



FORSHAW GROUP

6 LOOM STREET, MANCHESTER

NOISE ASSESSMENT FOR PLANNING PURPOSES

2 September 2021

AEC REPORT: P4393/R1b/RDC

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1.0 INTRODUCTION

- 1.1 Acoustic & Engineering Consultants Limited (AEC) has been instructed by Forshaw Group to undertake a noise assessment in relation to the proposed development located at 6 Loom 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 It is understood that this development has already gained planning permission from Manchester City Council (MCC). This assessment relates to discharging Condition 8a of the planning conditions which relates to achieving acceptable internal noise levels within the development.
- 1.4 Acoustic terminology is discussed in brief in Appendix A.

2.0 BACKGROUND AND SITE DESCRIPTION

- 2.1 The proposed development will be comprised of a new build five-storey dwelling with four bedrooms and a rooftop terrace, located at 6 Loom Street, Manchester. The site is currently occupied by a vacant single storey garage, as shown on Figure 1, at the back of this report.
- 2.2 Loom Street is a narrow back street in the Ancoats area of Manchester. There are existing offices and residential properties surrounding the proposed development. In addition to these receptors, Halle at St Michael's is an artistic and education activity space for community events and it has a rear wall that backs onto Loom Street. As there is no glazing onto Loom Street, noise from this source has not been considered further. Access to Loom Street is gained from either Cotton Street to the west, or Sherratt Street to the east.
- 2.3 The rear of the development (to the south) backs onto T C Sales Direct Ltd and the Seven Bro7hers establishment. At the rear of Seven Bro7hers is a small platform that houses some external plant equipment that backs onto the proposed development.
- 2.4 AEC has been informed that the rear wall of the proposed development will not be directly fixed to the existing rear walls of any other premises in the area. Therefore, AEC has not considered internal noise breakout between these spaces.
- 2.5 Further to the south is Cutting Room Square, from where public access to Seven Bro7hers is gained. There are other restaurants and bars also located on Cutting Room Square such as The Counter House and Canto. As a result of Covid-19 restrictions placed on the establishments in the area, most have been granted pavement licenses by MCC meaning that Cutting Room Square now has outdoor seating.
- 2.6 Due to the layout of the scheme, there will only be glazing on the Loom Street elevation. In relation to the rooftop amenity space, there will be no direct line of sight to the plant or Cutting Room Square as the stairwell will provide screening.

- 2.7 Following conversations with Dave Marland of DM Design Consultants Ltd, it is understood that ventilation to the development will be provided by a mechanical ventilation heat recovery unit (MVHR), which will provide fresh air to all occupied rooms and extract from wet rooms/kitchens. It has been confirmed that the system meets the ventilation requirements of ADF and that no provisions for trickle vents are necessary.

3.0 NOISE MEASUREMENTS

- 3.1 Based on the layout of the scheme, the three main sources of noise impacting the development are activities on Loom Street, pedestrians and patrons in Cutting Room Square, and any noise associated with the rooftop external plant at the rear of Seven Bro7hers.
- 3.2 Noise levels from the first two sources have been measured by AEC and further details are presented below. In relation noise from the plant serving Seven Bro7hers it was not possible to gain access to the rooftop plant in order to measure the noise levels. Therefore, noise from this source has been determined based on survey details presented in Azymuth Acoustics (Planning Permission: 121924/FO/2018). Details of this survey are discussed, below.

AEC Noise Level Survey 2021

- 3.3 An attended daytime noise level survey was undertaken on Thursday 10 June 2021, between approximately 1000 and 1200h. An attended night-time noise level survey was undertaken on Saturday 5 June 2021, between approximately 2200 and 2330h.
- 3.4 Measurements were undertaken at two locations around the development site identified as A and B on the attached Figure 1. A full measurement procedure is presented in Appendix B and full details of the noise level measurements are presented in Tables B1 and B2 in Appendix B.
- 3.5 All measurements were undertaken in general accordance with BS7445-1: 2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'.
- 3.6 Location A was chosen to measure noise levels impacting the front façade of the proposed development. Measurements were made under façade conditions. Location B was chosen to measure noise levels from Cutting Room Square. These were free-field measurements.
- 3.7 A summary of the measured daytime ambient and night-time ambient and maximum noise levels is presented in Table 3.1, below.
- 3.8 It should be noted that a maximum noise level of 80dB_{L_AF_{max}} was measured at Location A during the night-time period, however, this was due to a one-off event of the Seven Bro7hers bins being emptied. As this may only happen a couple of times at night, this has been excluded from the assessment.

