KIRINDOLAM 8 LIMITED

NO. 1 CASTLEFIELD

NOISE IMPACT ASSESSMENT

25 August 2026

AEC Reference: P5860-R01-AGB (P03)

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1.0 INTRODUCTION

1.1 Acoustic & Engineering Consultants Limited (AEC) has been instructed by Kirindolam 8 Limited to undertake a noise impact assessment for planning purposes in relation to the proposed new residential development, No. 1 Castlefield.

1.2 The proposals are 592 new residential units over two blocks.

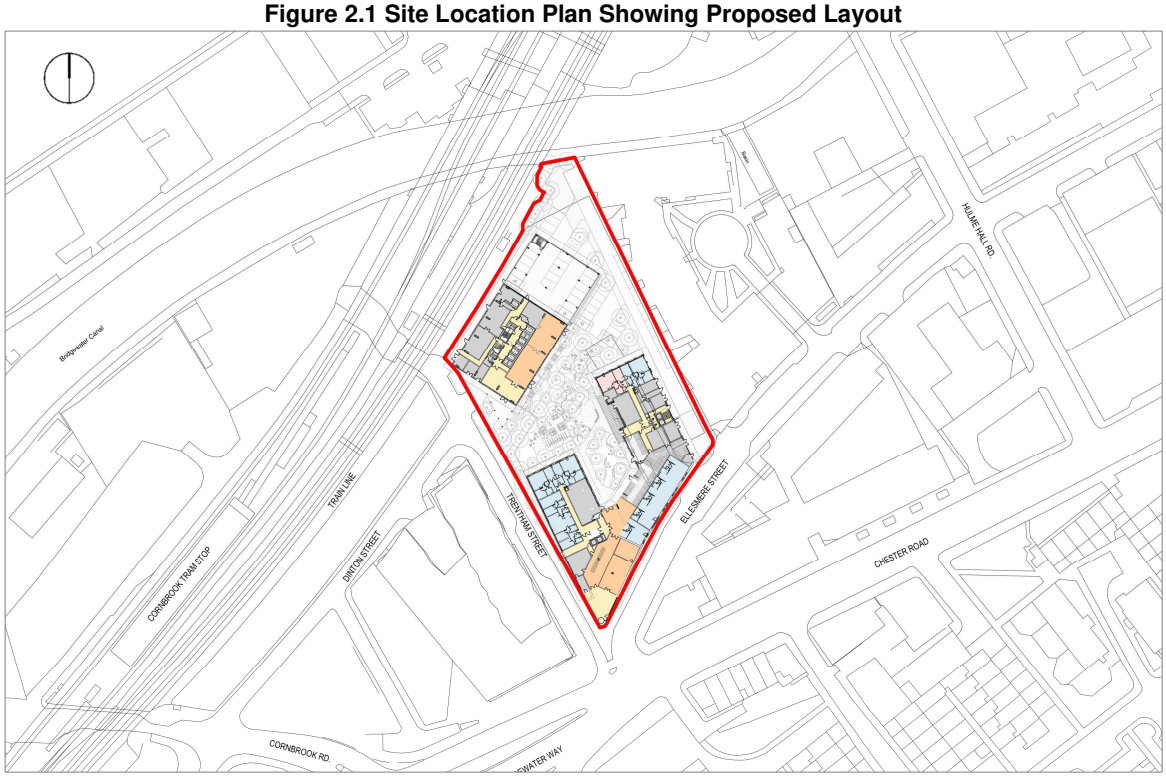
1.3 This report details the baseline noise levels measured at the development site, presents the assessment criteria and discusses the implications on the building design to achieve appropriate internal noise levels required by the Local Authority.

1.4 Acoustic terminology is discussed in brief in Appendix A.

2.0 SITE AND DEVELOPMENT DESCRIPTION

2.1 The site is located north of the A57 Chester Road, adjacent to Ellesmere St and Trentham St, as shown in Figure 2.1.

Figure 2.1 Site Location Plan Showing Proposed Layout



2.2 Block A is a 46-storey building located to the north of the site and directly overlooking train and tram lines which run on an elevated viaduct. The closest train line is located approximately 10m from the northeastern façade of Block A.

2.3 The southern façade of Block B, a 9-storey building, fronts onto Ellesmere Street, which is a moderately busy road with approximately 50 car pass-bys per hour during the daytime. Trentham Street bounds the western facades of the buildings.

3.0 BASIS OF ASSESSMENT

Local Authority Engagement

3.1 AEC phoned Manchester City Council (MCC) in May 2026 to attempt to speak with the Environmental Health Department. It was confirmed that any contact would need to be via email. As such, an email was sent to the environmental health department in May 2026 but a reply has not yet been received.

3.2 However, it is important to note that MCC clearly lays out its requirements in its technical guidance document '*Planning and Noise'* which was last updated in October 2022. This guidance has been reviewed and is discussed in the various sections below.

National Planning Policy Framework

3.3 The Government's approach to managing noise within the planning system is set out in the National Planning Policy Framework (NPPF), published by the Ministry of Housing, Communities and Local Government in August 2026. The NPPF addresses noise within Chapter 17, *Pollution, Public Protection and Security*, principally through Policy P3 (Living Conditions and Pollution) and Policy P4 (Agent of Change and Safeguarded Areas).

3.4 In relation to noise, Policy P3 of the NPPF requires planning decisions to:

- ensure development is appropriate for its location, taking account of the likely effects of noise on health, living conditions and the natural environment;
- provide healthy living conditions for occupants and users, avoiding exposure to noise levels that could have an unacceptable adverse effect on health and quality of life;
- avoid giving rise to, or contributing to, unacceptable noise impacts on existing receptors;
- mitigate and reduce to a minimum potential adverse impacts resulting from noise;
- avoid significant adverse effects on health and quality of life arising from noise;
- maintain the character of tranquil areas valued for their recreational and amenity benefits.

3.5 The NPPF also incorporates the Agent of Change Principle through Policy P4. This requires new noise-sensitive development proposed close to existing noise-generating uses to identify potential conflicts and demonstrate that suitable acoustic mitigation can be provided, ensuring that established businesses and facilities are not subject to unreasonable operational constraints as a consequence of the new development.

3.6 Detailed guidance supporting the NPPF is provided within the Planning Practice Guidance (PPG). PPG Noise guidance was most recently updated in July 2022 and emphasises:

- the need to assess where development may create additional noise or be sensitive to the existing acoustic environment;
- the importance of good acoustic design early in the design process; and
- opportunities to improve the acoustic environment where practicable.

3.7 PPG states that 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; and
- whether or not a good standard of amenity can be achieved.

3.8 PPG aligns with the Noise Policy Statement for England (NPSE), published by the Department for Environment, Food and Rural Affairs (Defra) in March 2010. The NPSE provides the overarching national noise policy aims, which are to:

- avoid significant adverse effects on health and quality of life;

- mitigate and minimise adverse effects on health and quality of life where they cannot be avoided; and
- contribute to the improvement of health and quality of life where possible.

3.9 PPG and NPSE use the concepts of LOAEL (Lowest Observed Adverse Effect Level) and SOAEL (Significant Observed Adverse Effect Level). These concepts underpin the PPG's Noise Exposure Hierarchy, which assists in determining whether noise effects are acceptable, adverse or significantly adverse. To assist with this, the guidance presents a Noise Exposure Hierarchy table, which is reproduced as Table 3.1 below.

Table 3.1 – PPG Noise Exposure Hierarchy Table

Response	Examples of Outcome	Increasing Effect Level	Action
No Observed Effect Level			
Not Present	No Effect	No Observed Effect	No specific measures required
No Observed Effect Level			
Present 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			
Present 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; where there is no alternative ventilation, having to close windows for some of the time because of the noise. 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			
Present and disruptive	The noise causes a material change in behaviour and/or attitude, e.g., 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 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 Adverse 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, e.g., auditory and non-auditory	Unacceptable Adverse Effect	Prevent

Internal Noise Limits

3.10 Appropriate noise limits to be achieved whilst whole dwelling (background) ventilation is being provided are presented in the following Table 3.2. They are based on the following guidance and are in line with the requirements of Manchester City Council (MCC).

