



2A MERTON ROAD, BRISTOL

NOISE REPORT FOR PLANNING

Acoustics Report A2291 R01

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Report for:

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1 Introduction

Ion Acoustics is appointed by Missiato Design and Build to provide a noise assessment for the planning application for a building on Merton Road, Bristol to be converted into six flats. The proposal is to refurbish the existing building to provide residential accommodation on the ground, first, and second floors. The scheme also includes a small part of extension for first and second floor and a new roof mansard. This report is prepared for submission with the planning application.

The site is on Merton Road and is part of a small commercial estate and so there are several commercial buildings close to the proposed development on several sides. Merton Road is used for access to the commercial estate only, but the site is reasonably close to Gloucester Road, and therefore, also exposed to some road noise. Similar schemes where planning permission has been sought have had noise conditions imposed, and it is understood that the planning officer has requested a noise assessment for the site and that similar conditions may apply for this scheme.

In particular, the conditions are expected to include a requirement to control external noise affecting the dwellings. This report is produced to provide information on requirements for likely conditions in the decision notice for submission to Bristol City Council.

This report includes the assessment of noise from the existing environment, and the sound insulation requirements to control external noise sources.

To determine existing noise levels in the area, a noise survey was conducted over the period Wednesday 14th – Friday 16th May 2025. The site was found to be mainly affected by noise from the local commercial units, some vehicle noise on Merton Road and road noise from regular traffic on Gloucester Road (A38) to the west of the premises. The rear of the proposed development is dominated by noise from a motorcycle workshop during the day. This report describes:

- The methodology and results of the noise survey;
- Noise levels affecting the proposed premises;
- Assessment of building envelope sound insulation requirements;
- Appropriate noise limits for any new mechanical services plant.

2 Scheme Details

2.1 Site Location

Figure 1 shows an aerial photo of the development site (highlighted in red), and the noise measurement positions, MP1 and MP2. Gloucester Road, the A38, is a primary thoroughfare, connecting the centre to the northern areas of Bristol and beyond. It is often busy with traffic and has a lot of public activity in various forms in the surrounding areas. There are various commercial units in the area including a motorcycle workshop, several fitness gyms and other units.

