VIEWS

8 MINSHULL STREET/42 BLOOM STREET, MANCHESTER

NOISE ASSESSMENT FOR PLANNING PURPOSES

14 February 2025

AEC REPORT: P5422/R01/PJK

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CITATION APPROVED HEALTH & SAFETY SYSTEMS

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1.0 INTRODUCTION

1.1 Acoustic & Engineering Consultants Limited (AEC) has been instructed by Views to undertake a noise assessment for planning purposes in relation to the proposed conversion of a former textile warehouse into a residential apartment block at 8 Minshull Street/42 Bloom Street, Manchester.

1.2 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 acceptable internal noise levels as required by the Local Authority.

1.3 Acoustic terminology is discussed in brief in Appendix A.

2.0 BACKGROUND AND SITE DESCRIPTION

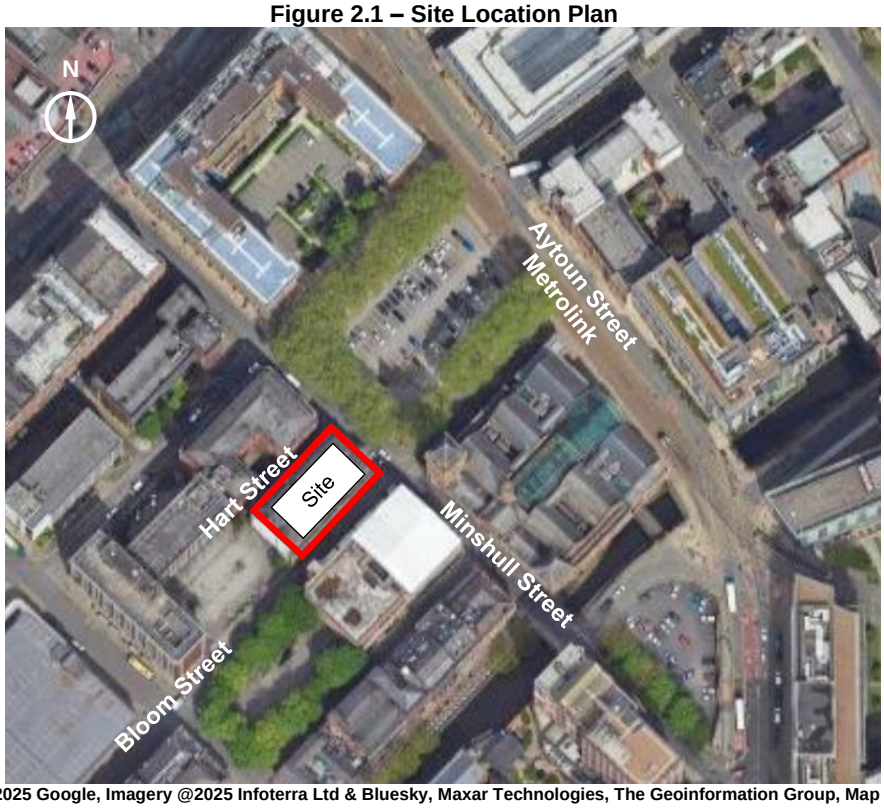
Site Location

2.1 The site is located on the junction of Minshull Street and Bloom Street in Manchester city centre. The site overlooks Minshull Street car park to the north east, beyond which is Aytoun Street, Bloom Street to the south east, two car parks to the south west and Hart Street to the north west.

2.2 The area is mainly occupied by office accommodation, and residential properties in an apartment block opposite Hart Street.

2.3 Between the site and Aytoun Street is the Metrolink tram line which links Piccadilly Gardens and Piccadilly train station.

Figure 2.1 – Site Location Plan



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2.4 Bloom Street is currently blocked off from road traffic and pedestrians. However, it is understood that when the road is open it is not particularly busy.

