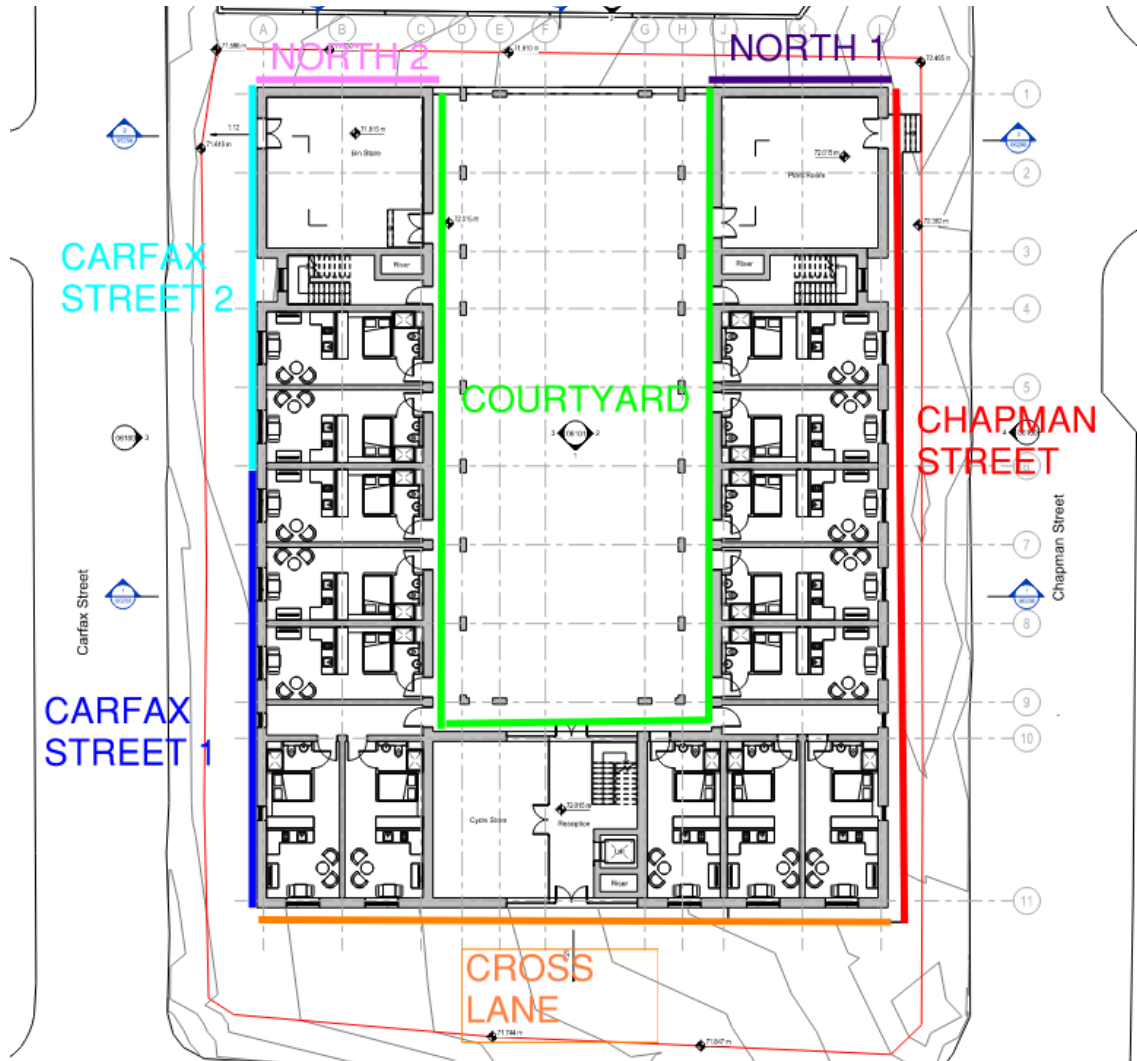


Figure 8 Facade zones

The predicted external facade noise levels for each of these zones are summarised in Table 7.

Table 7 Predicted maximum external facade noise levels

Elevation	Day (0700-2300), $L_{Aeq,16\text{ hr}}$ (dB)	Night (2300-0700), $L_{Aeq,8\text{ hr}}$ (dB)	L_{AFmax} (dB) not regularly exceeded during the night
Chapman Street (east)	65-66	61	77
Cross Lane (south)	62-64	61	77
Carfax Street (west) zone 1	57-59	54-56	72
Carfax Street (west) zone 2	55-56	52-53	69
North zone 1	62-63	56-58	74
North zone 2	57	52	68
Courtyard	55-58	50-52	68

8.2 Facade sound insulation

The external facade noise levels at the site are dominated by trains and road traffic.