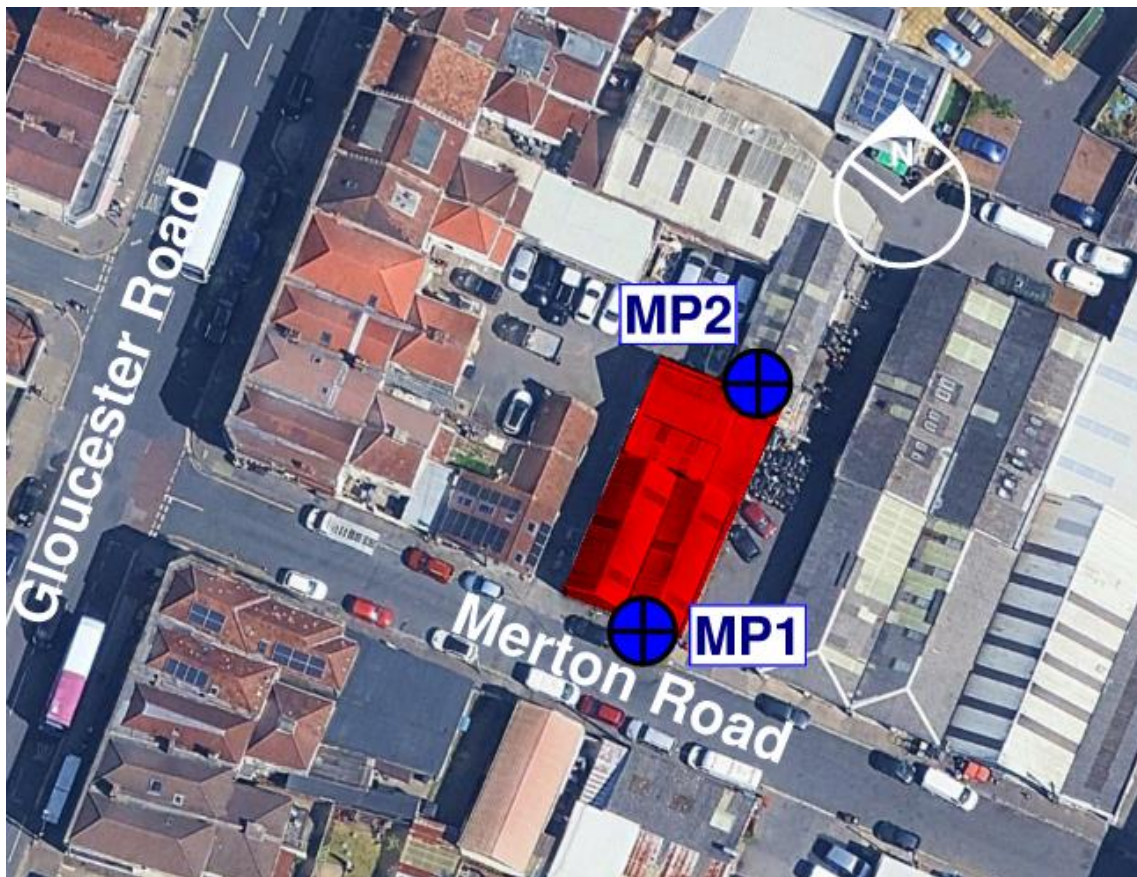


Figure 1: Aerial view of site with measurement positions displayed © Google Maps

2.2 Proposed Scheme

The existing building is a storage facility with part over two storeys. The existing building will be retained but modified to include an upper floor extension at the rear and a mansard roof to provide an extra floor. It will comprise six flats set over three storeys. Each flat will comprise a three or four bedrooms and a shared living area/kitchen.

Air Source Heat Pumps (ASHPs) are proposed for the development to the rear of the building. The floorplans for 2A Merton Road are given in Figures 2, 3, and 4.