2.5 There does not appear to be any entertainment venues in the immediate area.

Proposed Scheme

2.6 The proposed scheme, consists of the conversion of the existing 6-storey building into a 1, 2 and 3 bedroom residential apartment block.

2.7 It should be noted that there are only windows on the Hart Street, Minshull Street and Bloom Street elevations.

3.0 BASIS OF ASSESSMENT

National Planning Policy Framework

3.1 Current national planning policies are set out in the National Planning Policy Framework (NPPF) published by the Department for Communities and Local Government, dated March 2012, and revised most recently in December 2024.

3.2 The planning policies which relate specifically to or are considered relevant to noise, are presented in paragraphs 187, 198, 200 which are reproduced below:

"187. Planning policies and decisions should contribute to and enhance the natural and local environment by:

(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

198. 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:

(a) 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;

(b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

200. 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.

3.3 Further to the above, the Governments '*Planning Practice Guidance'* (PPG) published on 6 March 2014 and most recently updated in September 2023 states:

'Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). When preparing plans, or taking decisions about new development, there may also be opportunities to make improvements to the acoustic environment. Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset.'

3.4 In addition, the guidance indicates that, whilst noise can override other planning concerns, it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users, and its surroundings, as these can have an important effect as to whether or not noise is likely to pose a concern.

Residential Internal Noise Level Limits

3.5 Manchester City Council (MCC) has outlined their requirements for noise assessments to accompany planning applications in '*Planning & Noise – Technical Guidance'* (2022) (PNTG).

3.6 Section 3.7.1.1 of this document states "*The Council has adopted the following noise limits for residential properties*:

- *Bedroom (night-time – 23.00 – 07.00) 30dBL$_{Aeq}$ (individual noise events should not normally exceed 45dBL$_{Amax,F}$ by more than 15 times);*
- *Living Rooms (daytime – 07.00 – 23.00) 35dBL$_{Aeq}$*."

3.7 These levels are based on guidance presented in British Standard 8233:2014 '*Guidance on sound insulation and noise reduction for buildings'* (BS8233) and The Association of Noise Consultants (ANC) document Professional Practice Guidance on Planning and Noise '*New Residential Development*' (2017) (ProPG).

3.8 The daytime and night-time noise limit levels to be achieved in habitable rooms due to sources without a specific character (e.g. roads and rail) are presented in Table 3.1, below.

3.9 In relation to maximum noise levels in bedrooms during the night-time period, Note 4 of ProPG states that "*Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. 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 45dBL$_{Amax,F}$ more than 10 times a night*."

Ventilation Provision

Whole Dwelling Ventilation

3.10 The above internal noise level limits need to be met whilst whole dwelling ventilation is being provided. Whole dwelling ventilation is a continuous low-rate ventilation as defined in Approved Document F '*Ventilation*' (2021) of the Building Regulations. It is typically achieved either using trickle vents or a slightly open window although mechanical methods are sometimes used.

3.11 To achieve appropriate internal noise levels when whole dwelling ventilation is being provided by a partially open window, the highest allowable external noise levels are presented in the following Table 3.1. These limits are based on a slightly open window providing a reduction in external to internal noise levels of 15dB, as defined in ProPG.

Table 3.1 – Noise Limits to Allow Whole Dwelling Ventilation Provision via a Partially Open Window

Location	External Free-Field Noise Limit, dB		
	Daytime 0700 – 2300h $L_{Aeq,16h}$	Night-Time 2300 – 0700h	
		$L_{Aeq,8h}$	$L_{Amax,F}$
Living Room	50	-	-
Bedroom	50	45	60

Purge Ventilation

3.12 In relation to purge ventilation, ProPG suggests that as this should only occur occasionally (e.g. to remove odour from painting and decorating or from burnt food), the internal desired noise levels are not generally applicable. Therefore, internal noise levels due to windows being opened for purge ventilation has not been discussed further.