- British Standard 8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' (BS8233);
- WHO Guidelines for community noise;

- The Association of Noise Consultants (ANC) document Professional Practice Guidance on Planning and Noise '*New Residential Development*' (2017) (ProPG). Appropriate noise limits are presented in Table 3.2, which relate to the total noise from external sources and any plant providing background ventilation.

3.11 Whole dwelling ventilation requirements are defined in Approved Document F '*Ventilation*' (2010) of the Building Regulations (ADF). It is normally continuous low-rate ventilation and is typically provided via a partially opened window, trickle ventilators or mechanical means, and is often referred to as 'background ventilation'.

Table 3.2 – Internal Noise Level Limits within Habitable Rooms

Activity	Location	Noise Level Limit, dB		
		Daytime 0700 – 2300h $L_{Aeq,16h}$	Night-Time 2300 – 0700h	
			$L_{Aeq,8h}$	$L_{Amax,F}$
Resting	Living Room	35	-	-
Dining	Dining Room/Area	40	-	-
Sleeping (daytime resting)	Bedroom	35	30	45
*Regular individual noise events (e.g. scheduled aircraft, passing trains or cars) should not normally exceed 45dBL_{Amax} more than around 10 times per night.				

Control of Overheating Ventilation Provision (ADO)

Bedrooms During the Night-time

3.12 The development shall comply with *Approved Document O of the Building Regulations 2010 'Requirement 01: Overheating Mitigation Regulations 40B' (ADO).*

3.13 Section 3 of ADO states that occupants are likely to keep bedroom windows closed during sleeping hours if the noise within bedrooms exceeds the following limits:

'a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).
b. 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am).'

3.14 An overheating assessment must be undertaken using either the simplified method or dynamic thermal modelling. Under the simplified method residential developments are categorized according to risk:

- High risk – London and parts of Manchester (M1, M2, M3, M5, M15, M16 and M50);
- Moderate risk – England, excluding the above.

3.14 ADO assumes minimum ventilation opening free areas are equivalent to 13% and 4% of the floor area of the bedrooms for 'high' and moderate risk locations respectively. These openings are expected to provide approximately 5dB and 10dB attenuation of external noise.

3.15 As the site is in a moderate risk area, the maximum external free-field noise above which the simplified method cannot be used is presented in Table 3.3.

Table 3.3 – Night-time Free-Field External Noise Limits for a Simplified Assessment

Parameter	External Noise Limit, dB (Medium Risk Location)	External Noise Limit, dB (High Risk Location)
$L_{Aeq,8h}$	50	45
$L_{Amax,F}$	65*	60*

* Should not be exceeded more than approximately 10 times per night

3.16 Where these limits are exceeded, ADO states that dynamic thermal modelling should be undertaken in accordance with CIBSE's TM59 '*Design methodology for the assessment of overheating risk in homes'*.

3.18 Thermal modelling may demonstrate that smaller ventilation openings are sufficient to control overheating, allowing simple openings to be used at higher external noise levels than those assumed by the simplified method. However, the required free area would not typically be less than 2–4% of the floor area.

3.19 Where external noise levels preclude the use of simple openings for overheating mitigation, acoustically attenuated ventilation or mechanical ventilation systems should be considered.

3.20 Internal noise limits for mechanical systems used in the control of overheating are presented in the following Table 3.4.

Table 3.4 – Suggested Internal Noise Limit for Mechanical Plant

Parameter	Noise Limit*
Mechanical ventilation serving bedrooms for the control of overheating	35 $dBL_{Aeq,T}$
*Noise levels up to 5dB higher than those above may be appropriate in some scenarios, likewise lower noise levels may be appropriate for some residential developments	

Lounges During the Day-time

3.21 ADO does not set daytime internal noise level limits. During the daytime, Manchester City Council (MCC) indicates that consideration can be given to guidance presented in the Association of Noise Consultants '*Acoustics, Ventilation and Overheating: Residential Design Guide (2020) (AVO)*. It is important to note that AVO is a design guide only and not a statutory document.

3.22 AVO suggests that a two-level noise assessment is undertaken. A 'Level 1' relates to external noise levels and the site is categorised as negligible, low, medium or high risk depending on the external noise climate. AVO does not set specific limits for these categories but introduces a sliding scale from negligible risk to high risk.

3.23 Table 3.3 of the AVO guidance states that where internal noise levels in lounges exceed approximately 50$dBL_{Aeq,16hr}$ noise is likely to cause a material use in behaviour. This would relate to an external noise level of greater than approximately 63$dBL_{Aeq,16hr}$ during the daytime assuming a window open to 2% of the façade area.

3.24 Even for noise levels below this proposed limit, an increase in noise represents an increasing likelihood of impact. However, other factors should be considered including the size of the required window opening and the length of time the window needs to remain open.

3.25 Based on the above it is considered that where daytime external noise levels do not exceed 63$dBL_{Aeq,16hr}$ utilising opening windows to control overheating should be acceptable (assuming an opening of no greater than 2% of the floor area). Furthermore, depending on the size of opening required and the length of time a window needs to be open, an external noise level of up to 65$dBL_{Aeq,16hr}$ may be acceptable.

3.26 Although there is no statutory requirement to provide alternative means of ventilation when noise levels exceed 63$dBL_{Aeq,T}$, the client may wish to consider this.

External Amenity Space

3.27 BS 8233:2014 advises that for traditional outdoor amenity spaces, such as private gardens and patios, daytime noise levels should ideally not exceed 50dB$L_{Aeq,T}$, with 55dB$L_{Aeq,T}$ representing an upper guideline value that may be acceptable in noisier environments. Where these values cannot reasonably be achieved, particularly within urban areas or locations adjacent to major transport corridors, developments should be designed to achieve the lowest practicable external noise levels whilst recognising the benefits of the site's location.

3.28 For balconies, roof terraces and roof gardens, where these areas are intended for sitting out and relaxation, the principles applied to traditional amenity spaces remain relevant.

3.29 MCC has adopted an external noise limit of 55dB$L_{Aeq,T}$ for gardens and terraces during the daytime.

Atmospheric Plant Noise Emissions

3.30 To assess the potential impact of the any atmospheric mechanical services noise associated with the development. Consideration has been given to BS 4142:2014 *'Methods for rating and assessing industrial and commercial sound*'.

3.31 BS 4142 indicates that where the rating level ($L_{Ar,Tr}$) does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context. The rating level relates to the noise from the mechanical services plant with a noise character adjustment (where relevant).

3.32 MCC requires that the noise rating level from new plant and equipment should not exceed the existing background noise level by more than -5dB(A).

Noise Associated with the Scrapyard

3.33 Again, the appropriate method of assessing noise from the scrapyard is to use BS 4142:2014. Consideration should be given to a correction for any noise character and also the context of the sound.