Table 3.1 – Summary of Measured Noise Levels

Measurement Location	Period	Noise Level, dB	
		Ambient, $L_{Aeq,T}$	Maximum, $L_{AFmax,F}$
A	Daytime	53	-
	Night-time	57	68 - 71
B	Daytime	57	-
	Night-time	72	80

- 3.9 During the daytime period, noise levels at Location A were mainly due to distant construction noise from various surrounding sites and pedestrian noise (particularly on Cutting Room Square). Distant road traffic on the surrounding roads also impacted the measurements, but to a lesser extent. Car pass bys on Loom Street itself were sporadic. Due to the traffic on Loom Street being so infrequent, it is not anticipated that rush-hour measurements would have made any difference to the assessment. Therefore, measurements were carried out slightly later when more pedestrians would be active.
- 3.10 During the night-time period, noise levels at Location A were entirely due to activities on Cutting Room Square. Occasionally, pedestrians would walk past the measurement location, however, this was rare. Maximum noise levels at this location were due to sporadic vehicle pass bys on Loom Street. Throughout the one-hour total measurement period in this location, six vehicles drove past the site.
- 3.11 During the daytime at Location B, ambient and maximum noise levels were due to occasional car pass bys on Blossom Street. Distant construction noise and other road traffic also influenced the ambient noise levels.
- 3.12 Ambient and maximum noise levels at Location B at night were entirely due pedestrians and patrons in Cutting Room Square and the outdoor seating provided by the bars and restaurants in the area.
- 3.13 Throughout the survey, the typical daytime and night-time background noise levels were 46dBL_{A90} and 54dBL_{A90}, respectively.

Azymuth Noise Level Survey 2019

- 3.14 An attended daytime noise level survey was undertaken by Azymuth Acoustics on 18 April 2019 in order to measure noise levels breaking out of the rooftop plant associated with Seven Bro7hers.
- 3.15 It is understood that there are four items of external plant; two air-conditioning condenser units, one chilled drinks condenser unit and one kitchen extract flue. Based on the data presented in the Azymuth report, the highest noise level measured was from the kitchen extract plant which produced a noise level of 66dBL_{Aeq, T} at 2m. This was around 8dB higher than the noise levels measured from the other plant. Therefore, the total noise level from all equipment was around 68dBL_{Aeq, T} at 2m.

4.0 BASIS OF ASSESSMENT

National Planning Policy Framework

- 4.1 Current national planning policies are set out in the National Planning Policy Framework (NPPF) published by the Department for Communities and Local Government in March 2012 and revised in February 2019.
- 4.2 The planning policies which relate specifically to noise, were updated in July 2019 and are presented in paragraphs 170, 180 and 182 and are reproduced below:
- “170. 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 noise.*
- 180. 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.*
- 182. 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.”*
- 4.3 Further to the above, the Governments ‘Planning Practice Guidance’ (PPG) published on 6 March 2014 and updated on 22 July 2019 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.”*

- 4.4 In addition, the guidance indicates that, whilst noise can override other planning concerns, it should not be considered in isolation from the economic, social and other environmental dimensions of any proposed development.