Consequently, rather than specify the airborne sound insulation performance in a series of octave bands across the frequency range, the single figure Apparent Weighted Sound Reduction Index (R_w) in combination with the spectrum adaptation term (C_{tr}) is considered to be the most convenient form of performance rating for specification purposes.

For reference, these terms are defined in BS EN ISO 717-1:2013 Acoustics – Rating of sound insulation in buildings and of building elements Part 1: Airborne sound insulation.

The exception to this is in relation to maximum sound pressure levels (L_{AFmax}) which are often due to sources such as horns, sirens, wheel squeak, car doors slamming, etc. Such sources typically do not exhibit high levels of low frequency sound and therefore the single figure Apparent Weighted Sound Reduction Index (R'_w) alone is often utilized in terms of airborne sound insulation performance.

Minimum airborne sound insulation requirements for the facades, which are applicable under background ventilation conditions are given in Table 8. These have been determined to achieve the internal noise criteria for bedrooms and living areas using predicted external noise levels at the facades.

Table 8 Minimum overall facade sound insulation requirements – residential spaces

Elevation (ref Figure 8)	Overall minimum sound insulation performance, R'_w+C_{tr} (dB)
Chapman Street (east)	32
Cross Lane (south)	32
Carfax Street (west) zone 1	27
Carfax Street (west) zone 2	24
North zone 1	29
North zone 2	23
Courtyard	23

In all cases the proposed mechanical background ventilation would be suitable acoustically.

9 Acoustics, ventilation and overheating

ADO2021 sets out requirements for internal noise levels in bedrooms during the night, and therefore takes precedence over AVO Guide. For living rooms during the day, the guidance in AVO Guide has been used to inform the recommendations provided.

9.1 Approved Document O 2021 (during the night)

Although demonstrating compliance with ADO2021 is not strictly a requirement of planning, achieving the requirements will likely have implications on the building's design. This may include impacts on the appearance of the facade and requirements for additional building services plant (eg, external heat rejection plant, mechanical ventilation with/without cooling units within apartments).

The predicted levels of environmental noise ingress with a single partially open window to control over heating are provided below. These are based on maximum open area of:

- 4% of the floor area to the bedrooms, providing 10 dBA of attenuation to the external free-field noise level.
- 12% of the floor area to the living rooms, providing 5 dBA of attenuation to the external free-field noise level.

These are in line with the minimum free-areas advised by the MEP team for overheating control.

Table 9 Predicted noise ingress levels with partially open window

Elevation	Predicted noise ingress level with partially opening window		
	Day, $L_{Aeq,16hr}$ (dB)	Night, $L_{Aeq,8hr}$ (dB)	L_{AFmax} (dB) not regularly exceeded during the night
Chapman Street (east)	57-58	-	-
Cross Lane (south)	54-56	-	-
Carfax Street (west) zone 1	49-51	-	-
Carfax Street (west) zone 2	47-48	-	-
North zone 1	54-55	-	-
North zone 2	49	-	-
Courtyard	47-50	37-39	55

The above predictions indicate the implications set out in Table 10 with regards to the overheating control strategy for ADO during the night and AVOG during the day.

Table 10 Implications for overheating control strategy

Elevation)	Implications for overheating control strategy
Chapman Street (east)	Opening windows not possible to control overheating. Alternative strategy to be provided, with mechanical ventilation is currently proposed. No bedrooms in this zone.
Cross Lane (south)	Comments as per Chapman Street (east)
Carfax Street (west) zone 1	Attenuated passive ventilation is being explored, but mechanical ventilation is likely to be needed based on the required louvre areas. Overheating control with partially opening windows during the day may be possible if duration for which overheating occurs is minimal. No bedrooms in this zone.

Elevation)	Implications for overheating control strategy
Carfax Street (west) zone 2	<p>Attenuated passive ventilation is being explored, but mechanical ventilation is likely to be needed based on the required louvre areas.</p> <p>Overheating control with partially opening windows during the day may be possible if duration for which overheating occurs is minimal to moderate.</p> <p>No bedrooms in this zone.</p>
North zone 1	Comments as per Chapman Street (east)
North zone 2	Comments as per Carfax Street zone 1 (west)
Courtyard	<p>Partially opening windows to control overheating to bedrooms is possible at night.</p> <p>Overheating control with partially opening windows to living rooms during the day may be possible if duration for which overheating occurs is minimal to moderate.</p>

The results of any thermal analysis will need to demonstrate that any apartments that include the opening windows to control overheating can achieve compliance with both TM59 criteria and the noise requirements.