Vibration

3.34 MCC indicates that significant vibration is only likely to be generated by Trams and Trains within the city. As the train lines are within 10m of the nearest railway, consideration has been given to BS 6472-1:2008 '*Guide to evaluation of human exposure to vibration in buildings – Part 1: Vibration sources other than blasting.*'

3.35 BS 6472 identifies the vibration dose values above which various degrees of adverse comment may be expected in residential buildings. This data is reproduced in the following Table 3.5

Table 3.5 – BS6472 Vibration Values Above Which Adverse Comments May be Possible

Period	Vibration dose values ($m/s^{1.75}$)		
	Low probability of adverse comment	Adverse comment possible	Adverse comment probable
Daytime 0700h to 2300h	0.2 to 0.4	0.4 to 0.8	0.8 to 1.6

Night-time 2300h to 0700h	0.13	0.26	0.51

Shortened Noise Survey Measurement Procedure

3.36 As secure monitoring locations were not available for the site shortened attended noise surveys were undertaken based on the methodology presented below. In addition to this in all instances, the measured noise levels will also be compared to long term noise data obtained by other consultants in relation to:

- The originally proposed development on the No. 1 Castlefield site (Lighthouse Acoustics report 0141/APR1, dated September 2016.
- The Trilogy, Manchester, south of the site on Chester Road (SRL report 82841-SRL-RP-YA-01-S2-P2, dated September 2025).
- Cornbrook Manchester, 80m to the west of No. 1 Castlefield (Jameson Acoustics report 22101-RP-1-R2 dated January 2024).

Road Traffic

3.37 In relation to road traffic noise, BS8233 states that the noise from road traffic can be determined using the Department of Transport Welsh Office document '*Calculation of Road Traffic Noise'* issued in 1988 (CRTN). CRTN presents the shortened measurement procedure which can be used to convert the arithmetic mean of the measured $L_{A10,T}$ levels (measured over 3 consecutive hours during the period 1000h to 1700h) into an 18-hour L_{A10} level by subtracting 1dB.

3.38 BS8233 suggests that the conversion of the $L_{A10,18h}$ to $L_{Aeq,16h}$ can be achieved by the (approximate) relationship of $L_{Aeq,16h} = L_{A10,18h} – 2dB$. Therefore, the daytime ambient noise level can be determined by subtracting 3dB from the arithmetic mean of the $L_{A10,T}$ levels measured on-site over 3 consecutive hours (between 1000 and 1700h).

3.39 For the night-time, measurements were undertaken over the first two hours of the night-time and these levels were checked against DEFRA noise map data and have been used to represent the 8-hour night-time period.

Railway Noise

3.40 A railway noise assessment has been undertaken using the principles of The Department of Transport's '*Calculation of Railway Noise'* 1995. Single-event noise levels (L_{AE}) have been obtained from on-site monitoring of representative train and tram pass-bys. The L_{AE} metric represents the total noise energy generated by an individual train or tram movement.

3.41 The measured L_{AE} values are then combined with train and tram movement data to calculate the equivalent continuous noise levels (L_{Aeq}) by accounting for the number of train pass-bys during the daytime and night-time periods using:

$$L_{Aeq,T} = L_{AE} + 10\log10(N) - 10\log10(T)$$

Where N = the number of train/tram movements and T = the time period in seconds.

3.42 The above is calculated for each train and tram type and then the resulting railway noise levels were reported as $L_{Aeq,16hr}$ for the daytime period and $L_{Aeq,8hr}$ for the night-time period, representing the equivalent continuous sound level containing the same total acoustic energy as the individual train events occurring during each period. This methodology is consistent with the established CRN approach and provides a robust assessment of operational railway noise based on measured site-specific conditions

4.0 NOISE & VIBRATION CLIMATE

Noise

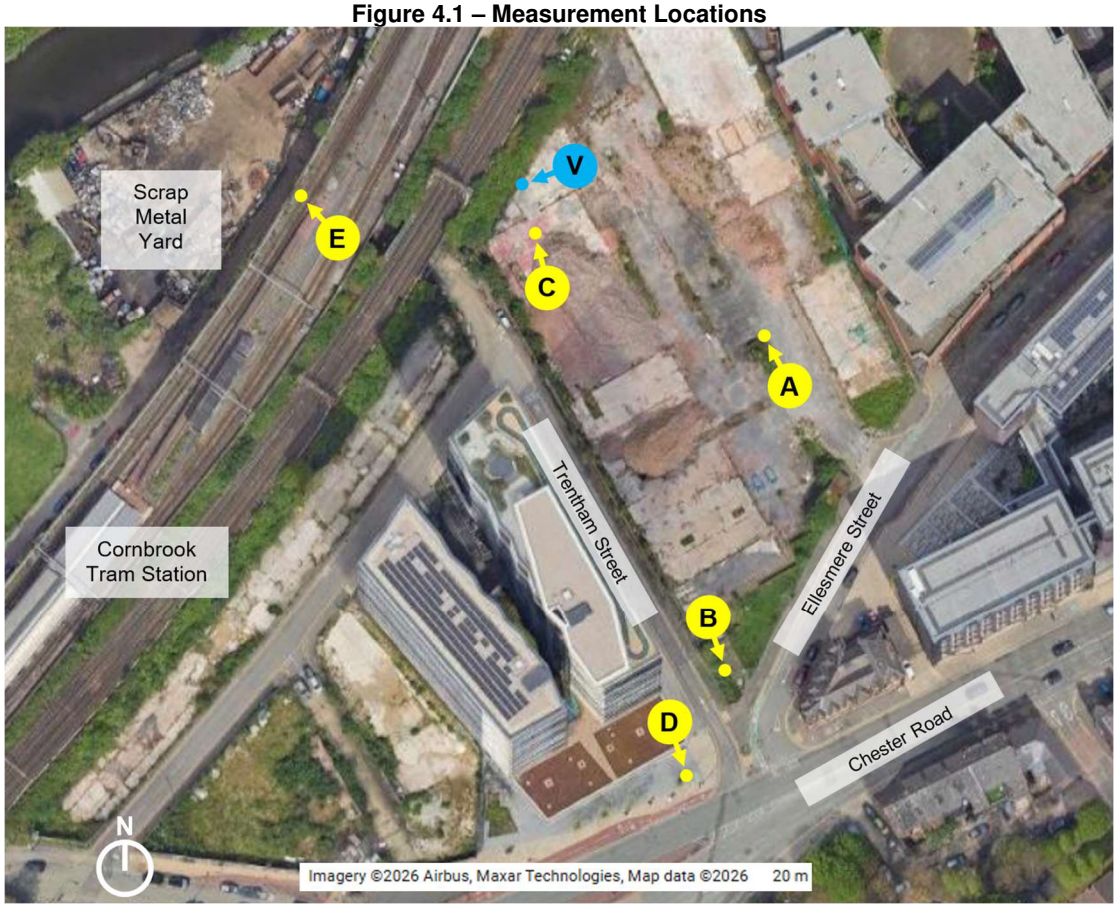
4.1 Attended noise level surveys were undertaken by AEC at the following times:

Noise: Thursday 16 April 2026 1400h to 1630h.
Tuesday 16 June and Wednesday 17 June 2026 2300h to 0105.
Thursday 14 May 2026 (rail only) 1430h to 1730h.

Vibration: Thursday 16 April 2300h to Tuesday 21 April 0700h.

4.2 Noise measurements were undertaken at 5 locations around the development site identified as A to E on Figure 4.1, below.

Figure 4.1 – Measurement Locations



4.3 All measurements were undertaken under free-field conditions and in general accordance with BS7445-1: 2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'. A full measurement procedure for the survey is presented in Appendix B and the measured data is presented in Tables B1 to B4 of Appendix B.

4.4 With reference to the survey data, the anticipated free-field daytime ($L_{Aeq,16h}$) and night-time ($L_{Aeq,8h}$) noise levels have been calculated and used to develop a noise model within CadnaA environmental noise prediction software.

4.5 The predicted noise levels across the site and surrounding area have been compared with longer-term noise monitoring data collected by others in the vicinity of the development site (see Section 3.0).

4.6 The comparison confirms that the AEC survey results are consistent with previous measurements. This provides additional confidence that the data used in this assessment is representative of the prevailing noise environment.

4.7 Based on the above, the noise levels affecting the façades of the proposed buildings have been calculated. The results are presented on the following Figures 4.2 & 4.3.