Internal Noise Level Limits

- 4.5 MCC outlined their requirements for noise assessments to accompany planning applications in '*Planning & Noise – Technical Guidance*' (2015) (PNTG).
- 4.6 Section 3.6.1.1 of this document states "*Manchester City Council has adopted the following internal limits for residential properties:*
- *Bedroom (night-time – 23.00 – 07.00) 30dB_{LAeq} (individual noise events should not normally exceed 45dB_{LAmax,F} by more than 15 times);*
 - *Living Rooms (daytime – 07.00 – 23.00) 35dB_{LAeq}."*
- 4.7 These levels are based on guidance presented in BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' (BS8233) and The Association of Noise Consultants (ANC) document Professional Practice Guidance (ProPG) on Planning and Noise '*New Residential Development*' (2017).
- 4.8 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 45dB_{LAmax} more than 10 times a night.*"
- 4.9 Based on this AEC would propose to design the façade in order that maximum noise levels in bedrooms do not typically exceed 45dB_{LAmax,F} during the night-time period 2300h to 0700h and any non-typical events such as a one-off emergency siren or noisy motorbike pass-by will be excluded in the assessment.
- 4.10 In addition to the above, ProPG also notes that the attenuation of external to internal noise levels provided by a window partially open for whole dwelling (background) ventilation is no more than 15dB.
- 4.11 Therefore, for rooms to have whole dwelling ventilation via a partially open window, external noise levels outside habitable rooms should not exceed 50dB_{LAeq,16h} during the daytime, and 45dB_{LAeq,8h} and 60dB_{LAmax,F} at night.

Ventilation and Control of Overheating

- 4.12 The ventilation specifications presented in BS8233 and ProPG are based on achieving the requirements of Approved Document F (ADF) 'Ventilation' (2010) of the Building Regulations only.
- 4.13 ADF requires that continuous whole dwelling ventilation is provided to limit the accumulation of moisture and other pollutants originating within a building. This is typically achieved either via a partially opened window, or by a whole building ventilation system through the provision of trickle ventilators or mechanical ventilators. ADF states that '*The ventilation provisions will not necessarily meet cooling needs*'.
- 4.14 As previously stated, ventilation to the development will be provided by a mechanical ventilation heat recovery unit (MVHR), which will provide fresh air to all occupied rooms and extract from wet rooms/kitchens. It has been confirmed that the system meets the ventilation requirements of ADF and that no provisions for trickle vents are necessary. In order to meet MMC's internal noise level limits, the MVHR system should be controlled to achieve internal ambient noise levels no greater than NR30 L_{eq} when the systems are operating at their design duty.
- 4.15 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 desired internal noise levels are not generally applicable. Therefore, internal noise levels due to windows being opened for purge ventilation has not been discussed further.
- 4.16 In addition, AEC has also received confirmation from Dave Marland of DM Design Consultants Ltd that with respect to overheating, it has been concluded that given the limited glazed areas, the orientation of the glazed elevations as well as the ventilation already provided by the MVHR system, that overheating should not become a problem on this development. Furthermore, it is understood that the energy assessor has reviewed this approach and indicated that overheating should not occur. Based on this, AEC has not discussed overheating further.

External Noise Level Limits

- 4.17 For traditional external areas that are used as an amenity space, such as gardens and patios, BS8223 states that it is desirable that ambient noise levels should be not exceed $50dBL_{Aeq,16h}$ during the daytime, with an upper limit of $55dBL_{Aeq,16h}$.
- 4.18 Furthermore, PNTG provides a limit for $50dBL_{Aeq,16h}$ to stop '*moderate annoyance*', and an upper limit of $55dBL_{Aeq,16h}$ for '*serious annoyance*'.
- 4.19 For traditional external areas that are used as an amenity space, such as gardens and patios, BS8223 and ProPG states that it is desirable that ambient noise levels should be not exceed $50dBL_{Aeq,16h}$ during the daytime, with an upper limit of $55dBL_{Aeq,16h}$.
- 4.20 These noise level limits have been used as the design aim for this assessment.

Atmospheric Plant Noise Emissions

- 4.21 Based on guidance presented in MCC's document PNTG, the following is stated in relation to noise level limits for fixed plant machinery at noise sensitive premises:

“Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.”

5.0 ASSESSMENT OF PROPOSED DEVELOPMENT

- 5.1 As stated above, the noise levels within the area affecting the development are either from activities on Loom Street, pedestrians and patrons in Cutting Room Square, and noise associated with the rooftop external plant off Seven Brothers.
- 5.2 Based on the layout of the scheme, there are only two areas that may be severely affected by the noise levels from the sources listed above; the glazing strategy on the Loom Street elevation and the rooftop amenity space. These are subsequently discussed, below.