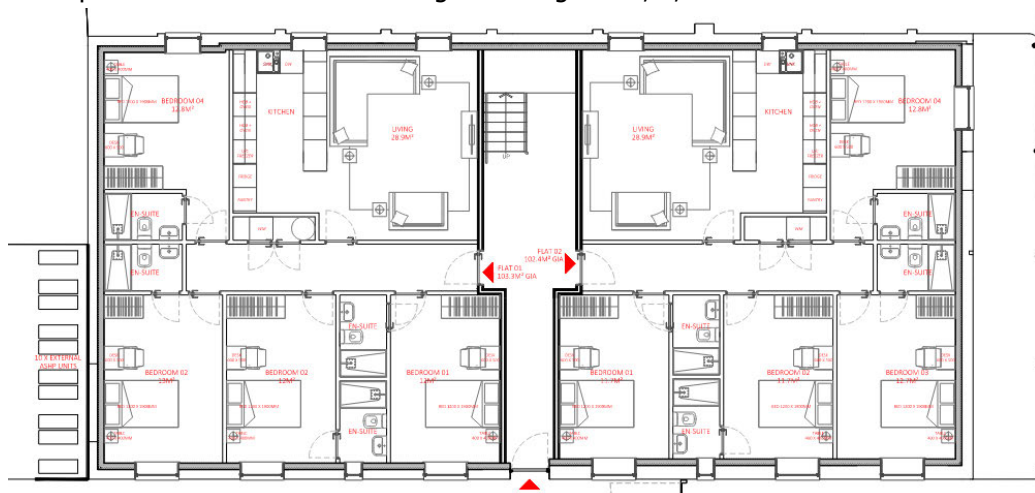


Figure 2 – Ground Floor Plan

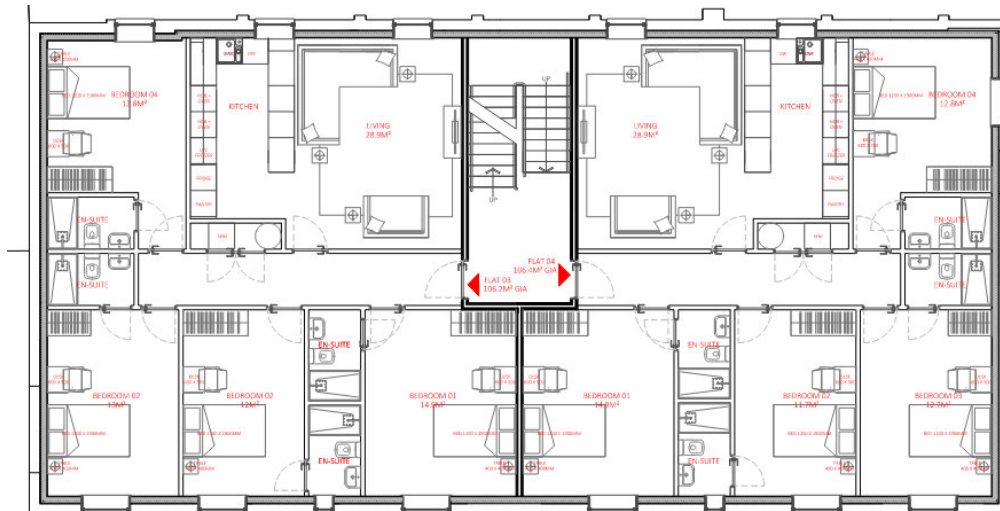


Figure 3 – First Floor Plan

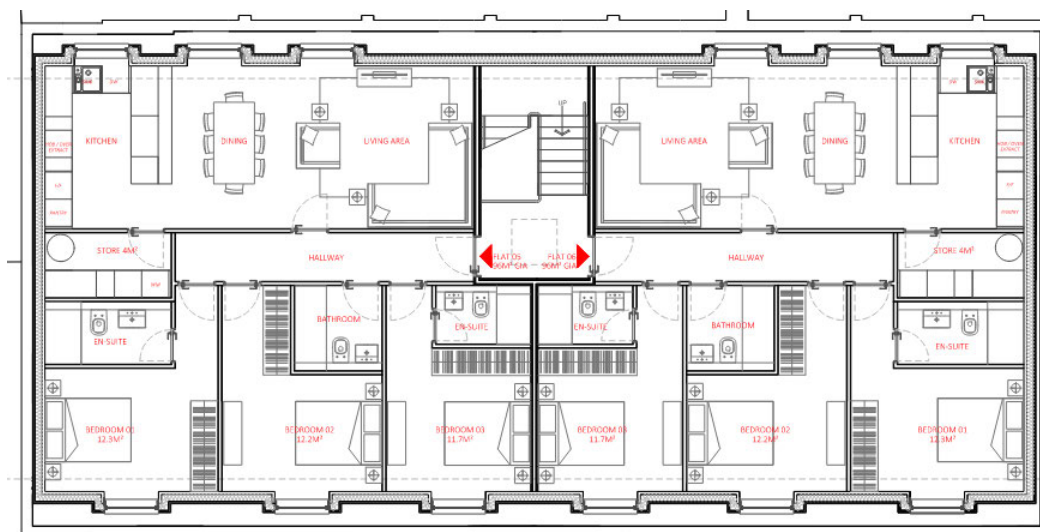


Figure 4 – Second Floor Plan

3 Planning Conditions and other Guidance

Similar schemes have been given conditions concerning noise as part of the planning permissions. These typically would require an assessment of external noise affecting the new dwellings from general environmental noise sources including road noise, commercial activity, the public, and plant.

3.1 Bristol City Council Guidance

The requirements for previous similar schemes in Bristol have been given conditions in respect of noise as part of the planning permissions. Typical requirements from BCC include the following:

"No development shall take place until a scheme of noise insulation measures for the development has been submitted to and approved in writing by the Council. The scheme of noise insulation measures shall include details the glazing and ventilation specification for bedrooms and living rooms."

The noise assessment shall be carried out by a suitably qualified acoustic consultant/engineer and shall take into account the provisions of BS 8233: 2014 Guidance on sound insulation and noise reduction for buildings.

The recommended design criteria for dwellings are as follows:

Daytime (07.00 - 23.00) 35 dB LAeq 16 hours in all rooms & 50 dB in outdoor living areas.

Night time (23.00 - 07.00) 30 dB LAeq 8 hours & LAmax 45 dB in bedrooms."

3.2 BS 8233: 2014 - Internal Noise Criteria

BS 8233: 2014 "Guidance on sound insulation and noise reduction for buildings" contains noise limits for developments of a residential nature that are usually set in terms of two noise parameters: the ambient Level, L_{Aeq} , and the maximum Level, L_{AFmax} . The L_{AFmax} is the highest noise level in a given period and is determined by individual events such as vehicle pass-bys. An L_{AFmax} limit is usually only applied at night when sleep disturbance is most likely to be an issue. The L_{Aeq} is defined as the steady-state noise level which has the same energy as the actual time-varying noise over the same time period. It is effectively the average noise level.

Appropriate internal noise levels are recommended in BS 8233:2014, shown in Table 1.

