

Proposed Residential Development
Acorn Business Centre, Fountain Street
North, Bury, Gtr. Manchester, BL9 0LD



Noise Impact Assessment

TECHNICAL REPORT

42190-R1

Proposed Residential Development

Noise Impact Assessment

Prepared for: Shaf Ahmed c/o Acorn Business Centre, Fountain Street North, Bury, Gtr. Manchester, BL9 0LD

Site location: Acorn Business Centre, Fountain Street North, Bury, Gtr. Manchester, BL9 0LD

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1 INTRODUCTION

1.1 A residential development has been proposed at Acorn Business Centre, Fountain Street North, Bury, Gtr. Manchester, BL9 0LD (hereinafter, “The Site”). A site plan highlighting the development site boundary in red has been provided in Appendix B.

1.2 Sound Solution Consultants have been appointed to provide a noise assessment to support planning application reference ‘70688’ to Bury Council for the following development:

“Prior Approval for proposed change of use of first and second floor from offices (Class E) to 19 no. flats (Class C3) - Subdivision of the existing ground floor to form two dedicated access points for the tenants to access the apartments directly from Fountain Street North.”

1.3 The surrounding area is noted as mixed commercial and industrial, with the nearest existing dwellings approximately 100 m to the North and East of the development site.

1.4 It is understood that a now lapsed planning approval has previously been granted for 16 no. apartments at The Site in 2015 (planning reference ‘59332’).

1.5 The applicant has received the following comments relating to noise from Samuel Summers, Planning Officer at Bury Council:

“It is likely that noise disturbances will occur to any residents of this proposed development on the first and second floors from activities carried out on the adjacent sites on the street, especially if these activities occur late at night or early in the morning.

We realise that the applicants have stated that the properties will be insulated to reduce noise. However, we still believe insufficient information has been provided by the applicant in respect of this application.

A suitable noise investigation shall be conducted to the satisfaction of the Local Planning Authority (LPA) to determine the suitability of the site for the proposed development.

I would therefore confirm that our prior approval is required in regard to noise and request that a suitable noise investigation is carried out.”

1.6 This document summarises a noise break-in assessment in accordance with BS 8233:2014 (Guidance on sound insulation and noise reduction for buildings) and World Health Organisation (WHO hereafter) ‘Guidelines for Community Noise’ 1999.

1.7 A site-based study of environmental sound has been used to evaluate the acoustic environment at The Site, in the context to the proposal for new residential development; accounting for current industry guidance, including BS 8233:2014.

1.8 A Glossary of Acoustic Terms has been provided in Appendix A that may assist with the terminology used within this report.

2 NOISE CRITERIA

BS 8233:2014 GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS

2.1 BS 8233:2014 provides guidance on suitable internal noise levels for residential dwellings. The assessment should assume that the ventilation strategy is providing the required background ventilation rate (i.e. trickle vents open or mechanical ventilation operating). The requirements of BS 8233:214 are outlined in Table 1 below.

Activity	Location	Daytime 07:00 – 23:00	Night-time 23:00 – 07:00
Resting	Living room	35 dB $L_{Aeq, 16 h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq, 16 h}$	30 dB $L_{Aeq, 8 h}$ 45 dB $L_{Amax(F)}$ *

* BS8233:2014 does not provide guidance on maximum noise events. This criterion is taken from WHO Guidelines for Community Noise 1999. Maximum noise events in bedrooms should not exceed 45dB L_{AFmax} more than 15 times per night-time from sources other than emergency sirens.

Table 1 – BS 8233 Internal Noise Level Guidelines

2.2 BS 8233:2014 also provides design criteria for noise in external areas used for amenity spaces such as gardens and patios stating a desirable external level not exceeding 50dB $L_{Aeq,T}$, with an upper guideline value of 55dB $L_{Aeq,T}$ which would be acceptable in noisier environments.

2.3 BS8233 recognises 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.”*

BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

2.4 The British Standard BS 4142:2014 +A1:2019 “Methods for Rating and Assessing Industrial and Commercial Sound” describes methods for rating and assessing sound of an industrial or commercial nature. The scope of the standard includes relevant topics for commercial development, such as sound from fixed installations (mechanical and electrical plant and equipment). The standard is applicable to the determination of rating levels for sources of sound as well as ambient, background and residual levels. The Standard was amended in June 2019.

2.5 Certain acoustic features can increase the significance of impact that might be expected from a comparison of the specific sound level to the background sound level where these features are likely to affect perception and response. Where such features are present at the assessment



location, a character correction (or penalty) to the specific sound level is made to obtain the rating level. This can be approached from subjective, objective and reference methods.

- Tonality: A correction of 0dB to +6dB for sound ranging from not tonal to prominently tonal.
- Impulsivity: A correction of up to +9dB can be applied for sound that is impulsive.
- Intermittency: A penalty of +3dB can be applied if on/off conditions are readily distinctive within the reference time interval over the period of the greatest amount of on-time.
- Other characteristics: A penalty of +3dB can be applied in the absence of all other defined characteristics, where the specific sound contains a distinctive feature in the residual acoustic environment.
 - Character corrections are normally added arithmetically where more than one feature is present, however, if any single feature is dominant to the exclusion of others, then it may be appropriate to reduce the correction or apply a zero correction for the minor characteristics. The rating sound level is equal to the specific sound level if there are no acoustic features present or expected to be present.

2.6 The significance of sound depends upon both the margin by which the rating level exceeds the background sound level and the context in which the sound occurs. An initial estimate of the impact of the specific sound is made by subtracting the measured background sound level from the rating level. The context of the development is important in assessing the impact.

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context. A difference of around + 5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. Where the rating level does exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

2.7 The scope of the Standard recognises that human response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact can depend on various factors such as the exceedance to the background level, its absolute level, time of day and change in environment, as well as local attitudes to the source of sound and character of the neighbourhood.



3 ENVIRONMENTAL NOISE SURVEY & SITE OBSERVATIONS

3.1 A noise survey has been undertaken between Monday 24th and Friday 28th February 2025 to quantify sound levels at the development site. Appendix B provides details of the site location and measurement position(s).

3.2 The dominant sound sources noted at the site were distant road traffic and commercial noise from surrounding commercial uses including:

- Meadow Self Storage (West) – This is understood to operate 24/7, comprising intermittent visits from domestic vehicles and light goods vehicles to access storage units. Occasional noise and activities were observed from monitoring Position 1.
- Playtime Soft Play Centre (South) – Open 7 days with varying hours, peaking at 09:30 – 17:30 on Fridays. This was operating during the survey but operational noise was not readily audible at any of the monitoring positions.
- M Tiger Car Repair Garage (South) – Exact operating hours are not known, but expected between Monday to Saturday during daytime (07:00 – 19:00) hours only. Activities are contained within a brick building with no window or door openings facing the development site. Occasional anonymous noise attributed to the garage was heard from monitoring Position 2.
- The Motor People Ltd Car Sales (North) – Exact operating hours are not known, but expected between Monday to Saturday during daytime (07:00 – 19:00) hours only. Exact activities are not known, but expected to comprise the storage of used cars and low level vehicle movements. Minimal noise and activity was observed from this unit.

3.3 Commercial and industrial noise is typically assessed in accordance with BS 4142, but for this Site is not possible to separate operational noise levels from the residual noise climate where the adjacent commercial operations are existing.