Control of Overheating Strategy

3.13 Paragraph 0.3 of ADO states that the "*document applies to new residential buildings only*". Therefore, as this is a conversion of an existing building, and based on guidance presented in PNTG, AEC has deemed it appropriate to consider the guidance presented in the Association of Noise Consultants '*Acoustics, Ventilation and Overheating: Residential Design Guide (2020) (AVO)* for daytime and night-time internal noise levels.

3.14 It is important to note that AVO is a design guide only and not a statutory document and the Local Authority may have their own requirements.

3.15 Table 3.3 of AVO presents guidance for allowable noise from transportation sources whilst windows are open for the control of overheating. With reference to this document AEC would propose that windows can be utilised in the control of overheating provided that the resultant internal ambient noise levels are below approximately 50dB$L_{Aeq,16h}$ during the daytime, and 42dB$L_{Aeq,8h}$ and 65dB$L_{Amax,F}$ during the night-time.

3.16 These internal noise levels are the upper end of the medium risk category for adverse effects. Where these internal noise levels would be exceeded, AVO states that "*noise causes a material change in behaviour (e.g., having to keep windows closed most of the time)*". In this situation, AEC would suggest alternative means for the control of overheating are considered, which do not rely on open windows.

3.17 AVO states that where transportation is the main source of noise, *"it is assumed that a partially open window will provide an outside-to-inside level difference of 13dB and is considered representative of typical domestic rooms with simple façade openings of around 2% of the floor area"*.

3.18 Considering the above, it is considered acceptable to control summertime heating via opening windows where external free-field noise levels are no greater than those presented in the following Table 3.2. This is based on simple façade openings to around 2% of the floor area.

Table 3.2 – External Free-Field Noise Level Limits for the Control of Overheating via Openable Windows

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	63	-	-
Sleeping (daytime resting)	Bedroom	63	55	78

3.19 The limits presented in Table 4.3 are subject to agreement with the Local Authority and may be subject to change

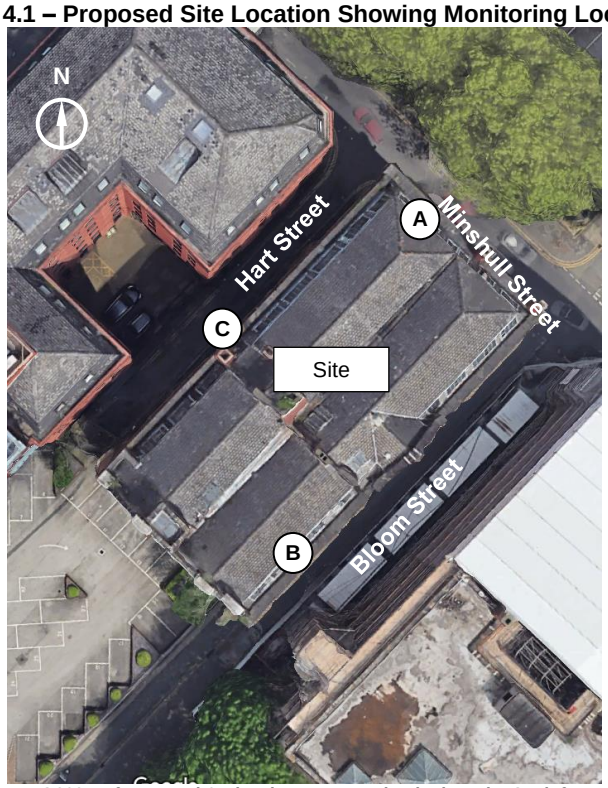
4.0 NOISE CLIMATE

4.1 Unattended noise level surveys were undertaken by AEC between 1400h on Wednesday 29th and 1200h on Thursday 30 January 2025 on the Minshull Street elevation, and 1300h on Wednesday 05th and 0700h on Monday 10th February 2025 on the Bloom Street elevations.

4.2 Measurements were undertaken at second floor level, at 1m from the façade 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 Table B.1 of Appendix B and the measured data is presented in Graphs B.1 and B.2.