The AVO guide provides a graphical format for assessing the significance of adverse effects, as shown in Figure 3 (for daytime periods). This plots the predicted internal ambient noise level during overheating conditions against the duration for which the overheating condition occurs.

10 Conclusion

Sandy Brown has been appointed to provide an assessment of noise in relation to the proposed development at Chapman Street, Manchester, M18 8LZ.

An environmental noise survey has been carried out at the site. The noise survey was carried out between 13:00 on 4 November 2025 and 13:25 on 5 November 2025.

The average ambient noise levels measured during the survey were $L_{Aeq,16h}$ 65 dB during the day and $L_{Aeq,8h}$ 59 dB at night.

An initial assessment has been carried out to determine required acoustic performances for the facades and provide guidance on the ventilation strategy.

Representative background sound levels measured during the survey were $L_{A90,5min}$ 57 dB during the day and $L_{A90,5min}$ 41 dB at night.

Based on the requirements of Manchester City Council and on the results of the noise survey, all plant must be designed such that the cumulative noise level at 1 m from the worst affected windows of the nearby noise sensitive premises does not exceed $L_{Aeq,5min}$ 52 dB during the day and $L_{Aeq,5min}$ 36 dB during the night.

Appendix A

Survey details

Reference standards

- BS 7445 Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*
- BS 7445: Part 2: 1991 *Description and measurement of environmental noise, Part 2. Guide to the acquisition of data pertinent to land use.*

Equipment

The unattended and attended noise measurements were taken using a Rion NL-52 sound level meter.

Calibration details for the equipment used during the survey are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
Sound level meter	NL-52/00932326	Rion	24 Apr 26	TCRT23/1806
Microphone	UC-59/09251	Rion	24 Apr 26	TCRT23/1806
Pre-amp	NH-25/32354	Rion	24 Apr 26	TCRT23/1806
Calibrator	NC-74/34536129	Rion	24 Apr 26	TCRT23/1576
Sound level meter	NL-52/01143564	Rion	12 Dec 26	TCRT24/1898
Microphone	UC-59/10153	Rion	12 Dec 26	TCRT24/1898
Pre-amp	NH-25/43581	Rion	12 Dec 26	TCRT24/1898
Calibrator	NC-74/34257023	Rion	12 Dec 26	TCRT24/1895
Sound level meter	NL-52/00721068	Rion	29 Oct 26	TCRT24/1796
Microphone	UC-59/22056	Rion	29 Oct 26	TCRT24/1796
Pre-amp	NH-25/22174	Rion	29 Oct 26	TCRT24/1796
Calibrator	NC-75/34824367	Rion	28 Oct 26	TCRT24/1788

Calibration of the meters used for the measurements is traceable to national standards. Calibration certificates for the sound level meters used in this survey are available upon request.

Calibration checks were carried out on the meters and their measurement chains at the beginning and end of the survey. No significant calibration deviation occurred.

Noise indices

Noise indices recorded included the following:

- $L_{Aeq,T}$ The A-weighted equivalent continuous sound pressure level over a period of time, T.
- $L_{AFmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a fast time weighting.
- $L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement period. Indicative of the background sound level.

Sound pressure level measurements are normally taken with an A-weighting (denoted by a subscript 'A', eg L_{A90}) to approximate the frequency response of the human ear.

A more detailed explanation of these quantities can be found in BS 7445: Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures*.

Weather conditions

During the unattended noise measurements, weather reports for the area indicated that temperatures varied between 13°C at night and 15°C during the day, and the wind speed was less than 3 m/s.