3.4 For the proposed development, it is considered more relevant to consider the absolute noise levels in accordance BS 8233. However, a + 3 dB acoustic character correction (to account for commercial noise characteristics which may be audible at the proposed receptors) has been applied to all declared noise levels to inform a robust assessment, drawing on BS 4142 guidance for commercial / industrial noise.



Position	Location	Period	Sound Pressure Levels dB re. 20 μ Pa **
1	Position 1 First Floor West Façade Approx. 5 m AGL	Day (07:00 – 23:00)	61 dB $L_{Aeq, 16 h}$
		Night (23:00 – 07:00)	53 dB $L_{Aeq, 8 h}$
			69 dB $L_{Amax(F)}^*$
2	Position 2 First Floor South-East External Stairwell Approx. 6 m AGL	Day (07:00 – 23:00)	54 dB $L_{Aeq, 16 h}$
		Night (23:00 – 07:00)	49 dB $L_{Aeq, 8 h}$
			60 dB $L_{Amax(F)}^*$
3	Position 3 First Floor North-East Façade Approx. 5 m AGL	Day (07:00 – 23:00)	54 dB $L_{Aeq, 16 h}$
		Night (23:00 – 07:00)	53 dB $L_{Aeq, 8 h}$
			71 dB $L_{Amax(F)}^*$

* Value exceeded 10 times during entire night-time period, following latest industry guidance¹.

** + 3 dB Acoustic character penalty applied to all declared sound levels.

Table 2 – Summary of measured environmental sound pressure levels.

4 BS 8233:2014 ASSESSMENT

NOISE BREAK-IN ASSESSMENT

4.1 Detailed noise break-in calculations have been performed in octave frequency bands in accordance with Section G2 of BS 8233:2014 and noise mitigation measures have been generated in accordance with the proposed plans. The octave band results are shown in Appendix E; however, a summary of the calculation is shown in Table 7.

4.2 In most locations, the calculations have been based on an assumed solid masonry wall construction (e.g. > 215 mm brick) with a predicted sound insulation performance of 51 dB $R_w + C_{tr}$.

4.3 However, there is a limited area of lightweight external wall at first-floor area as indicated in Figure 1 below. It is recommended to provide an internal lining of 2 layers of dense plasterboard (> 12.5 kg/m² each), insulated stud and external weather board lining (> 10 kg/m²) in this area, to provide a sound insulation performance of approximately 36 dB $R_w + C_{tr}$.

¹ Paxton, B. Conlan, N et al. Assessing L_{max} for residential developments: the AVO guide approach. Proceedings of the Institute of Acoustics. Volume 41, Part 1, 2019.

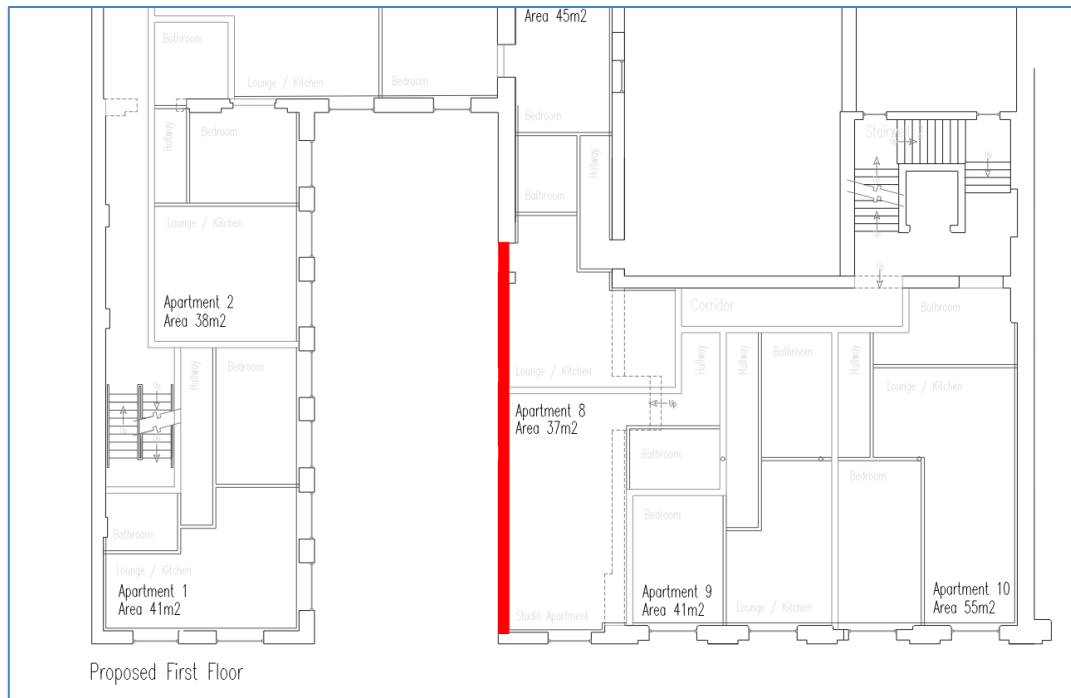


Figure 1 – Approximate extent of lightweight external wall.

- 4.4 The existing glazing is assumed to be standard thermal double glazing with a minimum sound insulation performance of $27 \text{ dB } R_w + C_{tr}$. The calculations summarised in Table 3 below show that it is acceptable to retain the existing double glazing.
- 4.5 Please note that any areas of single glazing must be replaced with double glazing, with a minimum sound insulation performance of $27 \text{ dB } R_w + C_{tr}$.
- 4.6 All retained glazing must be made good, ensuring good seals between frames and reveals; and between frames and glass. Any broken glazing or frames must be replaced with new double glazing with a minimum sound insulation performance of $27 \text{ dB } R_w + C_{tr}$.
- 4.7 In the absence of elevation and section drawings, our calculations have assumed windows to be 1.8 m and rooms 2.4 m in height. All façade areas and room volumes have been measured off the scale floor plans.

Calculation Summary according to BS 8233:2014 Section G2.1, from BS EN 12354-3:2000.									
Ref	Room Name	Sound Insulation Scheme, dB				Criteria, dB(A)			Pass / Fail Design Vs Criteria
		Wall	Glazing	Façade Vent(s)	Roof	35	30	45	
		Rw	Rw	D _{ne,w}	Rw	Day dB(A)	Night dB(A)	Max dB(A)	
1	Apt 1 Living	57	30	39	-	35	28	42	PASS
2	Apt 1 Bedroom	57	30	39	-	32	24	39	PASS
3	Apt 2 Living	57	30	39	-	33	25	40	PASS
4	Apt 2 Bedroom	57	30	39	-	33	25	40	PASS
5	Apt 3 Living	57	30	39	-	27	19	34	PASS
6	Apt 3 Bedroom	57	30	39	-	30	23	37	PASS
7	Apt 4 Living	57	30	39	-	22	19	31	PASS
8	Apt 4 Bedroom	57	30	39	-	24	20	32	PASS
9	Apt 5 Living	57	30	39	-	27	24	35	PASS
10	Apt 5 Bedroom	57	30	39	-	27	24	36	PASS
11	Apt 8 Studio	47	30	39	48	32	24	38	PASS
12	Apt 10 Living	57	30	39	-	28	21	35	PASS
13	Apt 10 Bedroom	57	30	39	-	31	24	38	PASS
14	Apt 11 Living	57	30	39	-	35	28	42	PASS
15	Apt 11 Bedroom	57	30	39	-	35	27	42	PASS
16	Apt 14 Living	57	30	39	-	22	19	31	PASS
17	Apt 14 Bedroom	57	30	39	-	24	21	32	PASS
18	Apt 15 Living	57	30	39	-	26	22	34	PASS
19	Apt 15 bedroom	57	30	39	-	28	25	36	PASS
20	Apt 17 Studio	57	30	39	-	28	21	35	PASS
21	Apt 18 Studio	57	30	39	-	32	24	39	PASS

Table 3 – Summary of noise break-in calculations

4.8 Calculations show that suitable internal noise levels can be achieved using a strategy of ‘natural ventilation with background ventilators and intermittent extract fans’ in accordance with Approved Document F (2021 edition).