4.3 Spot check measurements of plant serving the adjacent residential building, were also undertaken during the daytime of Wednesday 05th February on Hart Street. The measurement locations are presented in Figure 4.1, below.

Figure 4.1 – Proposed Site Location Showing Monitoring Locations



Imagery @2025 Google, Imagery @2025 Infoterra Ltd & Bluesky, Maxar Technologies, The Geoinformation Group, Map Data @2025

4.4 A summary of the daytime ambient and night-time ambient and maximum noise levels is presented in Table 4.1, below. In relation to night-time maximum noise levels, the highest and 10th highest maximum noise levels measured over a 2-minute sampling period are presented in Table 4.1, below.

Table 4.1 – Summary of Daytime and Night-Time Noise Levels

Day	Noise Level, dB		
	Daytime 0700-2300, $L_{Aeq,16}$	Night-Time	
		2300-0700h, $L_{Aeq,8h}$	$L_{Amax,F}$ Highest/10th Highest
Location L1 – Minshull Street			
Wednesday	61	57	80/71
Thursday	62	-	-
Location L2 – Bloom Street			
Wednesday	58	51	76/65
Thursday	58	51	73/66
Friday	55	53	88/68
Saturday	55	55	85/70
Sunday	54	51	78/67

4.5 Following a review of the audio recordings, the main source of noise during both the daytime and night-time periods at Locations A and B was road traffic and tram movements. The higher noise levels on the Saturday night were due to an increase number of sirens and higher wind speeds and rain.

4.6 In relation to Location C, the free-field ambient noise level due to the plant serving the residential block on the opposite side of Hart Street was 55dB$L_{Aeq,T}$.

5.0 ASSESSMENT OF PROPOSED DEVELOPMENT

Determining of External Noise Levels

5.1 As stated above, the main source of noise affecting the site was road traffic on the surrounding roads and tram movements on the Metrolink line to the north west of the site.

5.2 As stated above, the unattended external noise levels were undertaken under façade conditions, therefore, in order to convert the presented levels to free-field noise levels a correction of -3dB has been applied to the measured levels as per the guidance in BS7445-2: 1991 '*Description and measurement of environmental noise – Part 2: Guide to the acquisition of data pertinent to land use*'.

5.3 Based on the above, the determined free-field daytime ambient and night-time ambient and maximum noise levels affecting the proposed development are presented in Table 5.1, below.

Table 5.1 – Determined Free-Field External Noise Levels

Elevation	Noise Level, dB		
	Daytime Ambient, $dBL_{Aeq,16h}$	Night-time	
		Ambient, $dBL_{Aeq,8h}$	Maximum, $dBL_{Amax,F}$
Minshull Street	≤ 60	≤ 54	≤ 70
Bloom Street	≤ 55	≤ 52	≤ 70
Hart Street	55	55	≤ 70

Glazing and Ventilation Requirements

5.4 As stated in Section 3.0, for habitable rooms to have whole dwelling ventilation provided via a window partially open, external noise levels should not exceed $50dBL_{Aeq,T}$ during the daytime and $45dBL_{Aeq,T}$ and $60dBL_{Amax,F}$ at night.

5.5 A comparison between these levels and the determined noise levels presented in Table 5.1, indicates that alternate means of whole dwelling (background) ventilation would need to be provided to all habitable rooms during the daytime and night-time periods.

5.6 The minimum sound insulation performances of the glazing and ventilators to meet the required internal noise levels limits for each noise source have been calculated based on the source noise levels and the glazing and room sizes stated on the provided drawings. The minimum sound insulation performances are presented in Table 5.2, below.