4.8 Figures 4.2 and 4.3 only show the worst-case levels affecting each floor of the buildings. Full building façade maps have been produced which will be used as the basis of detailed calculation during the design stages.

Figure 4.2 – Anticipated Worst-Case Free-field Daytime Noise Levels, $dBL_{Aeq,T}$

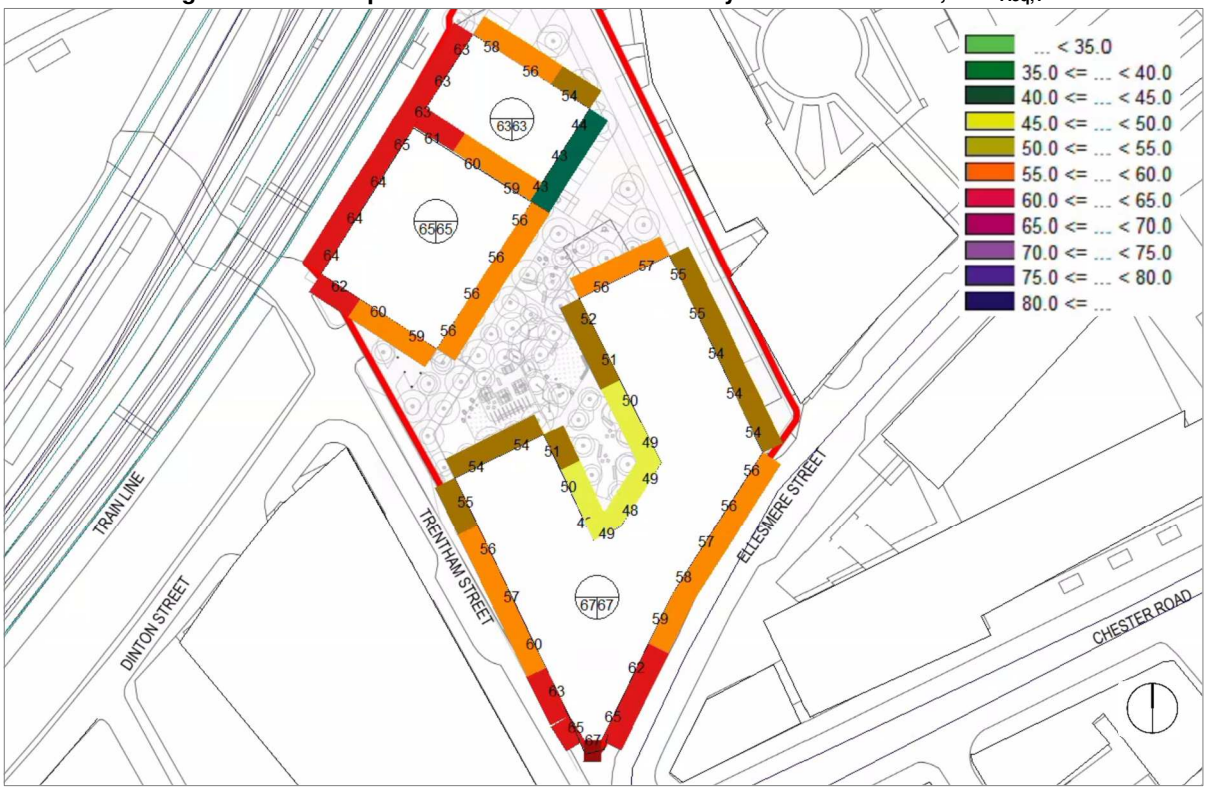


Figure 4.3 – Anticipated Worst-Case Free-field Night-time Noise Levels, $dBL_{Aeq,T}$



4.9 In addition to the noise levels presented on Figure 4.3, night-time free-field maximum noise levels affecting the building would typically be no greater than:

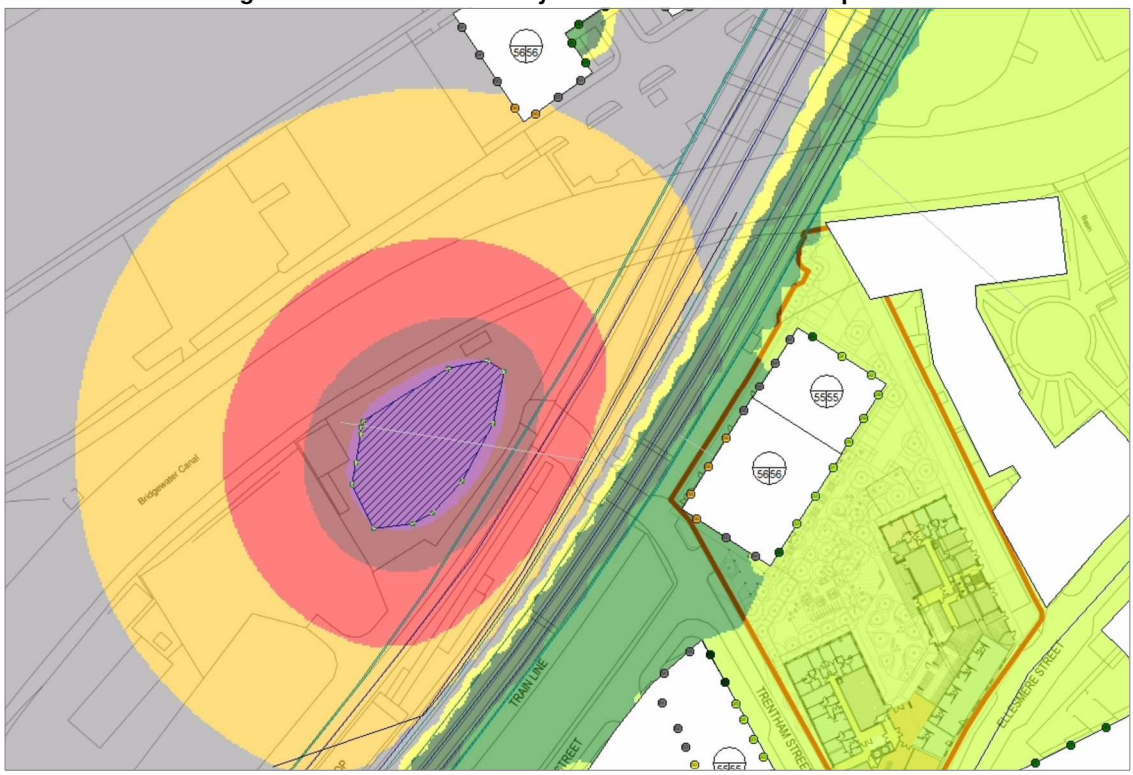
- 78$dBL_{Amax,F}$ for Block A facades facing onto the railway (will reduce on upper floors).
- 73$dBL_{Amax,F}$ for Block B facades closest to Chester Way.
- 68$dBL_{Amax,F}$ for all other locations, including the rear of blocks A and B.

4.10 Bennet Bros scrap metal recycling merchants is located to the west of the site, on the opposite side of the viaduct, as shown in Figure 4.2. The site operates between 0800h and 1700h, and the principal noise sources include a crusher/baler and wheeled excavators. Owing to screening provided by the viaduct, noise from the site is often largely inaudible at ground level. However, during the daytime surveys, noise from the yard was perceptible at locations close to the railway throughout the survey period.

4.11 Noise levels of approximately 75$dBL_{Aeq,T}$ were measured at the open entrance gate while the crusher/baler and wheeled excavators were operating simultaneously. On this basis, the measured data are considered representative of a typical worst-case operating scenario; at other times, noise levels would be expected to be lower than those measured and on occasion, it is possible the noise levels could be marginally higher. The noise sources were located at varying positions within the yard, approximately 10–15 m from the measurement location.

4.12 Based on this a calculation has been undertaken using CadnaA and the output is presented on the following Figure 4.4.