4.9 In conjunction with the glazing requirements discussed previously in this section, ventilators must be selected with a minimum sound insulation performance of 39 dB $D_{n,e,w}$. This can typically be achieved using acoustic trickle ventilators (e.g. Renson *Invisivent* Evo AK High).

4.10 In the case of background ventilation, where the total number of ventilators need to achieve a suitable Equivalent Area for the entire dwelling, each habitable room may need to contain more than one trickle vent. In this instance, the performance of the ventilator will need to increase (by a factor $10 \times \log_{10} [n]$, where n is the number of vents per room). For example:

Façade component	Quantity in Room Façade	Ventilator Specification dB $D_{n,e,w}$
Ventilators (per habitable room)	1	≥ 39
	2	≥ 42
	3	≥ 44
	4	≥ 45
	5	≥ 46
	6	≥ 47

Table 4 – Minimum specifications for ventilators, where one or more are used per habitable room.

- 4.11 It should be noted that the internal noise criteria will be exceeded if windows are opened to provide comfort or purge ventilation. The information in this section is therefore based upon securing a suitable internal environment with closed windows. BS 8233:2014 clarifies that *“if relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level”*. Adequate ventilation is described as building ventilation in accordance with this standard (e.g. trickle ventilation, which must be considered “open” for adequate assessment).
- 4.12 The assessment has demonstrated that **with windows closed**, a ventilation strategy of trickle vents and intermittent extract fans can be used to achieve suitable internal noise levels.
- 4.13 Alternative glazing and ventilators may be selected but the supplier must demonstrate that the performance requirements (including the ventilator guidance outlined in Table 4) can be achieved.

BUILDING SERVICES NOISE

- 4.1 This document uses indoor ambient noise level criteria in terms of $\text{dB } L_{\text{Aeq, T}}$ which includes external noise transmitted via the façade as well as internal noise such as that from mechanical ventilation and cooling systems.
- 4.2 In the event that mechanical ventilation or cooling are proposed, internal mechanical services noise limits are provided in Table 5, and have been set 3 dB below the relevant BS 8233 internal noise criterion to allow for the contribution of external noise break-in.

Room Type	IANL Design Requirement $\text{dB } L_{\text{Aeq, T}}$	Approximate Mechanical Services Noise Rating (NR)
Bedrooms	≤ 27	$\leq \text{NR } 22$
Living Rooms	≤ 32	$\leq \text{NR } 27$

Table 5 – Internal ambient noise level design requirements from proposed mechanical services.

- 4.3 In the case of an MVHR strategy, a boost function should be included within the design of the mechanical ventilation systems to allow rapid air changes to overcome the requirement for summer cooling (i.e., normally by means of opening windows) whilst maintaining low internal ambient noise levels.
- 4.4 Note that Noise Rating limits have been estimated using an approximate ‘5 dB rule of thumb’, but ultimately, the internal mechanical services noise limits but comply with the $\text{dB } L_{\text{Aeq, T}}$ values in Table 5.



EXTERNAL AMENITY AREAS

4.5 There are no proposed specific external amenity areas associated with the development. However, if residents were to utilise the external areas to the rear of the building (allocated for parking), these areas are expected to fall within the BS 8233:2014 upper guidance limit of 55 dB $L_{Aeq,16h}$ to provide suitably protected, quiet and tranquil outdoor spaces within the development.

5 NOISE TRANSFER FROM COMMERCIAL GROUND FLOOR AREAS

5.1 Ground floor commercial areas comprise a mix of storage, offices and a community space as shown in Figure 2 below.

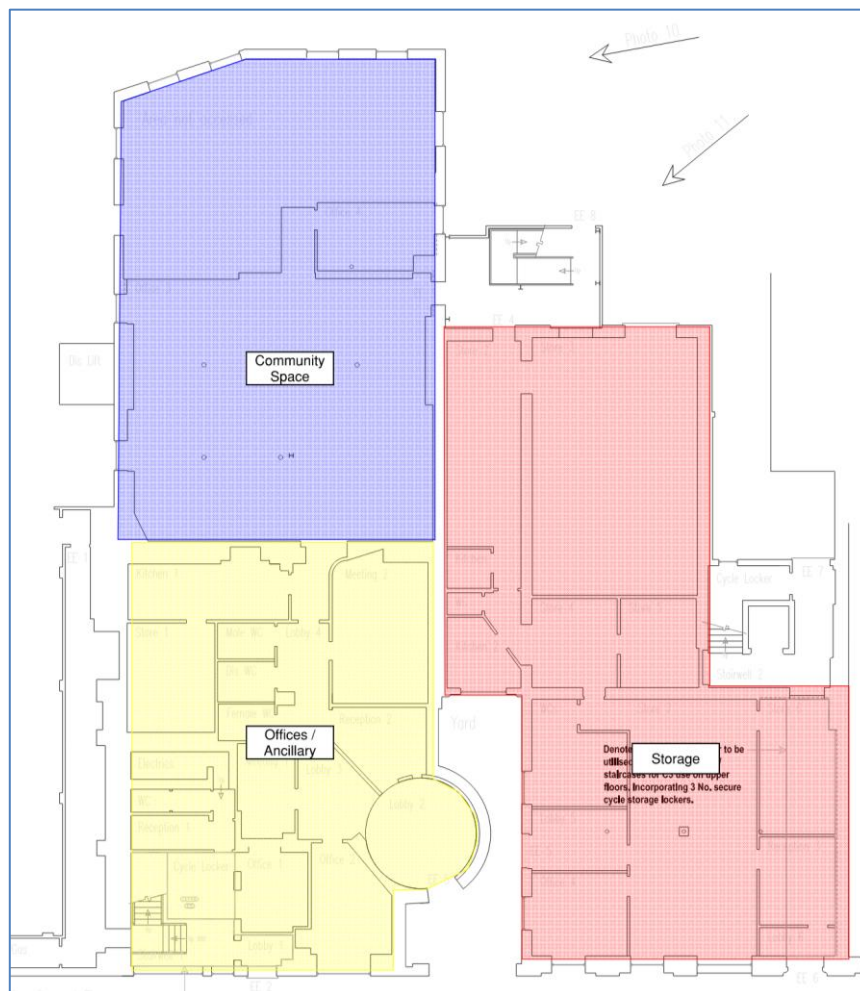


Figure 2 – Approximate ground floor commercial usage.

5.2 It is understood that the community space is used during daytime hours only (07:00 – 20:00), primarily for cultural workshops aimed at children as shown in Figure 3 below. Where low operational noise levels are expected from this space, a worst-case reverberation operational noise level of 75 dB $L_{Aeq,T}$ has been assumed for this assessment.



Figure 3 – Ground floor community space.