Table 5.2 – Outline Requirements of Glazing and Ventilation to Achieve Internal Noise Levels in Habitable Rooms

Elevation	Sound Insulation Performance			
	Daytime (Living rooms etc.)		Night-time (Bedrooms only)	
	Glazing	Ventilator	Glazing	Ventilator
Minshull Street	$29dBR_w$ / $25dBR_w + C_{tr}$	$33dBD_{n,e,w}$	$35dBR_w$ / $29dBR_w + C_{tr}$	$38dBD_{n,e,w}$
Bloom Street	$29dBR_w$ / $25dBR_w + C_{tr}$	$33dBD_{n,e,w}$	$35dBR_w$ / $29dBR_w + C_{tr}$	$38dBD_{n,e,w}$
Hart Street	$29dBR_w$ / $25dBR_w + C_{tr}$	$33dBD_{n,e,w}$	$35dBR_w$ / $29dBR_w + C_{tr}$	$38dBD_{n,e,w}$

5.7 Example glazing build-ups, to achieve the required sound insulation performances presented in Table 5.2, are provided in Table 5.3 below. Consideration of frames and seals is more critical where the glazing acoustic performance requirement is 40dBR_w or higher, in these instances consideration should be given to secondary glazed systems or alternative means of controlling noise break-in.

Table 5.3 – Example Glazing Constructions

Sound Insulation Performance	Example Construction
35dBR_w / 29dBR_w + C_{tr}	10mm Glass / 12-24mm TC / 4mm Glass
29dBR_w / 25dBR_w + C_{tr}	4mm Glass / 6-16mm TC / 4mm Glass

5.8 Prior to any glazing being installed, octave band sound insulation performance data of the glazing build-ups and ventilators selected must be verified by AEC or others.

5.9 All background ventilation sound insulation requirements have been based on the use of a single ventilator per room. If more than one unit is required, such as may be required to satisfy Building Control requirements, the performance of each unit might need to be increased.

Purge Ventilation

5.10 Windows can be openable for purge ventilation provided that 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.

Control of Overheating

5.11 If it is determined by others that there is a need to control overheating within the development, a comparison between the noise levels presented in Table 5.1 and those presented in Table 3.2, indicates that windows can be opened to aid with the control of overheating in all habitable rooms in the development during both the daytime and night-time periods.

External Envelope

5.12 To maintain the sound insulation performance of the external envelope the remainder of the façade construction should have a sound insulation performance of at least 10dB higher than the glazing. Therefore, the external walls and proposed roof would need to achieve a sound insulation performance of at least around 45dB'$_w$. This would be readily achievable with standard construction methods.

6.0 SUMMARY & CONCLUSIONS

6.1 Acoustic & Engineering Consultants Limited (AEC) has been appointed by Views, to undertake a noise assessment for the proposed residential development located at 8 Minshull Street/42 Bloom Street, Manchester.

6.2 The proposed development will include the conversion of a textile warehouse into a residential block.

6.3 Based on AEC's experience of noise assessments with Manchester City Council (MCC), it is understood that that internal noise levels in new residential properties should comply with guidance presented in their document '*Planning & Noise – Technical Guidance'* (2022) (PNTG). This is discussed further in Section 3.0 along with the ventilation requirements.

6.4 An unattended daytime and night-time noise survey was undertaken by AEC in January and February 2025 and the main noise source in the area was road traffic on the surrounding roads and noise from tram movements. In addition, building services plant is the main noise source affecting the Hart Street elevation. Full details of the noise level survey are presented in Appendix B. A summary of the noise levels measured and the sources of noise affecting the proposed development are discussed in Section 4.0.

6.5 An assessment of the noise levels measured and affecting the proposed development is presented in Section 5.0. Based on this assessment, the sound insulation requirements of the building envelope and ventilation have been determined and are presented in Table 5.2. In brief, acoustically enhanced glazing is required, and ventilation can be provided by through the frame acoustic trickle vents.

6.6 Based on the above, appropriate planning conditions can be applied to the proposed development to ensure internal noise levels compliant with Manchester City Councils requirements in the proposed accommodation are achieved.