Figure 4.4 – Predicted Hourly Noise Levels due to Scrap Yard



4.13 Vibration levels were continuously monitored Thursday 16 April to Tuesday 21 April 2026, at location V, 10m from the nearest railway line on an existing concrete slab. Full details of the measurements are included in Appendix B. The highest daytime and night-time levels are presented in Table 4.1.

Table 4.1 – Measured Vibration Levels

Date	Day (0700-2300) / Night (2300 - 0700)	Measured VDV, $m/s^{1.75}$			PPV
		X	Y	Z	
16.04.26	Night	0.003	0.006	0.018	0.15 to 0.3 Z & Y axis
19.04.26	Day	0.015	0.052	0.032	0.2 to 0.3 Z & Y axis

5.0 ASSESSMENT OF PROPOSED DEVELOPMENT

Residential Façade and Ventilation Requirements

Whole Dwelling Ventilation Provision

5.1 It is assumed that whole dwelling (background) ventilation will be provided by an MVHR system that will be ducted to atmosphere above the windows of the apartments. However, at this stage the acoustic requirements for trickle vents have also been included, should these be considered.

Windows

5.2 Based on the free-field external noise levels presented above to meet the BS8233/WHO internal noise level limits presented in Table 3.2, the windows need to achieve the sound insulation performances presented in the following Table 5.1.

Table 5.1 – Window and Ventilation Requirements to Achieve Appropriate Internal Noise Levels in Habitable Rooms

Block	Room	Elevation Colour (Refer to figures 4.2 & 4.3)	Minimum Sound Insulation Performance requirement	
			Glazing	Ventilator (open position)
A (North)	Lounges Daytime Fig 4.2	Red	37dBR_w & 32dBR_w+C_{tr}*	41dB$D_{n,e,w}$*
		Orange	33dBR_w & 28dBR_w+C_{tr}	37dB$D_{n,e,w}$
		Golden	31dBR_w & 27dBR_w+C_{tr}	33dB$D_{n,e,w}$
		Dark Green & Mid Green	29dBR_w & 25dBR_w+C_{tr}	26dB$D_{n,e,w}$
	Bedrooms Night-time Fig 4.3	NE, NW & SW Facades (All colours)	44dBR_w & 38dBR_w+C_{tr}Δ	Mechanical OnlyΔ
		SE Façade (Green & Gold)	33dBR_w & 28dBR_w+C_{tr}	37dB$D_{n,e,w}$
B (South)	Lounges Daytime Fig 4.2	Red	37dBR_w & 32dBR_w+C_{tr}	41dB$D_{n,e,w}$
		Orange	33dBR_w & 28dBR_w+C_{tr}	37dB$D_{n,e,w}$
		Golden	31dBR_w & 27dBR_w+C_{tr}	33dB$D_{n,e,w}$
		Lime Green	29dBR_w & 25dBR_w+C_{tr}	26dB$D_{n,e,w}$
	Bedrooms Night-time Fig 4.3	Red	41dBR_w & 35dBR_w+C_{tr}	44dB$D_{n,e,w}$
		Amber & Green (Road facing)	37dBR_w & 32dBR_w+C_{tr}*	41dB$D_{n,e,w}$*
		Green & Lime Green (other facades)	33dBR_w & 28dBR_w+C_{tr}	37dB$D_{n,e,w}$

*Corner lounges to be checked.

ΔCan be reduced on higher levels and further back from the railway. This will be developed and finalised during the design stages.

5.3 The sound insulation requirements of the glazing and ventilators have been calculated based on:

- The methodology presented in BS 8233:2014 *'Guidance on sound insulation and noise reduction for buildings'.*

- A single trickle vent per room (in the open position);
- Approximate room dimensions and glazing areas identified on the planning drawings prepared by the project Architect, Denton Corker Marshall. (Approx 50% glazing to bedrooms and 60% to lounges)

5.4 All performances are indicative at this stage and will be subject to a full review and confirmation during the design stages.

Non-glazed Façade Elements

5.5 To maintain the sound insulation performance of the external envelope all non-glazed façade elements should have a sound insulation performance of at least 10dB higher than the glazing.

5.6 This can be achieved using opaque glazed elements with appropriate independent plasterboard internal linings with mineral wool insulation for Block A.

5.7 For Block B, this should be readily achievable with masonry external layers and plasterboard internal layers.

Control of Overheating

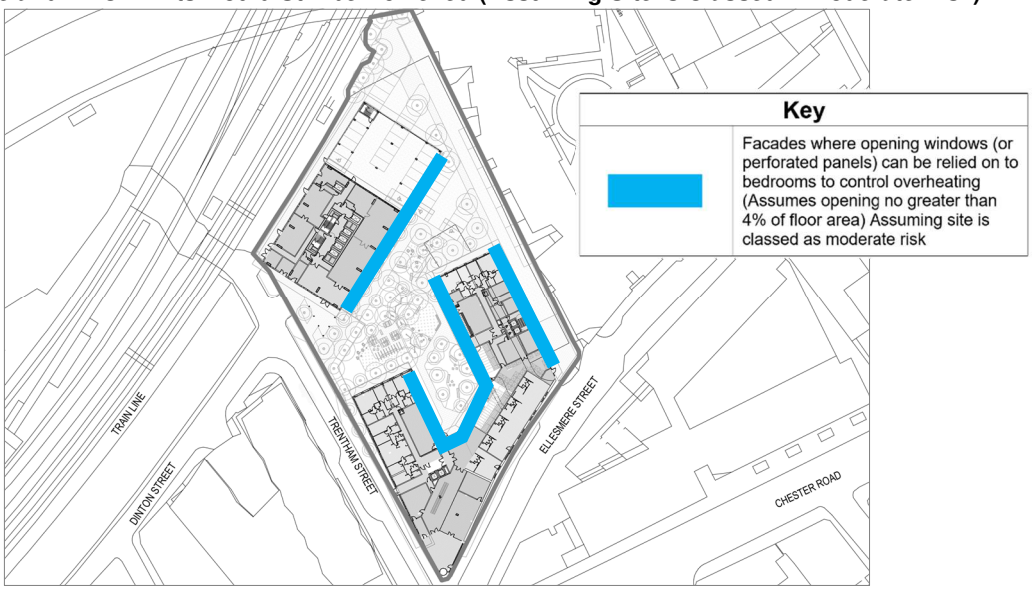
ADO Requirements (Night-time)

5.8 Based on the measured noise levels, it is considered that dynamic thermal modelling should be undertaken in accordance with CIBSE TM59, *Design Methodology for the Assessment of Overheating Risk in Homes*.

5.9 If the overheating assessment determines that simple façade openings with a free area equivalent to approximately 8% of the floor area are required, it is unlikely that any bedrooms could rely on simple façade openings to control overheating whilst maintaining acceptable internal noise levels. In such circumstances, acoustically attenuated openings or mechanical ventilation solutions would be required.

5.10 If the overheating assessment determines that simple façade openings with a free area equivalent to approximately 4% of the floor area are sufficient, simple façade openings (e.g. windows or perforated panels) may be relied upon to control overheating in bedrooms on the façades identified in Figure 5.1, where external night-time noise levels do not exceed approximately 50dB$L_{Aeq,8h}$ and 65dB $L_{Amax,F}$.

Figure 5.1 – Facades Where Bedroom Windows Can be Used for the Control of Overheating During the Night-time and ADO Limits would Still be Achieved (Assuming Site is Classed A Moderate Risk)



Daytime

5.11 If there is a requirement to consider AVO guidance, then it should be acceptable to rely on opening windows to lounges where the anticipated daytime noise levels (refer to Figure 4.2) affecting all facades are below 63dB$L_{Aeq,T}$.