5.3 Visual inspection above the lay-in-grid tile ceiling has found a large void of > 500 mm and an arched brick soffit. It is expected that the brick arch is > 200 mm deep with a screed topping.

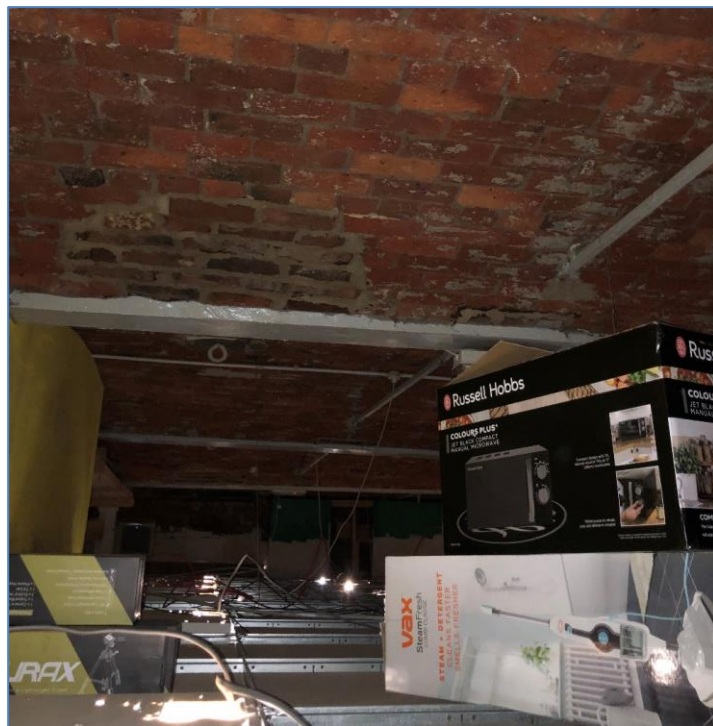


Figure 4 – Visual inspection of ground floor soffit.

5.4 Sound insulation testing has been carried out between the ground floor community space and first floor boardroom to determine existing sound insulation levels between ground and first-floor areas. The sound insulation test result is summarised in Table 6 below and a full test certificate is provided in Appendix X.

Test Description				Measured Performance
Source Room		Receive Room		
Name	Vol. m³	Name	Vol. m³	dB D _{nT, w} +C _{tr}
GF Community Space	383	FF Boardroom	67	53

Table 6 – Summary of sound insulation testing.

5.5 Table 6 shows a sound insulation performance of 53 dB $D_{nT,w} + C_{tr}$ between ground and first floor areas, reflecting a + 10 dB on Approved Document E (ADE) criteria for change-of-use residential dwellings.

5.6 Table 7 below shows an assessment of noise breakout from Community Space to first floor areas based on SSC octave band library data for a comparable space.

Calculation Step	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	
Assumed 75 dB $L_{Aeq,T}$ spectrum for community space (dB Z)	69	72	74	68	66	58	75 dBA
Measured sound insulation (D_{nT})	45	48	50	62	62	60	53 dB $D_{nT,w} + C_{tr}$
Resultant First Floor Sound Level (dB Z)	24	24	24	6	4	0	22 dBA

Table 7 – Assessment of noise break-out between Community Space and first-floor areas.

5.7 Table 7 predicts resultant noise levels of 22 dBA in first-floor flats during community space use. This is > 10 dB below the daytime internal noise criteria provided in BS 8233:2014, suggesting that operational noise breakout from the community space is likely to be acceptable.

5.8 It is considered that the existing separating floor construction between ground and first floor areas is sufficient to control noise breakout, subject to no intensification of operations (in terms of usage times or noise levels) in the ground floor commercial areas.

6 CONCLUSIONS

- 6.1 A study of environmental noise affecting a proposed residential development has been carried out at Acorn Business Centre, Fountain Street North, Bury, Gtr. Manchester, BL9 0LD.
- 6.2 Initial appraisal of the site has identified that commercial and industrial noise forms a significant part of the existing noise climate. As commercial noise cannot be readily separated from the residual noise climate, it is considered more relevant to consider the absolute noise levels in accordance with BS 8233. However, a + 3 dB acoustic character correction has been applied to all declared noise levels to inform a robust assessment, drawing on BS 4142 guidance for commercial / industrial noise.
- 6.3 It has been found that, **with windows closed**, a ventilation strategy of trickle vents and intermittent extract fans can be used to achieve suitable internal noise levels, subject to a minimum ventilator performance of 39 dB $D_{n,e,w}$ (and following the multiple ventilator guidance in Table 4). It should be noted that the internal noise criteria will be exceeded if windows are opened to provide comfort or purge ventilation.
- 6.4 Section 4 provides additional guidance for making good existing glazing and enhancing the sound insulation performance of limited areas of lightweight external wall.
- 6.5 Section 5 summarises an assessment of commercial noise transfer between ground and first-floor areas, concluding that the existing separating floor construction is sufficient to control noise breakout, subject to no intensification of operations (in terms of usage times or noise levels) in the ground floor commercial areas.
- 6.6 On the basis that recommendations within this report have been adopted, it follows that any significant adverse noise impacts can be avoided in the finished development as to accord with overarching planning requirements for new residential development.



Appendix A: Glossary of Acoustic Terms

'A' weighting dB(A): Correction applied to the frequency range of a noise in order to approximate the response of the human ear. Noise measurements are often A-weighted using an electronic filter in the sound level meter.

Attenuation: Sound reduction, measured in decibels (dB).

Ambient Sound: The totally encompassing sound in a given situation at a given time usually composed of sound from many sources near and far. Note: The ambient sound comprises the residual sound and the specific sound when present.

Background sound level: A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.

Calibration: A check of the function of a sound level meter by comparing the meter reading with a known sound pressure level.

Decibel (dB): The unit of sound level and noise exposure measurement. The range of audible sound pressures is approximately 0 dB to 140 dB.

Frequency (Hz): The pitch of the sound, measured in Hertz.

L_{Aeq,T}: The A-weighted equivalent continuous sound pressure level during a period. It is the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period, T.

Octave-bands: A division of the frequency range into recognised bands.

Rating level, L_{Ar,Tr}: The specific sound level plus any adjustment for the character of the sound.

Residual sound: Ambient sound remaining in the absence of the specific sound or that it is suppressed as not to contribute to the ambient sound level.

Residual sound level, L_r or L_{eq,T}: The equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given reference time interval, T.

Sound pressure level (SPL): The basic measure of sound, expressed in decibels, usually measured with an appropriate frequency weighting (e.g. the A-weighted SPL in dB(A)).

Sound power level (L_w): The sound energy radiated per unit time by a sound source measured in watts (W). Sound power can be weighted (e.g. A-weighted) and is not influenced by environmental or physical factors such as weather or distance.

Specific sound: Sound source being assessed.

Specific sound level, L_s or L_{eq,T}: The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval, T.