APPENDIX A – Acoustic Terminology in Brief

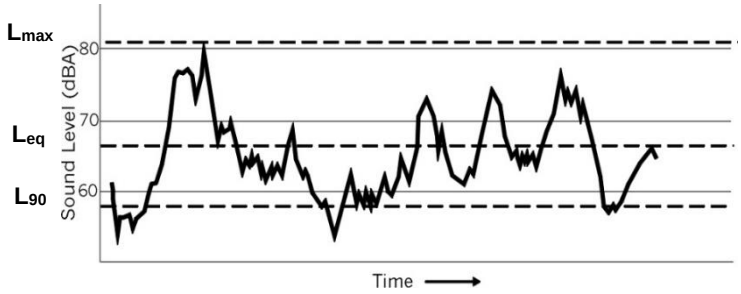
General

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.



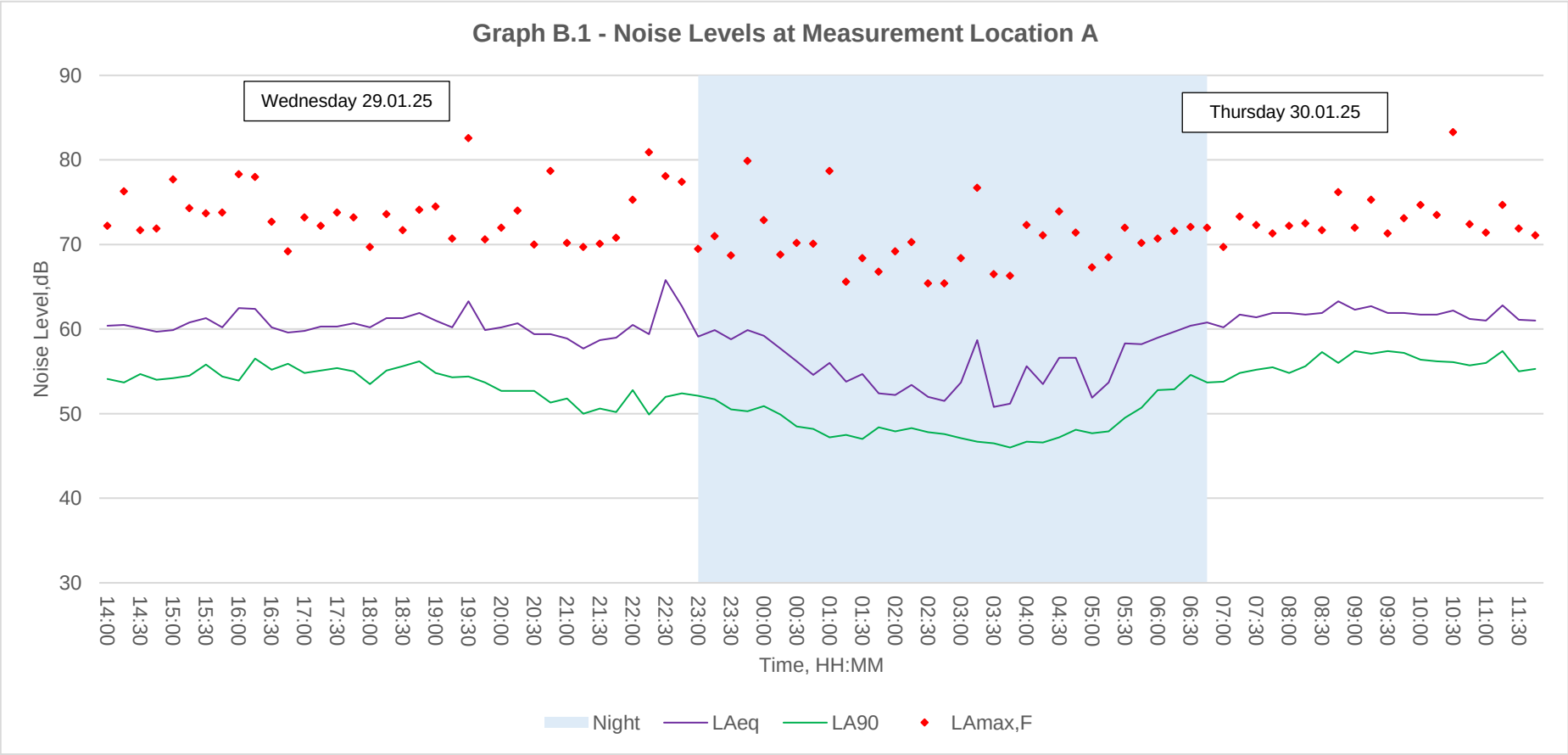
Commonly Used Descriptors for Sound / Noise	
$L_{Amax,F/S}$	The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited.
$L_{Aeq,T}$	The equivalent continuous (A-weighted) sound level. It may be thought of as the "average" sound level over a given 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.
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.
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.