5.12 However, if MCC do not require this, opening windows could be used to lounges on all facades.

Purge Ventilation

5.13 Windows can be openable for purge ventilation provided they are effectively acoustically sealed when closed, and it is important that any frames and seals do not downgrade the sound insulation performance of the glazing.

Noise from the Scrap Metal Yard

5.14 As presented on Figure 4.4, the anticipated free-field noise levels affecting the building as a result of scrap yard activities should be no greater than 56dB$L_{Aeq,T}$.

5.15 The anticipated typical background noise levels at the upper floors of Block B which are most affected is approximately 53dB$L_{A90,\ 1hr}$.

5.16 Due to the impulsive nature of the sound a character correction needs to be applied. Paragraph 9.2 (Note 1) of BS4142 indicates that the residual noise can mask impulsive noise. As the predicted level will only be approximately 3dB higher than the anticipated background noise and the residual noise level would be some 64dBL_{Aeq}, it is considered an appropriate character correction would be 3dB.

5.17 Based on the above, a BS4142 assessment is presented in the following Table 5.2.

Table 5.2 – BS4142 Assessment of Scrap Yard Noise Levels

Description	**BS4142 Quantity (over 1 hour)**	**Comment**
Specific Noise Level (dBL_{Aeq})	56	Will not affect all rooms.
Character adjustment	+3	Some impulsive noise but will be masked.
Rating Noise Level, dB	59	--
Background (dBL_{A90})	53	--
Rating Minus Background	**+6**	**Context discussed below**

5.18 It is considered that the above would represent an observed adverse effect and this is considered acceptable based on the following context:

- The noise is daytime only;
- The residual noise is significantly higher than the anticipated industrial noise;
- This is not a new noise source being introduced to an area;
- The anticipated noise levels at other new tower blocks would be equivalent to those that would affect the new development and it is assumed that there are no ongoing noise complaints associated with these developments.

Vibration

5.19 The highest daytime VDV was 0.052 m/s$^{1.75}$ which is below the BS 6272:2008 range of 0.2 to 0.4m/s$^{1.75}$ where there is a low probability of adverse comment. The highest night-time VDV was 0.018 m/s$^{1.75}$ which is below the limit of 0.13 m/s$^{1.75}$ where there is a low probability of adverse comment.

5.20 As the construction is a tower building with concrete piles, high mass concrete slabs and concrete columns, any amplification is unlikely to be significant. As such there is a low probability of adverse comment from future residents in terms of vibration.

Amenity Areas

5.21 Assuming approximately 1.2m high parapets 1.2m around the rooftop terrace of Block A, the acoustic model indicates rooftop noise levels of approximately 53 to 58dBL$_{Aeq,T}$ which is considered reasonable for such a space, with less than half the terrace exposed noise levels greater than 55dBL$_{Aeq,T}$.

5.22 For the rooftop external areas of Block B, calculations have demonstrated that in all instances, noise levels should be below 55dBL$_{Aeq,T}$ and therefore should be considered acceptable.

Plantrooms & Refuse Areas

5.23 Assuming a 200mm thick concrete slab between the plant rooms and apartments, provided noise levels are controlled to no greater than approximately NR75 in the plant rooms (which is a realistic limit for nearly all plant areas) noise in the habitable rooms above would be limited to NR15-20 and, as such, comply with the suggested limits.

5.24 Based on a 200mm thick concrete slab, maximum noise levels of around 95dBL$_{Amax}$ should be acceptable in the refuse storage area. This would limit maximum noise levels to no greater than 35dBL$_{Amax,F}$ in the residential apartments above. It is highly improbable that maximum noise levels would exceed 95dBL$_{Amax,F}$ in the refuse storage area at any time and, as such, there would be no requirement to under-draw these areas.

Atmospheric Plant Noise Emissions

5.25 Atmospheric plant noise should be controlled to the limits presented in Table 5.3, below. The limits have been set based on the typical lowest background noise level minus 5dB.

Table 5.3 – Free-Field Plant Noise Level Limits (at nearest residential window)

Location	Plant Noise Limit, dBL$_{Aeq,T}$	
	Daytime	Night-time
Nearest Residential Window *(Including those associated with the development)*	45	40

5.26 These overall noise limits would apply to the total plant noise from all plant associated with the building combined. Once further details relating to plant operation are confirmed, a noise limit can be determined for each item of plant.

5.27 In terms of emergency plant, at this stage, a limit of 10-15dB higher than those presented in Table 5.3 would be appropriate assuming this is tested no more than approximately 1-2 hours per month on a weekday between 0900h and 1700h.

6.0 SUMMARY & CONCLUSIONS

6.1 A noise impact assessment has been undertaken in relation to the proposed residential development at No. 1 Castlefield, Manchester.

6.2 Daytime and night-time noise surveys were undertaken by AEC on representative dates between April and June 2026.

6.3 Noise levels affecting the development site are predominantly due to road and rail traffic, with noise from the Bennet Bros scrap yard also affecting the northern facades of Block B.

6.4 Noise break-in calculations indicate that enhanced acoustic glazing specifications will be required for windows located adjacent to the railway corridor to the north and Chester Road to the south. For the remaining façades, standard to good acoustic glazing specifications are expected to achieve the relevant internal noise criteria.

6.5 Based on the façade acoustic requirements and ventilation strategy laid out in the report, internal noise levels within the apartments are expected to comply with the relevant BS8233 and WHO criteria and therefore MCC's requirements.

6.6 The ability to rely on opening windows for overheating mitigation will depend on the overheating risk classification determined under Approved Document O and a detailed CIBSE TM59 assessment. Should the development be classified as high risk, alternative overheating mitigation measures are likely to be required, as opening windows alone would be unlikely to provide an acceptable solution whilst maintaining suitable internal noise levels. If classified as moderate risk, it is anticipated that approximately 20–30% of bedrooms could rely on opening windows while maintaining compliance with relevant noise criteria.

6.7 A BS 4142 assessment of the noise from the scrap yard indicates that the rating level would be some 6dB above the representative background levels. However, when the acoustic context is taken into account, the resultant impact is considered moderate and unlikely to give rise to significant adverse effects on the health or quality of life of future occupants.

6.8 Noise emission limits have been established for any proposed mechanical plant. These limits are set at 5dB below the representative daytime and night-time background sound levels, in accordance with Manchester City Council requirements.

6.9 Based on the findings of this assessment, environmental noise is not considered to represent a constraint to the proposed development. Subject to implementation of the recommended mitigation measures and any necessary planning conditions, the development can provide an acceptable acoustic environment for future residents.

APPENDIX A – Acoustic Terminology in Brief

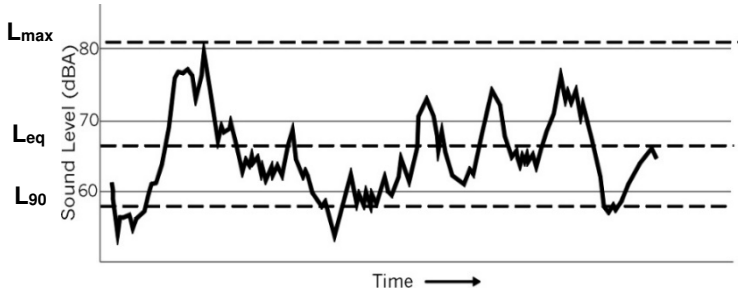
General

Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz *(Hz)*, that is, cycles per second. The human ear is sensitive to sounds from about 20 Hertz to 20,000 Hertz. Although sound can be of one discreet frequency - a 'pure tone' - most noise is made up of many different frequencies.

The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA,* normally used to assess the effect of noise on people. The dBA weighting emphasizes or reduces the importance of certain frequencies within the audible range

Sound / Noise Units

The figure below shows an example of sound level varying with time. Because of this variation over time the same period of noise can be described by several different levels. The most common of these are described below.