Table 1: Indoor Ambient Noise Levels from BS 8233: 2014

Activity	Location	Day (07:00 to 23:00)	Night (23:00 to 07:00)
Resting	Living rooms	35 dB L_{Aeq} , 16 hour	-
Dining	Dining room/area	40 dB L_{Aeq} , 16 hour	-
Sleeping - night Resting - day	Bedrooms	35 dB L_{Aeq} , 16 hour	30 dB L_{Aeq} , 8 hour

WHO guidelines propose internal limits of L_{Aeq} 35dB for living rooms, and L_{Aeq} 30dB and L_{AFmax} 42dB inside a bedroom at night. ProPG (Section 3.4) states that a level of L_{AFmax} 45dB Should be exceeded no more than ten times during the night.

The internal noise criteria in BS 8233: 2014 are followed by several notes:

"Note 1: Table 1 provides recommended levels for overall noise in the design of a building. These are the sum total of structure-borne and airborne noise sources. Groundborne noise is assessed separately and is not included as part of these targets, as human response to groundborne noise varies with many factors such as level, character, timing, occupant expectation and sensitivity.

Note 2: The levels shown in Table 1 are based on the existing guidelines issued by the WHO and assume normal diurnal fluctuations in external noise. In cases where local conditions do not follow a typical diurnal pattern, for example on a road serving a port in high levels of traffic at certain times of the night an appropriate alternative period, e.g. 1 hour, may be used but the level should be selected to ensure consistency with the levels of recommended in Table 1.

Note 3: These levels are based on annual average data and do not have to be achieved in all circumstances. For example, it is normal to exclude occasional events, such as fireworks night on New Year's Eve.

Note 4: Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or L_{AFmax} depending on the character and number of events per night. Sporadic noise events could require separate values.

Note 5: If relying on closed windows to meet the guide values, there needs to be appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.

Note 6: Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions achieved.

Note 7: Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal L_{Aeq} target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved. The more often internal L_{Aeq} levels start to exceed the internal L_{Aeq} target levels by more than 5 dB, the more that most people are likely to regard them as "unreasonable". Where such exceedances are predicted, applicants should be required to show how the relevant number of rooms affected has been kept to a minimum. Once internal L_{Aeq} levels exceed the target levels by more than 10 dB, they are highly likely to be regarded as "unacceptable" by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing unacceptable" noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form.

The internal noise limits proposed for this assessment are stated below in terms of bedrooms and living rooms. There are non-anonymous noise sources that are in close proximity to the proposed development, noise sources include a motorbike workshop. In the instances that the building will be subject to non-anonymous noises, a lower daytime internal noise limit is given for all bedrooms to provide greater protection.

- All Rooms Daytime: Typical L_{Aeq} 35 dB (07.00 to 23.00 hours)
- All Rooms Daytime: Non-anonymous noises L_{Aeq} 30 dB (07:00 to 23:00)
- Bedrooms at Night: L_{Aeq} 30 dB (23.00 to 07.00 hours), and L_{AFmax} 45dB not exceeded more than ten times.

3.3 National Planning Policy Framework

In 2012 the National Planning Policy Framework (NPPF) replaced a number of Planning Policy Statements with a single document which is intended to promote sustainable development. The NPPF was revised in December 2024^[1] and certain aspects of the guidance changed.

The NPPF sets out the Government's planning policies for England. The document is generally not prescriptive and does not provide noise criteria. Instead, it places the onus on local authorities to develop their own local plans and policies. Sections of the NPPF relating to noise are stated 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;

3.4 Noise Policy Statement for England (NPSE)

The Noise Policy Statement for England (NPSE) sets out the Government's policy on environmental, neighbourhood and neighbour noise for England. The policy sets out three aims:

- "avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impact on health and quality of life; and
- Where possible, contribute to the improvement of health and quality of life."

The NPSE introduces the following terms which are also used in NPPF:

^[1] <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

"NOEL – No Observed Effect Level

NOEL is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.

LOAEL – Lowest Observed Adverse Effect Level

LOAEL is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

SOAEL is the level above which significant adverse effects on health and quality of life occur."

However, neither the NPSE, nor the NPPF Planning Practice Guidance, define numeric criteria for the NOEL, LOAEL, or SOAEL. Instead, it is recommended in the NPSE that the limits of each effect level should be defined for each situation and location. The WHO "Guideline for Community Noise" and BS 8233:2014 recommend internal noise design targets for habitable rooms for the avoidance of negative health effects and to promote quality of life.