Appendix B: Annotated Proposed Block Plan

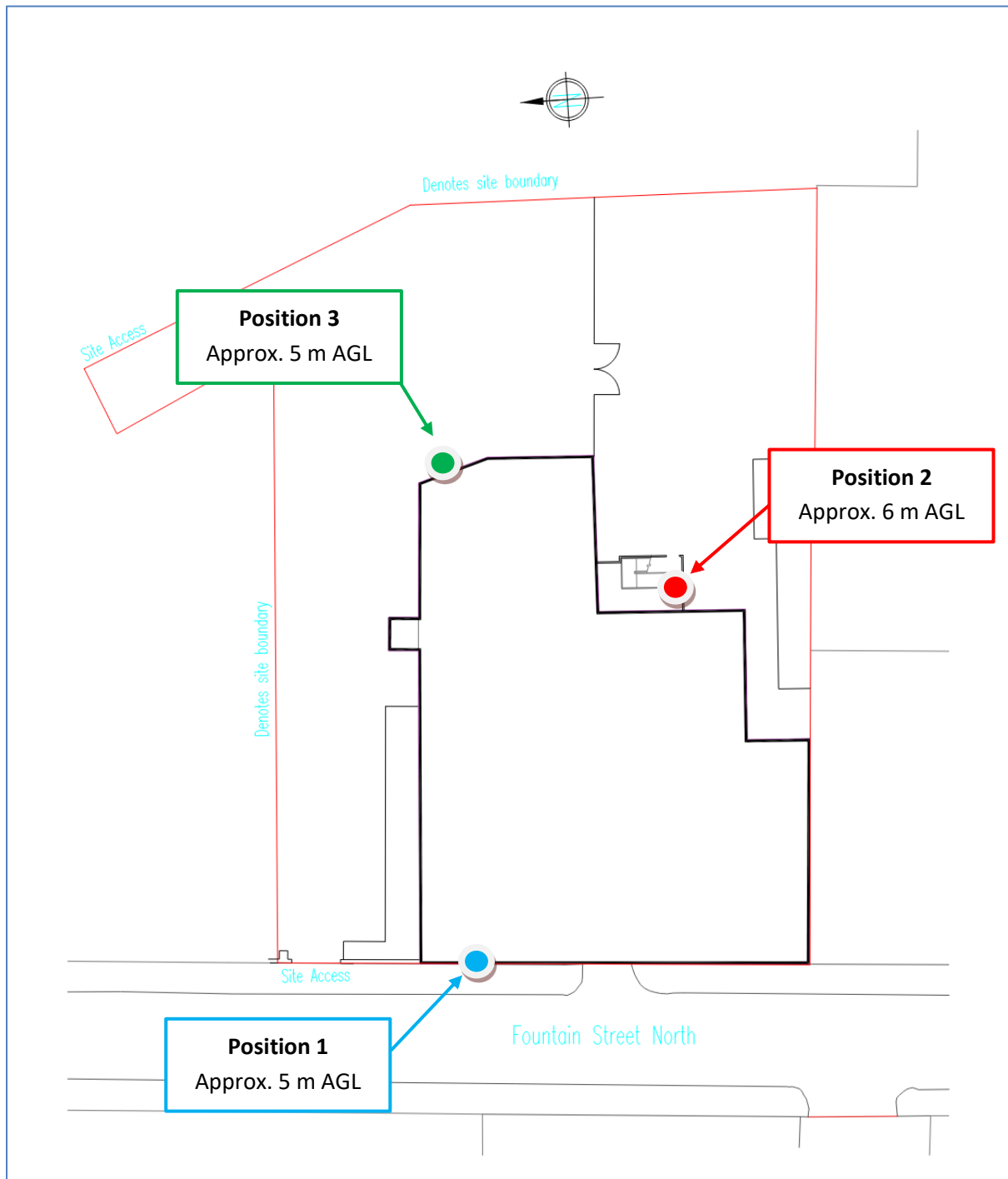


Figure B1 – Proposed block plan, annotated for measurement position.

Appendix C: Scheme Design

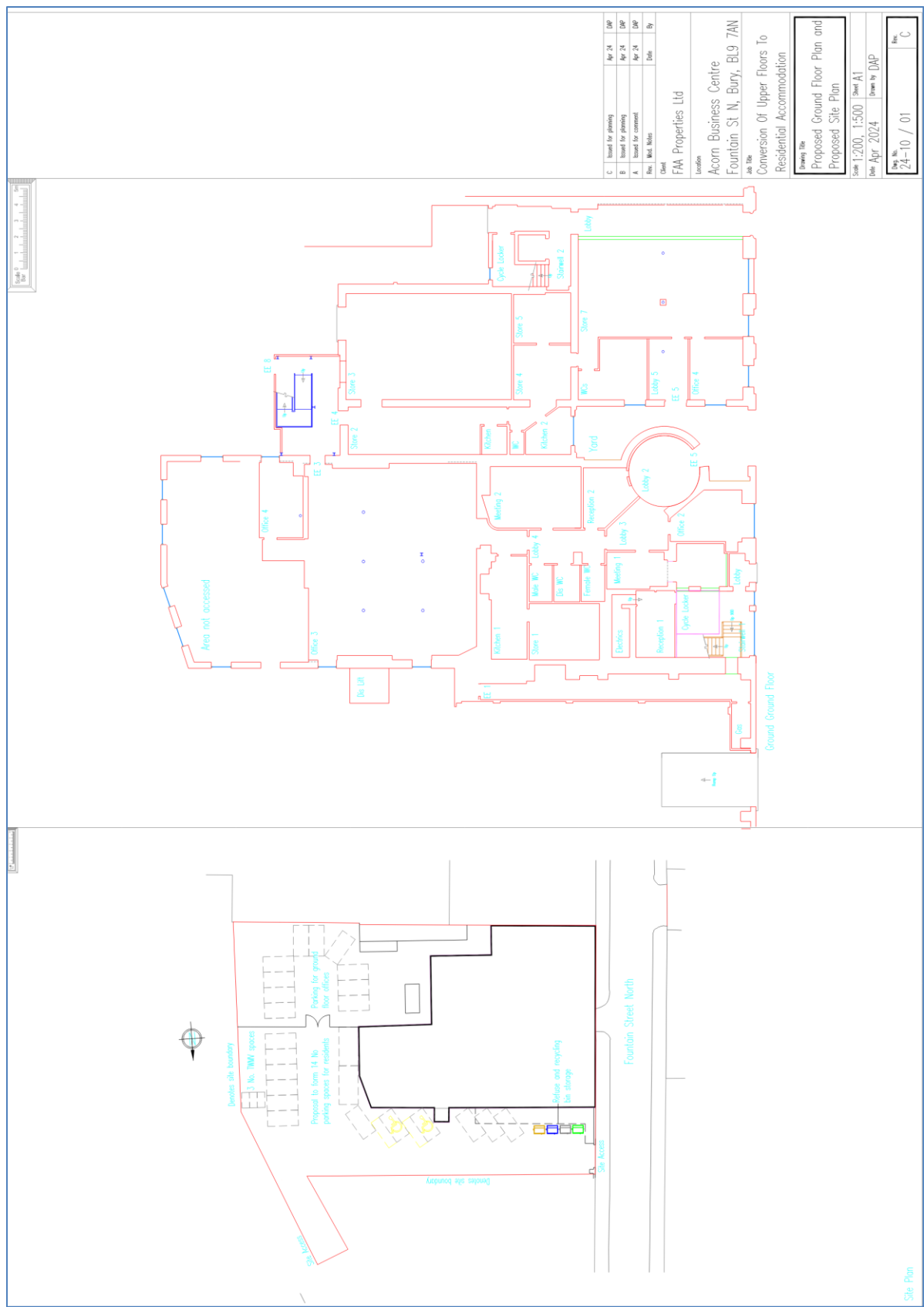


Figure C1 – Proposed site and ground floor plans.