Determining of External Noise Levels

- 5.3 The external noise levels affecting the Loom Street facade have been calculated using the noise levels presented in Table 3.1 of Section 3, distance attenuation and any acoustic screening. The calculated noise levels are presented on Figure 2 and in Table 5.1, below.
- 5.4 As identified above, measurements at Location A were undertaken under façade conditions. Therefore, in accordance with guidance presented in BS7445-2 'Description and measurement of environmental noise', a -3dB correction has been applied to the measured façade levels to represent free-field levels.

Table 5.1 – External Noise Levels Affecting Loom Street Facade

Noise Level, dB		
Daytime Ambient, $L_{Aeq,T}$	Night-Time	
	Ambient, $L_{Aeq,T}$	Maximum, $dBL_{Amax,F}$
≤ 50	≤ 54	≤ 68

Assessment of Glazing Requirements

- 5.5 The sound insulation performance of the glazing, to meet the requirements, have been calculated based on the spectrum noise data measured on-site and the room sizes and glazing areas presented on the architectural drawings, and these are presented in Figures 2 and 3, for the ground and first floors, respectively, and in Table 5.2, below.

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

Sound Insulation Performance			
Living Room/Dining Room		Bedroom	
29dBR _w / 25dBR _w + C _{tr}	4mm Glass / 6 – 16mm Cavity / 4mm Glass	35dBR _w / 32dBR _w + C _{tr}	10mm Glass / 6 – 16mm Cavity / 6mm Glass

- 5.6 Prior to any glazing being installed, octave band sound insulation performance data of the glazing build-ups selected must be verified by AEC or other suitably qualified persons.

Other Façade Elements

- 5.7 The roofs and walls to the property would need to achieve a minimum sound insulation performance of at least 10dB higher than the values for the glazing presented within the night-time section of Table 5.2, above. We would propose a minimum performance of at least 50dBR'_w.

External Noise Levels in Rooftop Amenity Space

- 5.8 Due to the height of the proposed development, as well as other buildings in the area, there is calculated to be significant screening from ground floor sources.
- 5.9 Based on the noise levels calculated within Table 5.1, and appropriate distance and screening attenuation from the sources from Cutting Room Square, it has been calculated that noise levels from these sources would be below 50dBL_{Aeq,16h} within the rooftop amenity space during the daytime period.
- 5.10 Based on the measured plant data from the kitchen extract, distance and screening attenuation, noise levels from the plant is expected to be around 50dBL_{Aeq, 16h}.
- 5.11 Based on the above, noise from all possible sources within the area would not exceed 55dBL_{Aeq,T} within the rooftop amenity space. Therefore, the upper limits of BS8233, PNTG and ProPG would not be exceeded and this should be deemed acceptable.

Plant Noise – Internal

- 5.12 The ventilation system will need to ensure that internal ambient noise levels in the all rooms, as presented in Section 4, are achieved.
- 5.13 To control airflow generated noise in ductwork systems to bedrooms, the maximum duct velocities are presented in Table 5.3, below.

Table 5.3 – Maximum Ductwork Airflow Velocities

Noise Level, dB(A)	Duct Velocity, m/s		
	Main Duct	Branch Duct	Final Runout
35 (NR30)	6.5	5.5	3.25