Commonly Used Descriptors for Sound / Noise	
$L_{Amax,F/S}$	The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited.
$L_{Aeq,T}$	The equivalent continuous (A-weighted) sound level. It may be thought of as the "average" sound level over a given time, T. It is used for assessing noise from various sources: industrial and commercial premises, construction sites, railways and other intermittent noises. **It can be considered as the "ambient" noise level.**
$L_{A90,T}$	The (A-weighted) sound level exceeded for 90% of a measurement period. **It is the value often used to describe the "background" noise.**
$L_{A10,T}$	The (A-weighted) sound level exceeded for 10% of a measurement period. It is the value often used to describe traffic noise.
$L_{A1,T}$	The (A-weighted) sound level exceeded for 1% of a measurement period. It is the value generally used to indicate a 'typical' maximum noise level.
L_{AE}	The sound exposure level is a notional noise level and describes the average L_{Aeq} noise level of an event over a given time period as if it occurred during a one second period. This allows the L_{Aeq} to be determined over a time period with a number of distinct events
Free-field Level	This refers to the sound level measured outside, away from reflecting surfaces.
Façade Level	This refers to the sound level measured outside, at 1m from a hard reflecting surface, typically 3dB greater than the free-field level.
Other Common Acoustics Descriptors	

NR	Noise rating – a graphical method for assigning a single number rating to a noise spectrum and is often use to specify noise level limits for mechanical services.
R_w	Single number rating used to describe the laboratory airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
R'_w	Apparent sound reduction index - Single number rating used to describe the sound reduction index of an on-site construction over a range of frequencies, typically 100-3150Hz.
D_w	Single number rating used to describe the on-site airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
$D_{nT,w}$	Weighted standardized level difference. A single number rating used to describe the on-site airborne sound insulation performance properties of a material or building element over a range of frequencies, typically 100-3150Hz. Standardized to a reference reverberation time of 0.5s (unless otherwise stated).
$D_{n,e,w}$	Element normalised level difference. Single number rating used to describe the sound insulation performance of small elements
C_{tr}	A road traffic spectrum adaptation term which is used to describe the low frequency sound insulation performance of building elements.
RT	Reverberation Time. Time (in seconds) required for the sound pressure level in a room to decrease by 60dB after the sound source has stopped
$L_{Ar,Tr}$	**Noise rating level -** The specific sound level for an industrial noise source plus any adjustment for the characteristic features of the sound. Typically used for BS4142.

APPENDIX B – Noise Survey Details

Date & Time of Survey:	**Noise**: Thursday 16 April 2026 1400h to 1630h. Tuesday 16 June and Wednesday 17 June 2026 2300h to 0105h. Thursday 14 May 2026 (Rail only) 1430h to 1730h **Vibration:** Thursday 16 April 2300h to Tuesday 21 April 0700h.
Personnel:	Toby Chadwick (AEC), Luke Owen (AEC).
Equipment Used:	**Noise:** B&K 2250 Real Time Analyser (AEC Kit 1) NTI XL2 Real Time Analyser (AEC Kit 6) **Vibration:** 01dB Orion, SN 10135, Acoustic 1 hire equipment.
Calibration:	The sound level analysers, which conform to BS EN 61672-1: 2013 *'Electroacoustics – Sound level meters - Part 1 Specifications'* for Class 1 Type Z meters, were in calibration and check calibrated before and after the measurement periods using a Brüel & Kjær type 4231 (94dB) calibrator. There was no significant drift of calibration. Full calibration certificates are available on request.

Weather Conditions:

Date	Period	Wet/Dry	Temp°C	Wind Speed & Direction	Cloud Cover
16.04.26	Day	Dry	14°C	1.9 mph S	70%
16.04.26	Night	Dry	3°C	2 mph NW	70%
17.04.26	Day	Dry	14°C	4 mph S	50%
17.04.26	Night	Dry	5°C	2 mph W	70%
18.04.26	Day	Dry	16°C	5 mph S	30%
18.04.26	Night	Dry	8°C	2 mph W	60%
19.04.26	Day	Dry	16°C	5 mph S	30%
19.04.26	Night	Dry	8°C	2 mph W	80%
20.04.26	Day	Dry	15°C	2mph S	70%
20.04.26	Night	Dry	9°C	9mph SW	80%
21.04.26	Day	Dry	13°C	7mph W	90%
21.04.26	Night	Dry	5°C	9mph SW	100%
16.06.26	Night	Dry	16°C	2 mph, South	100%
17.06.26	Night	Wet	15°C	2 mph, South	100%

Measurement Locations:	**Noise:** Measurements were undertaken at locations identified as A to E on Figure B1 and described below. A – 70m from railway line, 45m east from Trentham Street. B – South corner of site, 18m from Chester Road. C – North-west site position, 16m from railway line. D – Spot check Chester road. E – Spot check Scrap yard. **Vibration:** Measurements were undertaken 10m from the nearest line at Location V on Fig B1
Measurement Details:	Measurements were undertaken over various periods in terms of L_{eq}, L_1, $L_{90,}$ and L_{max}. Full 1/3rd Octave band centre frequency data was obtained for all measurements
Façade / Free-Field:	All Free-field
Measured Data:	The measured data is presented in the following Tables B1 to B3 for noise and B4 for vibration