Figure C2 – Proposed first and second floor plans.

Appendix D: Environmental Survey

The equipment used conforms to BS EN 61672-1:2003 (Class 1) for sound level meters and BS EN 60942 (Class 1) for sound calibrators; with at least traceable calibration history valid; no greater than two years for sound level meters and one year for sound calibrators, relevant to the times of the site assessment.

Position No.	Manufacturer	Model No.	Description	Serial No.
2	Larson Davis	LxT (ST)	3 rd octave band sound level meter	2680
	Larson Davis	PRMLxT1L	Microphone preamplifier (low range)	70093
	Larson Davis	337B02	½" electret microphone	327046
1 & 3	Larson Davis	LxT (SE)	3 rd octave band sound level meter	6519
	Larson Davis	PRMLxT1L	Microphone preamplifier (low range)	42418
	Larson Davis	337B02	½" electret microphone	105554
Both	Larson Davis	CAL200	Sound level calibrator	8121

Table D1 – Sound monitoring equipment.

Validation checks at the end of the survey demonstrated acceptable drift across all parts of the study, across the sound level measurement equipment used, of ≤ 0.20 dB. Interval data was recorded at the measurement location at 1-minute and 15-minute periods, time synchronised to GMT.

Weather conditions at the times of site attendance were deemed acceptable for surveying.

Weather conditions	Start	Finish	Additional comments
Wind velocity	< 5 m/s Average	< 5 m/s Average	None
Wind direction	S	N	
Cloud cover/rain	50 %, no rain	50 %, no rain	
Temperature	10 °C	4 °C	

Table D2 – Recorded weather conditions.

A brief description of the measurement position has been provided below:

Position 1) The microphone was installed at a height of approximately 5 m above ground level out of a first-floor window on the west façade of the building.

The monitoring position had clear line of sight of Fountain Street North and commercial activities at Meadow Self Storage.

Position 2) The microphone was installed at a height of approximately 6 m above ground level in a free-field location on the external stairwell at the south-east of the development building.

The monitoring position had clear line of sight of commercial activities at Playtime soft play centre and M Tiger car repair garage to the south of The Site.

Position 3) The microphone was installed at a height of approximately 5 m above ground level out of a first-floor window on the north-east façade of the building.



The monitoring position had clear line of sight of commercial activities at The Motor People Ltd Car Sales to the north of The Site.



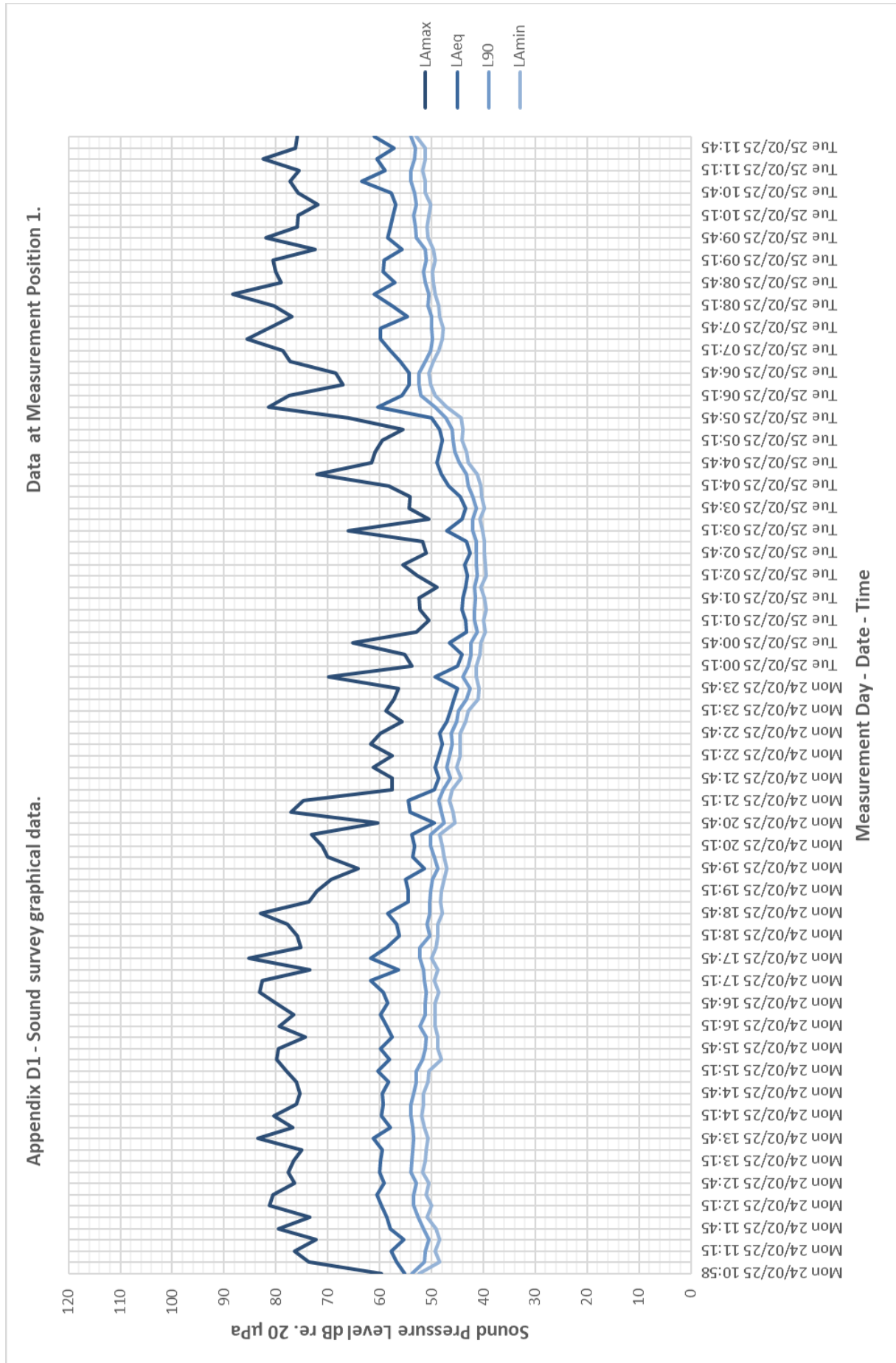
Figure D1 – Photo highlighting Measurement Position 1.