3.4.1 Planning Practice Guidance – Noise (Web Publication)

The planning practice guidance website provides advice of the application of the NPPF and the NPSE. The noise page "advises on how planning can manage potential noise impacts in new development".

Where residential development is planned close to sources of noise, the guidance gives examples of mitigation which may be included at the design stage: *"including noise barriers; and optimising the sound insulation provided by the building envelope"*.

The guidance also gives some further advice on interpretation of SOAEL as the level at which noise is noticeable and disruptive and where *"the noise causes a material change in behaviour and/or attitudes. E.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficult in getting back to sleep..."*

3.5 ProPG: Planning and Noise

The Professional Practice Guidance on Planning and Noise (May 2017) provides guidance on transport noise affecting new residential developments. The guidance was prepared by a working group formed of members of the Institute of Acoustics (IoA), the Association of Noise Consultants (ANC) and the Chartered Institute of Environmental Health (CIEH). It has no formal planning status but represents good industry practice. It is specifically for assessing noise from sites where transportation noise sources dominate. The guidance promotes a two-stage assessment approach:

Stage 1 – Initial Site Noise Risk Assessment; and,

Stage 2 – Full assessment and systematic appraisal of four key elements.

The stage 1 initial risk assessment indicates the likely risk of adverse effects from noise, assuming in the first instance that no mitigation was included within the proposals. The risk assessment is based on the measured or predicted noise levels during a "typical worst case" 24-hour period. Figure 1 of the document (adapted below as Figure 5) presents the Stage 1 assessment and

indicates that higher noise levels result in increased noise risk without mitigation. Figure 5 does not directly relate noise levels to specific risk categories, although the ProPG states that a negligible noise risk proudly correlates to noise levels not exceeding 50dB $L_{Aeq,16hr}$ (daytime) and 40dB $L_{Aeq,8hr}$ (night).

Day $L_{Aeq, 16 Hr}$	50 dB	55 dB	60 dB	65 dB	70 dB
	Negligible	Low	Medium		High
Night $L_{Aeq, 8 Hr}$	40 dB	45 dB	50 dB	55 dB	60 dB

Figure 5: ProPG Stage 1 Noise Risk Assessment (adapted from ProPG Figure 1)

Where the initial noise assessment indicates a higher risk of adverse noise effects, a stage 2 assessment is required. The stage 2 assessment is more involved than the stage 1 and requires systematic consideration of four elements:

Element 1 – Good Acoustic Design Process

The acoustic design of a building and any mitigation should be considered at an early stage of the design process. Following a good acoustic design process is considered a part of achieving a good design as required by the NPSE and NPPF. Guidance on the requirements for providing an Acoustic Design Statement (ADS) is given in Figure 2 of the ProPG.

Element 2 – Internal Noise Level Guidelines

Guidance on internal noise levels can be found in BS8233:2014 guidance on sound insulation and noise reduction for buildings. Figure 2 of the ProPG summarises the guidance from BS8233 but with several additions. The internal noise criteria are presented in Figure 2 of ProPG, and the relevant notes are presented in the text below Table 1 of this report.

Element 3 – External Amenity Area Noise Assessment

The guidance of the ProPG reflects and extends on the advice of BS8233 and PPG Noise. The guidance in the ProPG presents five points for consideration, the first being "If the external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended".

Element 4 – Assessment of Other Relevant Issue

"Other relevant issues" within the context of the ProPG include relevant national and local policies, which may have a bearing on the development.

Regarding developments located in higher-risk areas, ProPG says:

"This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS."

It goes on to explain what is meant by Good Acoustic Design:

"Good acoustic design is not just compliance with recommended internal and external noise exposure standards. Good acoustic design should provide an integrated solution whereby the

optimum acoustic outcome is achieved, without design compromises that will adversely affect living conditions and the inhabitants' quality of life or other sustainable design objectives and requirements.

"Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents."

3.6 Ventilation and Overheating: AVOG

The Acoustics, Ventilation, and Overheating Guidance (AVOG) was published by the Association of Noise Consultants (ANC) in January 2020¹. AVOG is guidance for acoustic practitioners and others involved in planning, developing, designing, and commissioning new dwellings to achieve an appropriate balance of internal noise levels, ventilation, and overheating control regarding external transportation noise. It seeks to encourage an assessment of these issues at the planning stage. It is not mandatory guidance but represents current best practices for assessing the issue. In particular, AVOG advises considering when noise levels are such that it is reasonable to control overheating with openable windows and when it may be too noisy. Part O Building Regulations refer to internal noise levels under conditions controlling overheating (e.g. open windows) but only apply to new buildings and is not relevant in this case.