FIGURE B1 – Existing Site Showing Monitoring Locations

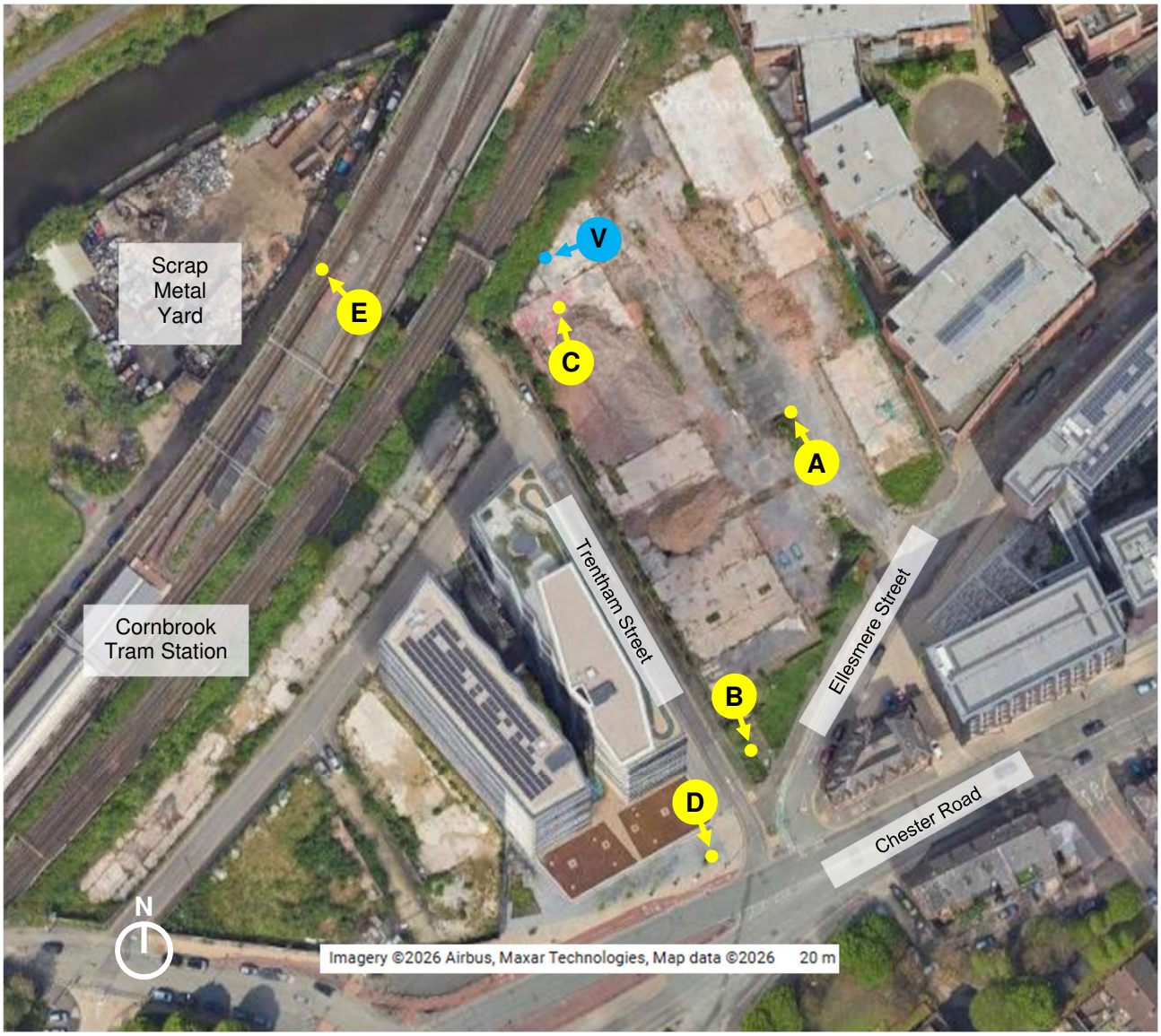


Table B1 – Measured Daytime Noise Levels

Location	Period, h	Noise Level, dB				Comments
		L_{Aeq}	L_{A10}	L_{A90}	$L_{Amax, F}$	
16 April 2026						
A	1418 – 1433	54.6	56.9	50.5	64.9	Facing the railway, mostly populated by trams, approximately 3-4 trains passed per hour. Traffic on Chester Road audible.
	1515 – 1530	54.6	56.6	50.6	66.9	
	1604 – 1612	55.1	57.2	49.9	70.9	
B	1435 – 1450	61.6	64.6	55.8	72.3	Facing Chester Road, busy through all measurements, around 7-8 cars passed through Ellesmere Street during each measurement. Some larger vehicles passed down Trentham Street on occasion.
	1531 – 1546	62.0	65.2	55.2	73.3	
	1613 – 1621	61.2	63.9	55.8	67.7	
C	1458 – 1513	55.9	57.2	50.4	76.4	Approximately 8-9 trams passed by during each measurement, occasional vehicle use of Trentham Street.
	1548 – 1603	56.1	57.8	51.7	72.3	
	1623 – 1631	56.7	58.1	51.2	70.6	
14 May 2026						
D	1543 – 1548	72.1	75.1	61.6	87.3	Road Traffic unscreened.
E	1530 – 1538	75.0	79.0	57.4	86.0	Measured scrap yard during constant use.

Table B2 – Measured Night-time Noise Levels

Location	Period, h	Noise Level, dB				Comments
		L_{Aeq}	L_{A10}	L_{A90}	$L_{Amax, F}$	
16-17th April 2026						
A	2310 – 2325	52.7	55.0	47.9	76.0	Trams frequently audible, some trains
	2344 – 2359	52.2	54.1	47.2	77.8	
	0100 – 0105	51.0	54.2	46.2	58.5	
B	2327 – 2342	51.3	53.2	45.5	72.9	Traffic on Chester road and trams frequently audible, some trains
	0019 – 0029	51.1	53.2	45.7	78.0	
	0044 – 0051	49.8	52.3	45.0	71.8	
C	0001 – 0016	54.5	57.6	48.4	76.5	Chester Road moderately busy, trains/trams and Trentham Street also audible at points,
	0031 – 0041	54.9	57.9	46.6	74.0	
	0053 – 0059	52.8	56.4	46.5	62.5	
13-14th May 2026						
A	2330 – 2345	49.8	52.9	42.9	62.4	Additional night-time measurements from aborted survey
B	2350 – 0005	48.2	50.1	54.4	69.3	
C	0006 – 0020	55.7	59.3	42.9	74.6	
D	2320 – 2325	68	72.3	54.5	79.4	Road traffic unscreened

TABLE B3 - Train Noise Levels at Position A (9m high)

Time	Train Type	Direction	Measured Noise	
			L_{AE}	$L_{Amax, fast}$
14:53	Metro	SW	85.1	76.8
14:54	Metro	NE	70.4	63.6
14:55	Metro	SW	81.9	73.4
14:56	Metro	SW	72.6	61.9
14:56	Metro	NE	71.9	62.8
15:04	Train	SW	76.4	81.1
15:06	Metro	NE	**74.5**	67.1
15:08	Metro	NE	**75.8**	67.2
15:10	Metro	NE	**73.5**	57.0
15:11	Metro	SW	**76.3**	65.8
15:12	Metro	SW	**75.3**	65.8
15:14	Metro	NE	**76.3**	66.5
15:18	Metro	SW	**75.3**	66.2
15:20	Metro	SW	**74**	64.3
15:21-26[1]	Train	NE	68.4	75.3
15:21	Metro	SW	75.4	74.1
15:38	Train	NE	66.9	74.2
15:50	Train	SW	65.2	72.5
15:53	Train	SW	64.7	72.0
15:55	Train	SW	58.6	64.3
16:10	Train	NE	66.6	75.2
16:11	Metro	Unclassifiable	75.2	64.3
16:13	Train	SW	69.8	75.9
16:15-17[2]	Train	NE	66.5	74.4
16:18	Train	SW	69.9	76.5
16:20	Train	Unclassifiable	57.9	64.7
16:28	Train	Unclassifiable	56.2	64.9
16:34	Train	NE	65.6	72.5
16:37	Train	NE	73.6	80.8
16:45	Train	SW	65.2	72.6
16:49	Train	SW	68.1	75.9

Time	Train Type	Direction	Measured Noise	
			L_{AE}	$L_{Amax, fast}$
16:50	Train	Unclassifiable	57.6	65.0
16:51	Train	Unclassifiable	57.9	64.0
16:54	Train	NE	59.4	69.5
17:00-05[3]	Train	NE	63.8	73.1
17:15	Train	SW	69.2	77.3
17:20	Train	SW	61.4	71.6
17:28	Train	Unclassifiable	57.9	64.7
17:30	Train	NE	63.1	69.2
17:31	Train	Unclassifiable	60.6	66.7
17:36	Train	NE	64.8	71.3
17:46	Train	Unclassifiable	58.3	62.6

***Green label indicates freight train passage**

Table B4 – Measured Vibration Levels

Date	Day (0700-2300) / Night (2300 - 0700)	Measured VDV, $m.s^{-1.75}$			PPV	Comments
		X	Y	Z		
16.04.26	Night	0.003	0.005	0.018	0.15 to 0.3 Z & Y axis	--
17.04.26	Day	0.004	0.006	0.028	0.2 to 0.3 Z & Y axis	Single PPV 0.55 Z-axis. No train linked to it. It lasts 10 seconds.
17.04.26	Night	0.003	0.004	0.018	0.2 Z & Y axis	--
18.04.26	Day	0.005	0.011	0.023	0.2 to 0.3 Z & Y axis	Y axis VDV and PPVs affected between 10am to 1pm – potentially weather, but could be some construction vehicle?
18.04.26	Night	0.002	0.005	0.009	0.3 Y axis	--
19.04.26	Day	0.015	0.052	0.032	0.2 to 0.3 Z & Y axis	--
19.04.26	Night	0.003	0.006	0.012	0.2 to 0.3 Z & Y axis	--
20.04.26	Day	0.015	0.015	0.028	0.2 to 0.3 Z & Y axis 0.3 to 0.5	--
20.04.26	Night	0.003	0.005	0.015	0.2 to 0.3 Z & Y axis	--