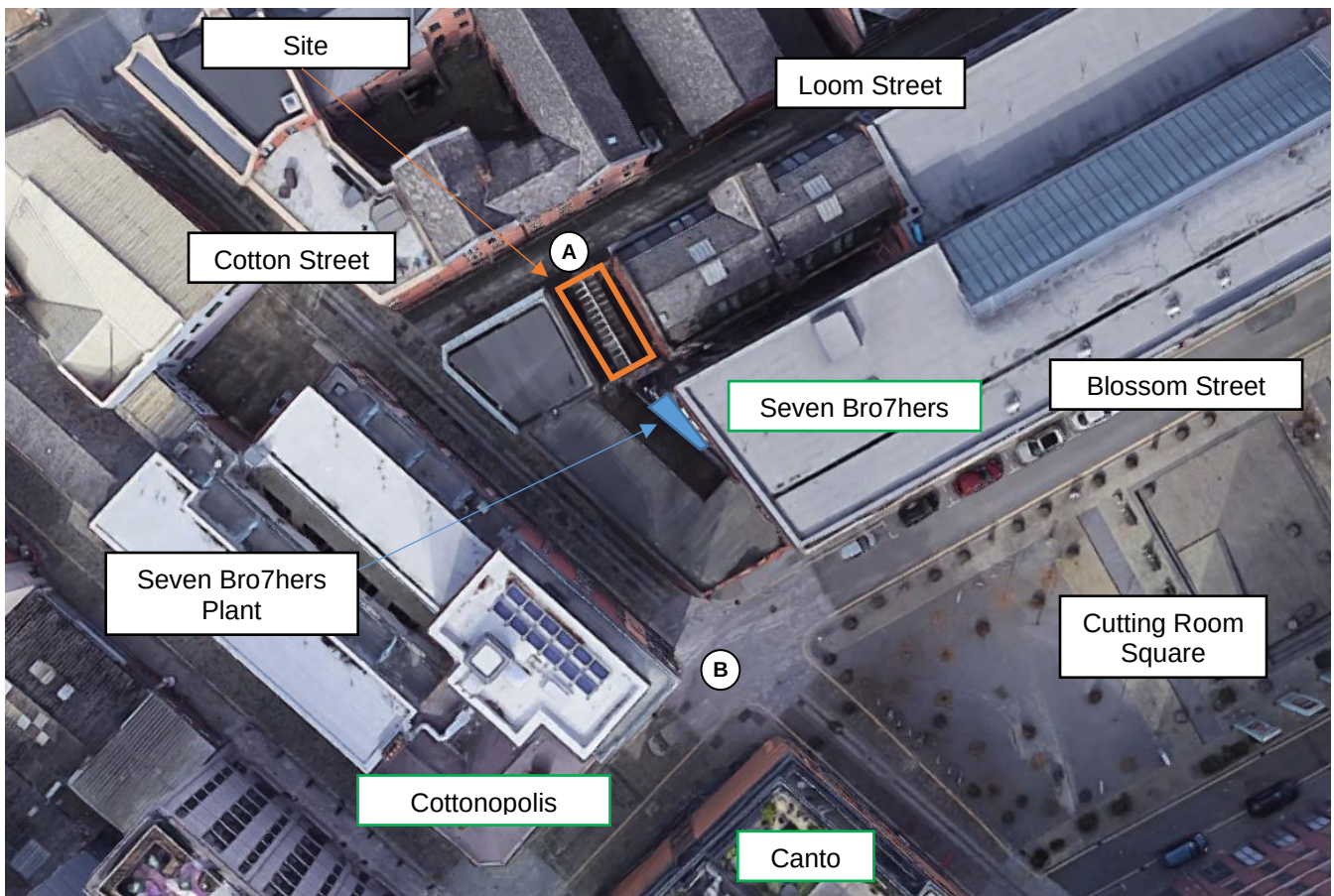
Plant Noise – External

- 5.14 While MVRH systems do not typically provide significant external noise breakout, AEC would propose that a provisional external noise level limit is set.
- 5.15 Based on the lowest typical background noise levels measured on-site, of $46\text{dB}_{\text{LA90,T}}$ during the daytime hours, noise emitted from the site should be controlled to no greater than $41\text{dB}_{\text{LAr,Tr}}$ external to the nearest noise sensitive receptor. By ensuring that this limit is met, the night-time noise level limits would also be achieved.
- 5.16 In meeting this level, the requirements of the PNTG would be achieved. To ensure this is the case, a detailed review of the proposed system will take place during the design stages of the development.