It is generally accepted that some degree of elevated noise is accepted when residents choose to open windows, especially for overheating control. The ANC AVOG suggests internal ambient noise levels of L_{Aeq} 50dB during the day and L_{Aeq} 42dB during the night are acceptable limits with the windows open to control overheating; however, it acknowledges that there is a greater risk of disturbance in proximity to these values. A guidance value in AVOG was also given for individual maxima of events of L_{AFmax} 65 dB.

3.7 BS 4142: 2014 +A1: 2019 – Assessment Principles

The standard method for assessing noise of a commercial or industrial nature affecting housing, is British Standard BS 4142 "Method for rating and assessing industrial and commercial sound". A BS 4142 assessment is typically made by determining the difference between the industrial noise under consideration and the background sound level as represented by the L_{A90} parameter, determined in the absence of the industrial noise. The L_{A90} parameter is defined as the level exceeded for 90% of the measurement time, representing the underlying noise in the absence of short duration noise events such as dog barks or individual cars passing.

The industrial noise under consideration is assessed in terms of the ambient noise level, L_{Aeq} , but a character correction penalty can be applied where the noise exhibits certain characteristics such as distinguishable tones, impulsiveness or, if the noise is distinctively intermittent. The ambient noise level, L_{Aeq} is defined as the steady-state noise level with the same energy as the actual fluctuating sound over the same time period. It is effectively the average noise level during the

¹ <https://www.association-of-noise-consultants.co.uk/acoustics-ventilation-and-overheating-guidance-released/>

period. The industrial noise level (L_{Aeq}) with the character correction (if necessary) is known as rating level, L_{Ar} , and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The standard then states:

- *"Typically, the greater the difference, the greater the magnitude of the impact."*
- *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- *A difference of around +5dB 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 will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."*

The standard outlines a number of methods for defining appropriate 'character corrections' to determine the rating levels to account for tonal qualities, impulsive qualities, other sound characteristics and/or intermittency.

4 Noise Survey

A baseline noise survey was carried out over the period Monday 14th May – Wednesday 16th May 2025 on the front of the existing building and the rear of the existing building, as shown in Figure 1. The meters were unattended except for set up and collection.

Rion NL52 sound level meters with Type WS15 windshields were used and calibrated with a Brüel & Kjær Type 4231 calibrator at the start and end of the survey. No significant drift in calibration was noted on collection. The meter was set up to log various noise indices (L_{Aeq} , $L_{Amax,F}$, L_{A90} , L_{A01} , L_{A10}) in consecutive 15-minute periods. Both meters, and the calibrator, were within their respective third-party calibration periods.

Weather conditions on set up were sunny, the temperature was 17°C, with north-easterly winds of 4m/s, and there was 0% cloud cover. On collection, the weather conditions were sunny, the temperature was 16°C, with north-easterly winds of 4m/s in a north-easterly direction, and 10% cloud cover.

4.1 Location MP1 – Overlooking Merton Road

Measurements at location MP1 were made between 11:00 on 14th May and 11:00 on 16th May 2025. The measurement location is shown in Figure 6. The microphone was placed on a pole of out a window on the second floor at the front of the building at a position 1m from the façade overlooking Merton Road and with a view to the various . The microphone represented the noise affecting the southern facade.



Figure 6: A photo of MP1 taken from Merton Road looking north-west

4.2 Location MP2 – Rear of Merton Road

Measurements at location MP2 were made between 10:45 on 14th May and 10:45 on 16th May 2025. The measurement location is shown in Figure 7. The microphone was placed on a pole of out a window on the second floor at the rear of the building at a position 1m from the façade. The microphone had a view over a number of commercial units, including the motorcycle repair unit. This position is slightly further from the motorcycle repair unit than the proposed new windows, but there were no other safe or suitable positions to log.



Figure 7: A photo of MP2 taken from Merton Road side lane looking south-west

5 Noise Survey Results

The full noise data measured on site is tabulated in Appendix A.

5.1 Noise Levels Measured at MP1 – Overlooking Merton Road

Noise levels measured at MP1 are shown graphically in Figure 8 in terms of the 15-minute L_{Aeq} , L_{AFmax} and L_{A90} noise levels.