APPENDIX B – Noise Survey Details

Table B.1 – Environmental Noise Procedure

Date & Time of Survey:	Location A – 1400h on Wednesday 29th and 1200h on Thursday 30 January 2025. Location B – 1300h on Wednesday 05th and 0700h on Monday 10th February 2025.					
Personnel:	Warren King and Paul Knowles (AEC).					
Equipment Used:	Cirrus CR:171B Real Time Analyser (AEC Kit 3).					
Calibration:	The sound level analysers, which conforms to BS EN 61672-1: 2013 *'Electroacoustics – Sound level meters - Part 1 Specifications'* for Class 1 Type Z meters, was 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. Calibration certificates are available on request.					
Weather Conditions:	**Date**	**Period**	**Wet/Dry**	**Temp**°C	**Wind Speed & Direction**	**Cloud Cover**
	29.01.25	Day	Dry	5°C	NW – 3m/s	50%
	29-30.01.25	Night	Dry	3°C	N – 2m/s	25%
	30.01.25	Day	Dry	4°C	NW – 1m/s	25%
	05.02.25	Day	Dry	6°C	NE – 1m/s	25%
	05-06.02.25	Night	Dry	-3°C	NE – 1m/s	25%
	06.02.25	Day	Dry	8°C	NE – 3m/s	75%
	06-07.02.25	Night	Dry	4°C	NE – 2m/s	75%
	07.02.25	Day	Dry	5°C	NE – 5m/s	75%
	07-08.02.25	Night	Dry	4°C	NE – 5m/s	75%
	08.02.25	Day	Dry	4°C	NE – 4m/s	75%
	08-09.02.25	Night	Dry/Wet	4°C	NE – 3m/s	75%
	09.02.25	Day	Dry	6°C	NE – 5m/s	75%
	09-10.02.25	Night	Dry	4°C	NE – 5m/s	75%
Measurement Locations:	Measurements were undertaken at 1m from the façade at second floor level, on the Minshull Street and Bloom Street elevations. Identified as A and B on Figure 4.1 and described below. A – On the Minshull Street elevation. B – On the Bloom Street elevation.					
Measurement Details:	Measurements at locations A and B were undertaken under facade conditions. Measurements were undertaken over various periods in terms of L_{eq}, L_{10}, L_{90}, and L_{max} and were logged continuously over 1s for post processing and assessment. Full results for the attended measurements are given in Graphs B.1 and B.2.					
Measured Data:	Full 1/3rd octave/octave band centre frequency data was obtained for all measurements.					