6.0 SUMMARY AND CONCLUSIONS

- 6.1 Acoustic & Engineering Consultants Limited has undertaken a noise assessment in relation to the proposed new build five-storey dwelling located at 6 Loom Street, Manchester.
- 6.2 An attended daytime noise level survey was undertaken on Thursday 10 June 2021, between approximately 1000 and 1200h. An attended night-time noise level survey was undertaken on Saturday 5 June 2021, between approximately 2200 and 2330h.
- 6.3 Measurements were undertaken at two locations around the development site identified as A and B on the attached Figure 1. Full details of the noise level measurements are presented in Tables B1 and B2 in Appendix B.
- 6.4 At Location A on Loom Street, ambient noise levels during the day were due to distant road traffic and minor construction noise. At night-time in this location, ambient noise levels were due to patron activity on Cutting Room Square. Maximum noise levels during both periods were due to intermittent car pass bys on Loom Street.
- 6.5 During the daytime at Location B, noise levels were due to car pass bys on Blossom Street as well as distant road traffic. At night-time in this location, ambient and maximum noise levels were due to patron activities in Cutting Room Square.
- 6.6 A summary of the noise levels measured on-site is provided in Table 3.1 of Section 3.
- 6.7 Based on the above, to achieve appropriate internal noise levels in line with the Local Authority's requirements of $35\text{dBL}_{\text{Aeq},16\text{h}}$ in living rooms during the daytime and $30\text{dBL}_{\text{Aeq},8\text{h}}$ and $45\text{dBL}_{\text{Amax},\text{F}}$ in bedrooms during the night-time, windows must remain closed, apart from during the daytime.
- 6.8 The outline requirements for the glazing strategy at the development to achieve the internal noise level limits has been calculated and are presented in Section 5. The sound insulation performances required for the windows, in order to comply with the above noise level limits are identified in Table 5.2. These have been reproduced on Figure 2.
- 6.9 In relation to ventilation, background ventilation in line with the requirements of Approved Document F will be provided via a non-mechanical MVHR system. Furthermore, it has been confirmed with Dave Marland of DM Design Consultants Ltd that overheating will not be an issue at this development.
- 6.10 Based on the above assessment, noise alone should not be considered a determining factor in relation to any planning permission being sought.

FIGURE 1 – Existing Site Showing Monitoring Locations



Map data ©2021 Google United Kingdom



FIGURE 2 – Proposed Site Layout



Key:

Colour on Figure 2	Sound Insulation Performance	Example Construction
	35dBR _w / 32dBR _w + C _{tr}	10mm Glass / 6 – 16mm Cavity / 6mm Glass
	29dBR _w / 25dBR _w + C _{tr}	4mm Glass / 6 – 16mm Cavity / 4mm Glass

APPENDIX A – Acoustic Terminology in Brief

Sound Description

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 discrete frequency - a 'pure tone' - most sound is made up of many different frequencies.

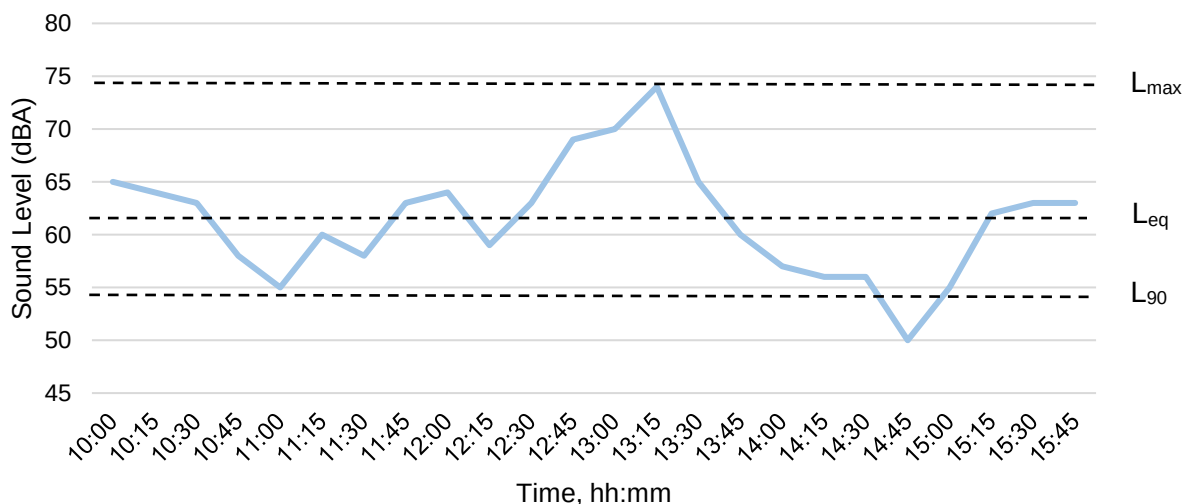
The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA*, normally used to assess the effect of noise on people. The *dBA* weighting emphasises or reduces the importance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

Sound Units

In order to assess environmental noise, measurements are carried out by sampling over specific periods of time, such as fifteen minutes or one hour, the statistically determined results being used to quantify various aspects of the sound.