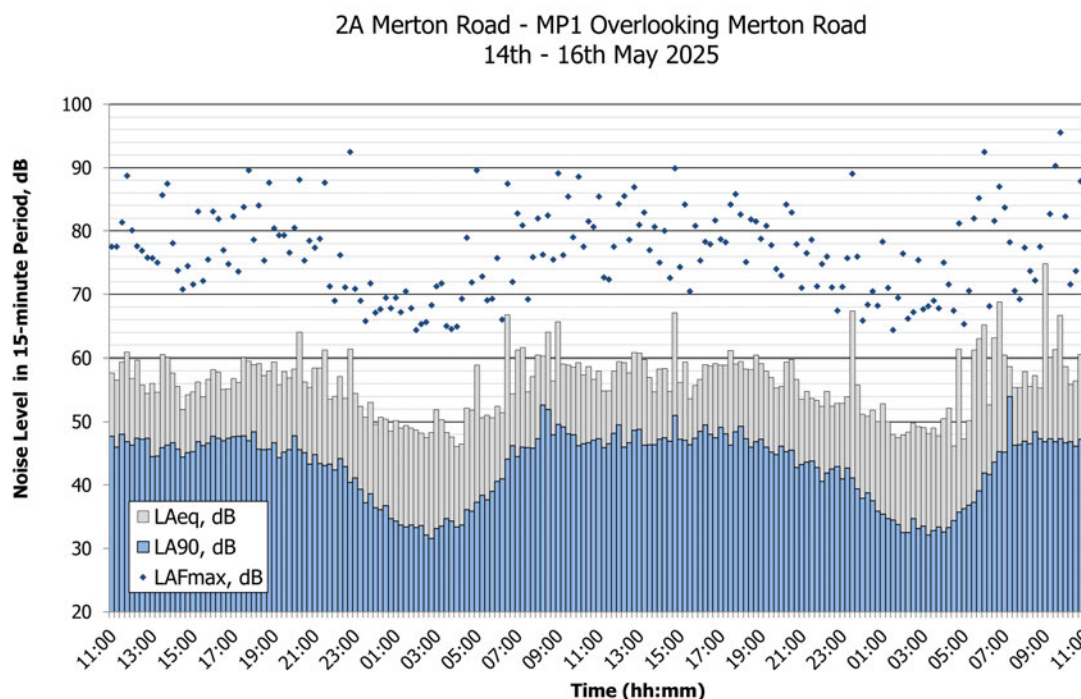


Figure 8: Noise Time History for MP1, overlooking Merton Road

The ambient noise levels are dominated by traffic noise from Gloucester Road, including from buses and emergency vehicles but include noise from local traffic including HGVs on Merton Road and any activity from commercial units. However, from site observations and consideration of the audio recordings, noise from commercial units was not particularly significant at this location. During the night, the traffic flow is reduced and was quieter, however, traffic noise is still present. The levels are moderately high, but not extreme, typically around L_{Aeq} 60dB, with some noticeable increases over shorter periods, usually associated with a higher L_{Amax} value. The ambient noise levels drop below L_{Aeq} 50dB in the night-time periods between around 00:00hrs and 05:15 but still stays above L_{Aeq} 45dB during the night, between these periods. The maxima were generally caused by road vehicles.

Due to the measurements being performed at 1m from the façade. The results are affected by reflections. To obtain equivalent free-field levels, the measurements have been reduced by 3dBA. Henceforth, results will be given in their equivalent free-field noise levels. Table 2 shows the results in terms of the 16-hour daytime and 8-hour night-time values. The values on 15th – 16th May (highlighted in green) are higher and are used in assessments.

Table 2: External Noise Levels at Location MP1 (free-field)

Day	Period	Duration	L_{Aeq} , dB	L_{AFmax} , dB, 10 exceedances of level
Monday 14 th – Wednesday 15 th May	Day (11:00 to 23:00, 23:00 to 11:00)	16 hrs	55.7	-
	Night (23:00 to 07:00)	8 hrs	51.5	67.9
Monday 15 th – Wednesday 16 th May	Day (11:00 to 23:00, 23:00 to 11:00)	16 hrs	57.9	-
	Night (23:00 to 07:00)	8 hrs	56.1	73.7

The typical sound spectra which have been derived relative to the dB(A) levels measured are provided in Table 3. The L_{Aeq} spectra are taken from the logarithmic average for both the daytime and the night-time L_{Aeq} indices, shown in Table 2. The L_{AFmax} value is taken from analysis of short-term data recorded to determine the 10 highest events based on a time of 2 minutes in line with Approved Document O guidance(not just the 10 highest $L_{Amax,15min}$ values). The typical L_{max} spectrum is derived from a logarithmic average of the 10 loudest events recorded over the night of Wednesday 14th May to Friday 16th May. These combined with the typical levels presented in Table 2, will be used to derive building façade sound insulation requirements.