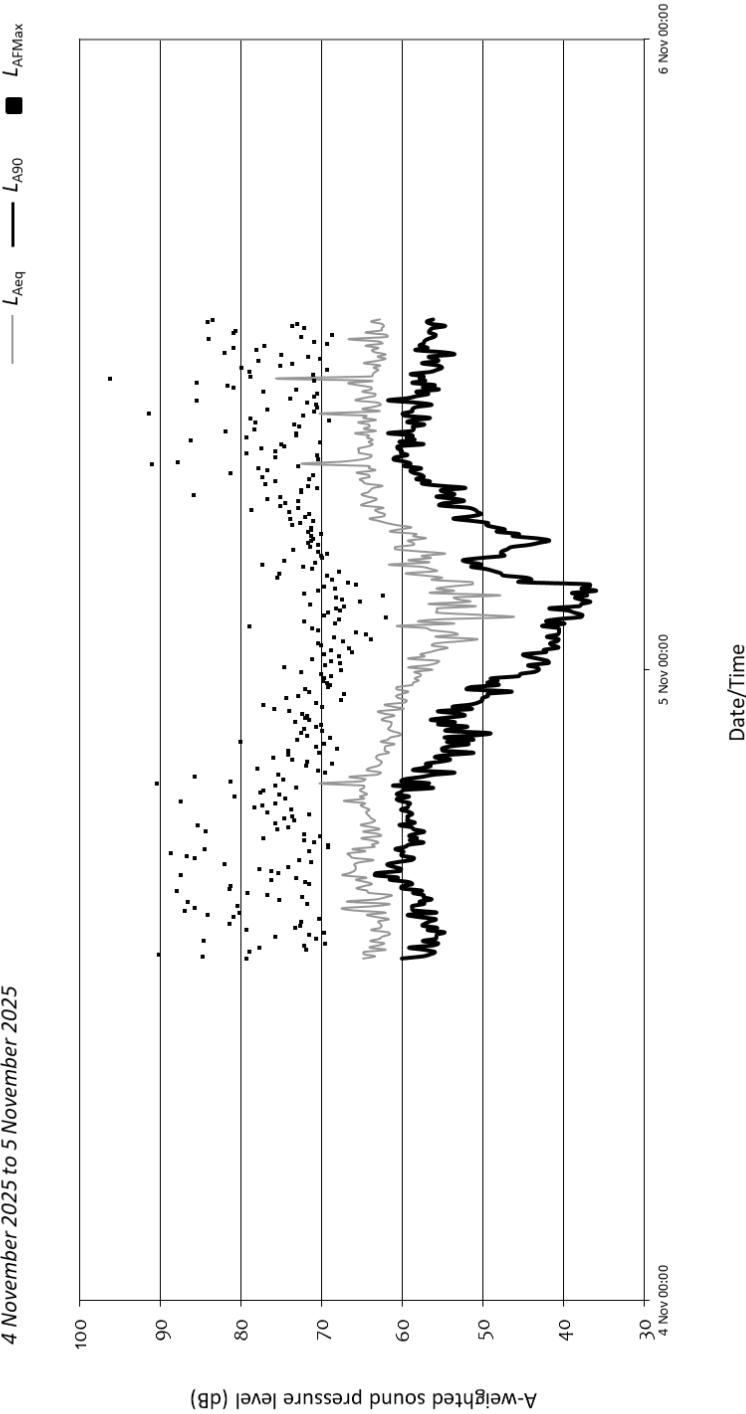
During the attended noise measurements, the weather was generally overcast and dry and no rain occurred. Wind speeds were measured at each position and varied between 0 m/s and 2.5 m/s.

These weather conditions are considered suitable for obtaining representative measurements.

Appendix B

Results of unattended measurements at Position L

Chapman Street, Manchester
Results of noise logging survey at Position L
4 November 2025 to 5 November 2025



Appendix C

BS 4142 corrections for attention catching features

The following applies where plant noise is assessed in accordance with BS 4142:2014+A1:2019.

If the proposed plant noise contains attention catching features (such as tonal elements, whines, whistles, bangs etc), penalty corrections should be applied based on the type and impact of the features.

If appropriate, a subjective assessment of the plant features can be adopted. Where the plant noise contains tonal elements, the following corrections can be made depending on how perceptible the tone is at the noise receptor:

- 0 dB where the tone is not perceptible
- 2 dB where the tone is just perceptible
- 4 dB where the tone is clearly perceptible
- 6 dB where the tone is highly perceptible.

Where the plant noise is impulsive, the following corrections can be made depending on how perceptible the impulsivity is at the noise receptor:

- 0 dB where the impulse is not perceptible
- 3 dB where the impulse is just perceptible
- 6 dB where the impulse is clearly perceptible
- 9 dB where the impulse is highly perceptible.

For noise which is equally both impulsive and tonal, then both features can be accounted for by linearly summing the corrections for both characteristics.

If the plant has other distinctive characteristics, such as intermittency, then a 3 dB correction can be made.

If a subjective assessment of tonality is not appropriate, an objective assessment can be made by analysis of time-averaged, third-octave band sound pressure levels. A noise source is deemed to be tonal if the level in a third-octave band exceeds the level in adjacent third-octave bands by the level differences given below:

- 15 dB in the low frequency third-octave bands (25 Hz to 125 Hz)
- 8 dB in the mid frequency third-octave bands (160 Hz to 400 Hz)
- 5 dB in the high frequency third-octave bands (500 Hz to 10000 Hz).

If an objective assessment identifies the plant noise to be tonal then a 6 dB correction must be made.