The figure below shows an example of sound level varying with time. Because of this time variation, the same period of sound can be described by several different levels. The most common of these are described below. It should be noted that in many instances in the main body of text, the unit will be preceded by a dB descriptor in the report e.g. $L_{Aeq,T}$ could be written $dBL_{Aeq,T}$.

Example of Sound Varying with Time



Unit Type	Acoustic Unit	Description
Standard Acoustic Units		
Ambient Sound Level	$L_{Aeq, T}$	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 and can be considered as the "ambient" noise level.
Percentile Level	L_{A90}	The (A-weighted) sound level exceeded for 90% of a measurement period. It is the value often used to describe background noise.
Maximum Sound level	L_{Amax}	The maximum (A-weighted) sound level measured during a given time. 'Fast' or 'Slow' meter response should be cited.
Additional Acoustic Units		
Sound reduction index	R_w	Single number rating used to describe the <u>laboratory</u> airborne sound insulation properties of a material or building element over a range of frequencies, typically 100-3150Hz.
Apparent sound reduction index	R'_w	Single number rating used to describe the sound reduction index of an on-site construction over a range of frequencies, typically 100-3150Hz.
Element normalized level difference	$D_{n,e,w}$	Single number rating used to describe the sound insulation performance of small elements.

APPENDIX B – Noise Survey Details

Date & Time of Survey:	Saturday 5 June 2021, 2200 – 2330h. Thursday 10 June 2021, 1000 – 1115h					
Personnel:	Ross Chamberlain (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 ' <i>Electroacoustics – Sound level meters - Part 1 Specifications</i> ' 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
	10/06/21	Day	Dry	15°C	Negligible	10%
	05/06/21	Night	Dry	18°C		20%
Measurement Locations:	Measurements were undertaken at two locations around the development site. Identified as A and B on Figure 1 and described below. A – 1m from the façade of the proposed development on Loom Street. B – At the corner of Cutting Room Square.					
Measurement Details:	Measurements were undertaken over various periods in terms of L_{eq} , L_{10} , L_{90} , and L_{max} .					
Façade / Free-Field:	A - Façade, B – Free-field.					
	Full results for the attended measurements are given in Tables B1 and B2.					
Measured Data:	Full octave band centre frequency data was obtained for all measurements.					

TABLE B1 – Measured Daytime Noise Levels

Location	Period, h	Noise Level, dB				Comments
		L _{Aeq}	L _{A10}	L _{A90}	L _{Amax, F}	
A	1015 – 1030	52.5	52.6	46.2	73.3	Ambient noise levels due to distant road traffic and construction noise. Maximum noise levels due to occasional car pass bys on Loom Street.
	1030 – 1045	52.7	54.7	46.0	72.5	
	1045 – 1100	49.7	51.3	46.1	70.7	
	1100 – 1115	53.6	55.5	47.1	71.6	
B	1000 - 1030	57.4	60.4	50.2	73.8	Ambient due to distant road traffic. Maximum noise levels due to occasional car pass bys.

TABLE B2 – Measured Night-Time Noise Levels

Location	Period, h	Noise Level, dB			Comments
		L _{Aeq}	L _{A90}	L _{Amax, F}	
A	2200 – 2215	56.5	53.5	80.4	Ambient noise level due to patron noise on Cutting Room Square. Maximum noise level due to bins being emptied on Loom Street approx. 40m away.
	2215 – 2230	55.6	53.4	68.0	Ambient noise level due to patron noise on Cutting Room Square. Maximum noise level due to car pass by on Loom Street.
	2300 – 2315	56.5	53.7	71.2	Ambient noise level due to patron noise on Cutting Room Square. Maximum noise level due to car pass by on Loom Street.
	2315 – 2330	56.6	53.5	70.6	Ambient noise level due to patron noise on Cutting Room Square. Maximum noise level due to car pass by on Loom Street.
B	2242 - 2247	71.7	69.1	80.3	Ambient noise level due to patron noise on Cutting Room Square. Maximum noise level to patron activities.