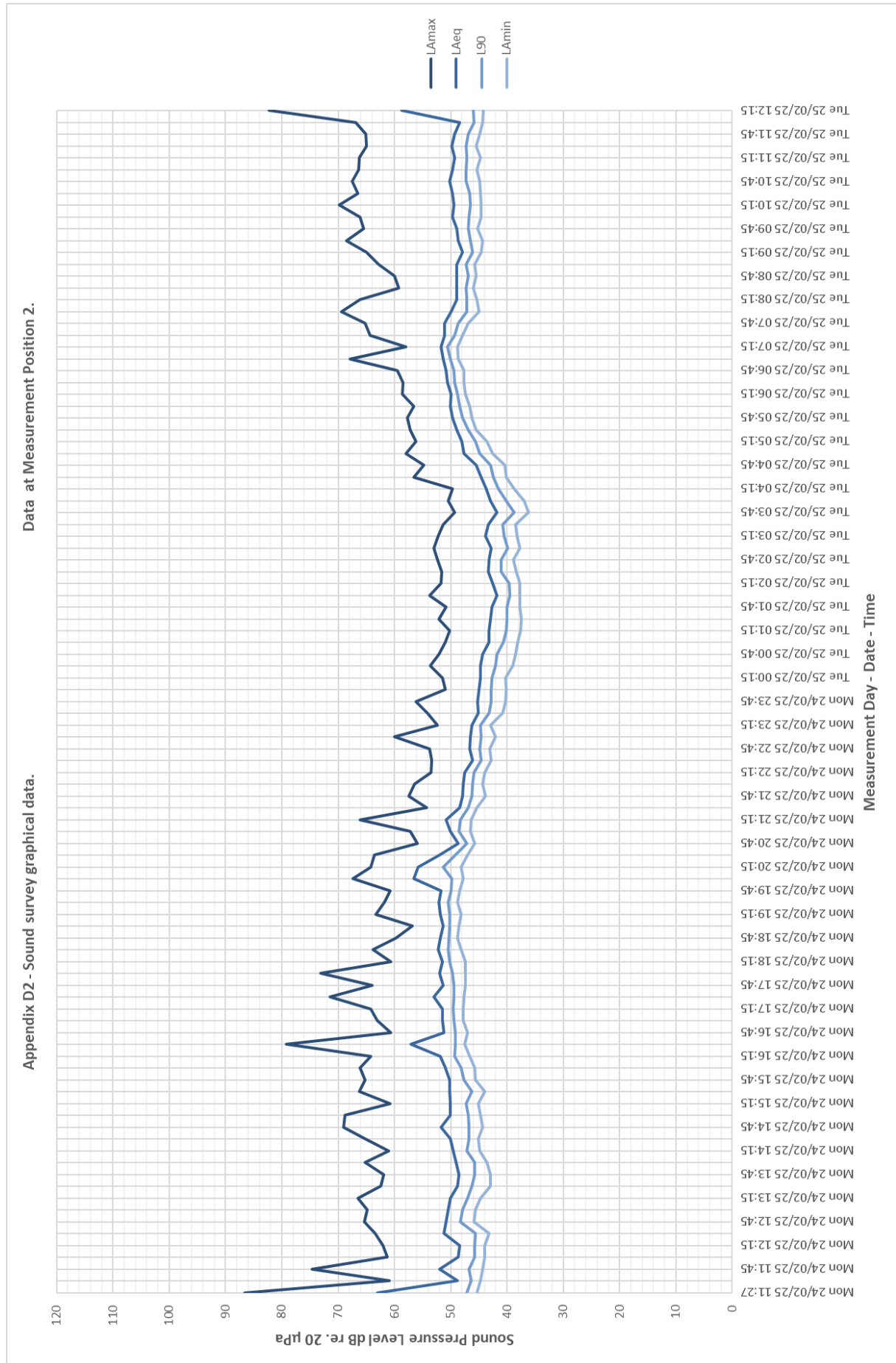


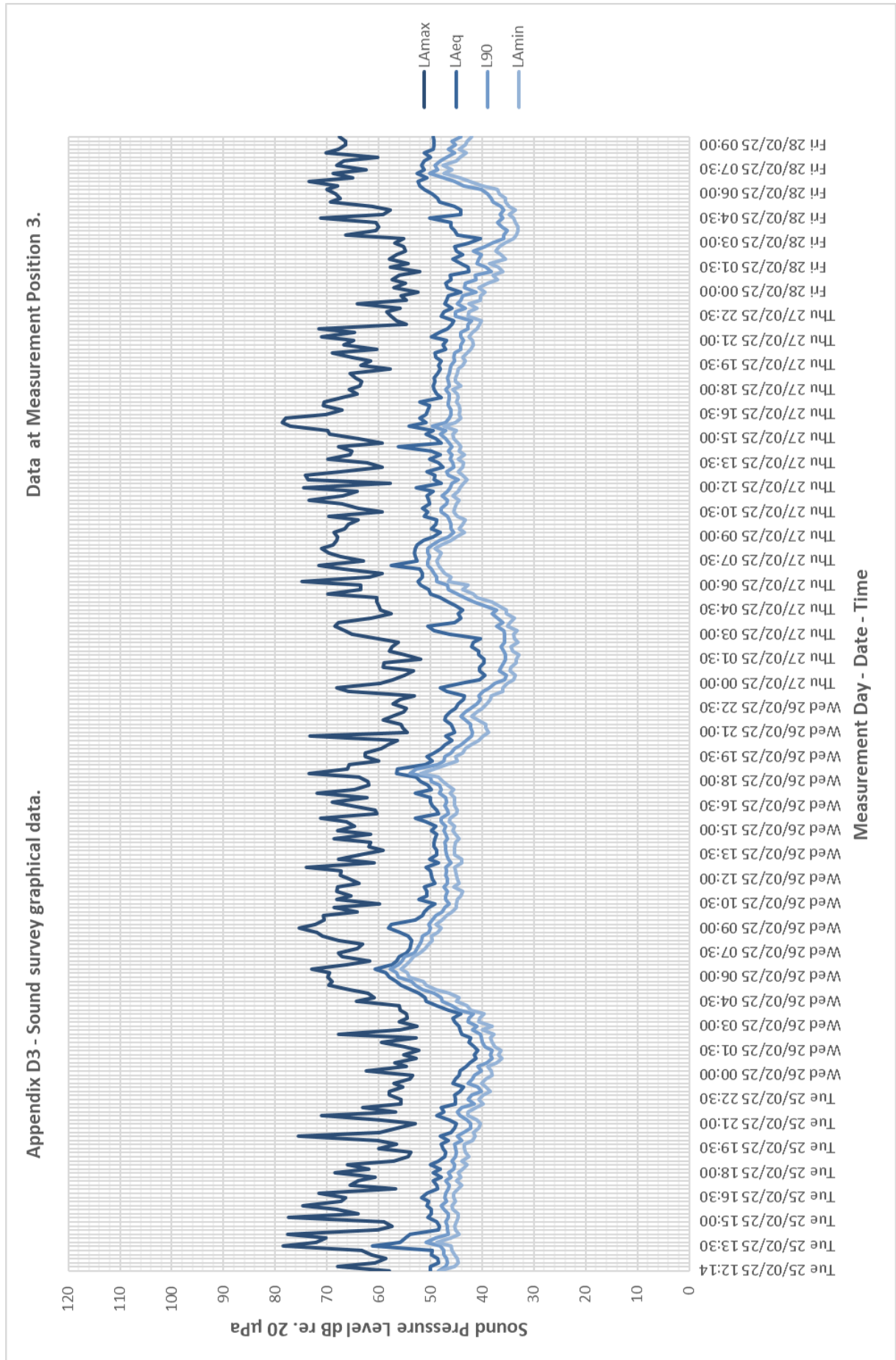
Figure D2 – Photo highlighting Measurement Position 2.



Figure D3 – Photo highlighting Measurement Position 3.







Appendix E: Noise Break-in Calculations

Calculations have been undertaken based on achieving BS 8233:2014 guidance criteria for both the internal average and maximum noise levels. The building elements specified in this section are based upon their indicated locations from the architectural scheme layout drawings in Appendix C, along with the estimated room volumes and building specifications.

The calculation method used follows Section G.2.1 of BS 8233:2014, based on the method given in EN 12354-3:2000, and considers the sound insulation of each major building façade component summarised as wall, glazing and ventilation parts.