Graph B.1 - Noise Levels at Measurement Location A
Wednesday 29.01.25
Thursday 30.01.25
Noise Level,dB
90
80
70
60
50
40
30
14:00
14:30
15:00
15:30
16:00
16:30
17:00
17:30
18:00
18:30
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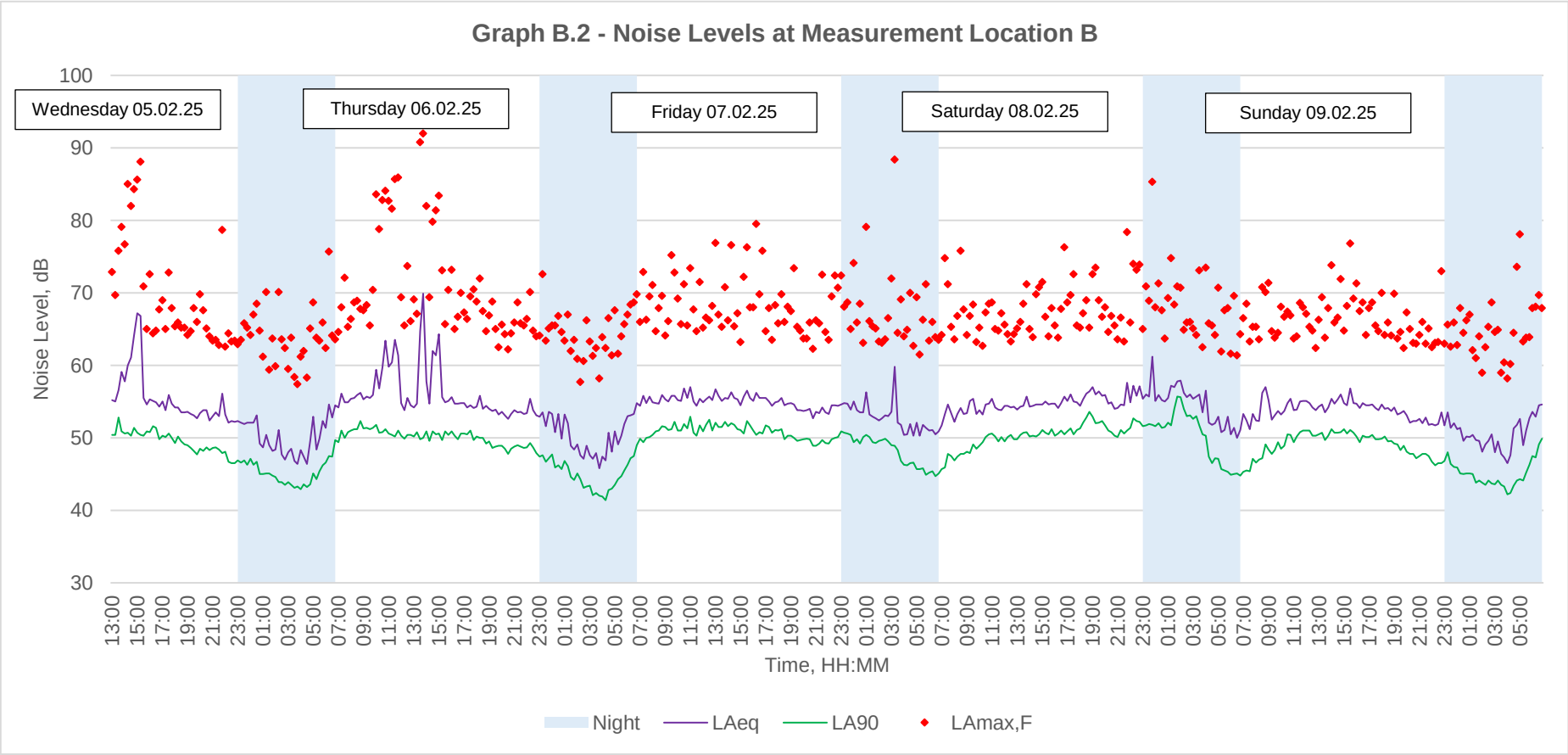
LA90
LAmax,F


Graph B.2 - Noise Levels at Measurement Location B
Wednesday 05.02.25
Thursday 06.02.25
Friday 07.02.25
Saturday 08.02.25
Sunday 09.02.25
Noise Level, dB
100
90
80
70
60
50
40
30
Time, HH:MM
Night
LAeq
LA90
LAmax,F