Ref	Room Name	Facade Wall		Glazing		Ventilation		Roof		External Noise		External Noise Result Day					External Noise Result Night					External Noise Result Max									
		Type	Rw	Type	Rw	Type	Rw	Type	Rw	Type	125	250	500	1k	2k	4k	A	125	250	500	1k	2k	4k	A							
1	Apt 1 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	42	40	31	29	18	11	35	35	33	24	21	11	7	28	46	48	40	35	27	18	42
2	Apt 1 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	39	37	28	26	15	7	32	32	30	20	17	8	4	24	43	44	37	32	23	15	39
3	Apt 2 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	39	38	29	26	15	8	33	32	30	21	18	8	4	25	43	45	37	32	24	16	40
4	Apt 2 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	39	38	29	26	15	8	33	32	30	21	18	8	4	25	43	45	37	32	24	16	40
5	Apt 3 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	34	32	23	21	10	2	27	27	25	15	12	3	-1	19	38	39	32	27	18	10	34
6	Apt 3 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	37	35	26	24	13	5	30	30	28	18	15	6	2	23	41	42	35	30	21	13	37
7	Apt 4 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	28	27	19	15	4	2	22	24	23	16	14	4	3	19	29	30	24	21	25	24	31
8	Apt 4 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	29	29	21	16	6	3	24	25	24	18	15	6	4	20	30	32	26	22	26	26	32
9	Apt 5 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	33	32	25	20	10	7	27	28	27	21	18	9	8	24	33	35	29	25	30	29	35
10	Apt 5 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	33	32	25	20	10	7	27	28	27	21	18	9	8	24	34	35	29	25	30	29	35
11	Apt 8 Studio	Lightweight	47	4 (20) 4	30	EVO AK High	39	tr pld ceiling, sound	48	Position 1	43	36	26	24	14	6	32	37	28	19	16	7	3	24	47	43	35	30	22	14	38
12	Apt 10 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	35	33	24	22	11	4	28	28	26	16	14	4	0	21	39	40	33	28	20	11	35
13	Apt 10 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	38	36	27	25	14	7	31	31	29	19	17	7	3	24	42	43	36	31	22	14	38
14	Apt 11 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	42	40	31	29	18	11	35	35	33	23	21	11	7	28	46	47	40	35	27	18	42
15	Apt 11 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	41	40	31	29	17	10	35	35	32	23	20	11	7	27	45	47	40	35	26	18	42
16	Apt 14 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	28	27	19	15	4	2	22	24	23	16	14	4	3	19	29	30	24	21	25	24	31
17	Apt 14 Bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	29	29	21	17	6	4	24	25	24	18	15	6	5	21	30	32	26	22	27	26	32
18	Apt 15 Living	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	31	31	23	18	8	5	26	27	26	20	17	8	6	22	32	34	28	24	28	28	34
19	Apt 15 bedroom	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 3	34	33	25	20	10	8	28	30	29	22	19	10	9	25	35	36	30	26	30	30	36
20	Apt 17 Studio	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	35	33	24	22	11	3	28	28	26	16	13	4	0	21	39	40	33	28	19	11	35
21	Apt 18 Studio	Solid Masonry	57	4 (20) 4	30	EVO AK High	39	None	-	Position 1	38	37	28	26	14	7	32	32	29	20	17	8	4	24	42	44	37	32	23	15	39

Table E1 – Detailed noise break-in calculation summary.

Appendix F: Sound Insulation Test Certificate

Standardised level difference according to ISO 140-4: 1998 Field measurement of airborne sound insulation between rooms

Site Address: Acorn Business Centre, Bury

Test Description: Test 1, airborne separating floor between GF Community Space and FF Boardroom.

Separating Element: Not Confirmed

Notes: None

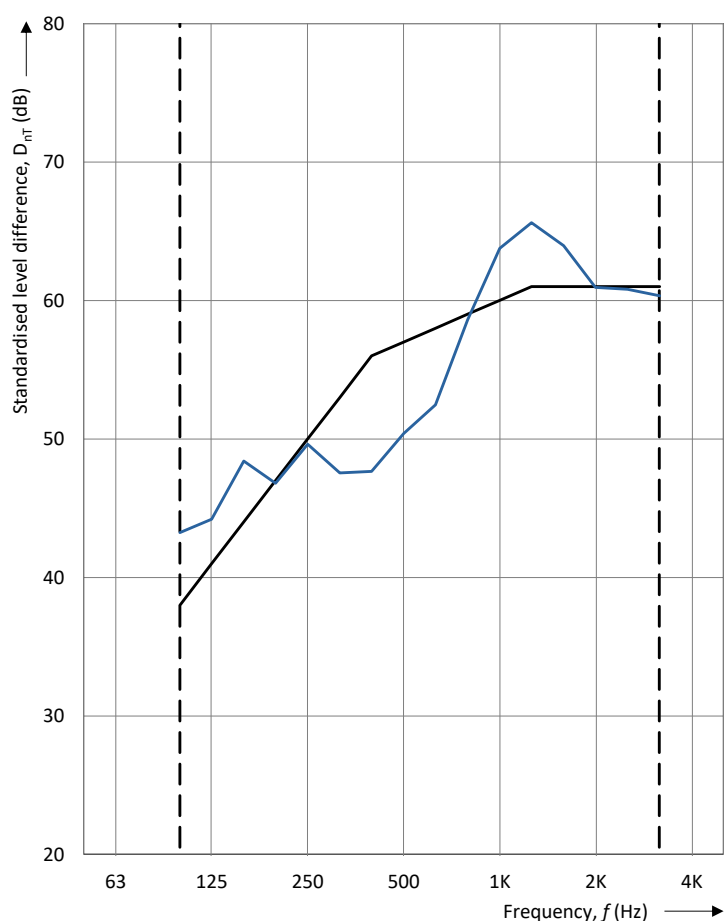
Source Room Volume: 383 m³

Receiving Room Volume: 67 m³

Sum of unfavourable deviations: 27.9 dB

--- Frequency range according to
— curve of reference values (ISO 717-1)

Frequency f Hz	D_{nT} ½ Octave dB
50	
63	
80	
100	43.2
125	44.2
160	48.4
200	46.8
250	49.6
315	47.5
400	47.7
500	50.4
630	52.5
800	58.6
1000	63.8*
1250	65.6*
1600	64.0
2000	60.9
2500	60.8
3150	60.3
4000	
5000	



Rating based on ISO 717-1

$D_{nT,w}(C; C_{tr}) = 57 (-1; -4) \text{ dB}$

$D_{nT,w} = 57 \text{ dB}$

Evaluation based on field measurement results obtained by an engineering method

Test Report Number: 42190-1

Testing Laboratory Name: Sound Solution Consultants Limited

Date of Test: 24/02/2025

Technical Staff: L Pickering



Appendix G: Acousticians Qualifications and Status

Author: Luke Pickering BSc. (Hons) MIOA

Position Held: Senior Acoustic Consultant.

Qualifications: BSc. (Hons) Sound Engineering and Design

Institute of Acoustics Diploma in Acoustics and Noise Control.

Affiliations: Member of the Institute of Acoustics.

Acoustics Experience: 10 years.

Checked: Lee Denson BSc. (Hons) MSc. MIOA

Position Held: Principal Acoustic Consultant.

Qualifications: BSc. (Hons) Music Technology.

MSc. Music Technology.

Institute of Acoustics Diploma in Acoustics and Noise Control.

Affiliations: Member of the Institute of Acoustics.

Acoustics Experience: 11 years.