Table 3: Sound Spectra Corrections relative to dB(A) level measured on Site at MP1

Spectral Corrections to dBA level.							
Parameter	Octave band centre frequency, Hz (dB)						
	63	125	250	500	1000	2000	4000
Day, L_{Aeq}	+2.8	-1.2	-4.1	-7.4	-7.3	-8.1	-8.1
Night, L_{Aeq}	+3.1	-6.4	-3.2	-8.6	-6.3	-6.9	-6.2
Night, L_{AFmax}	+2.0	-6.6	-5.3	-7.6	-7.0	-4.2	-8.8

5.2 Noise Levels Measured at MP2 – Rear of Merton Road

The time history chart for MP2 is given in Figure 9.

2A Merton Road - MP2 Rear of the Merton Road
14th - 16th May 2025

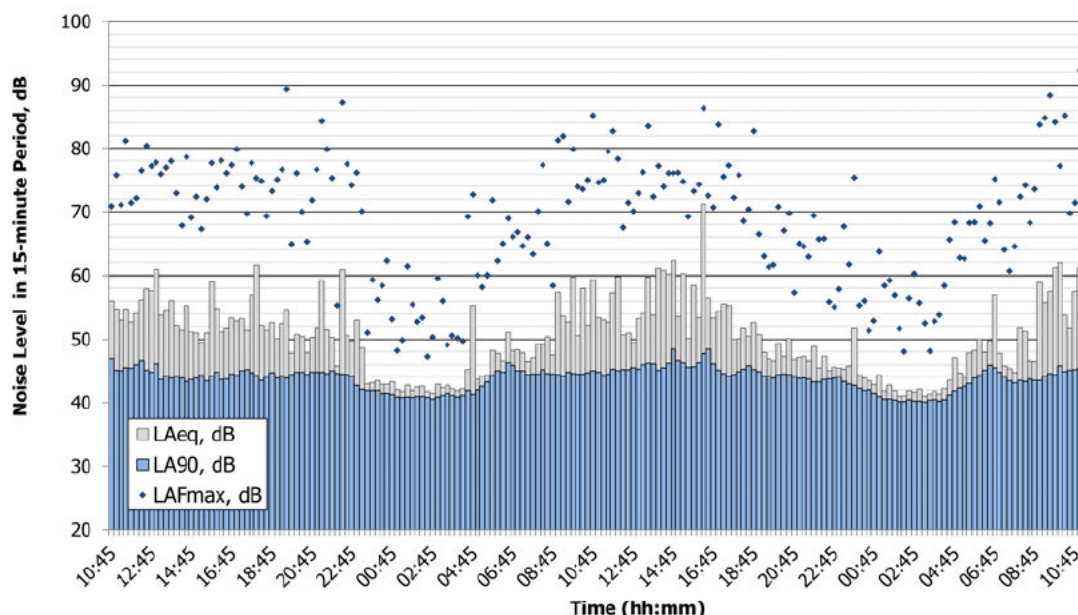


Figure 9: Noise Time History for MP2, rear of Merton Road

The levels are lower than at the front. Some noise was heard from the nearby workshops, including some typical workshop type noises from the motorcycle workshop. Engine noise from vehicles using the commercial estate, and likely including individual vehicles along the side lane adjacent to the building, was also heard, which contributed to the maxima. There was very faint music audible during the day, possibly from a gym, but the contribution was at a low level and well below the general ambient noise

Road traffic noise, assumed from Gloucester Road or potentially from Ashley Down Road to the north of the site, was also audible.

It is evident that there is some plant noise contributing to the climate, as during the night the L_{Aeq} and L_{A90} noise levels are reasonably similar and do not go below L_{A90} 40dB. The noise levels are again summarised in Table 4 with the worst-case measurement periods highlighted in green. And again, the results are affected by reflections, the measurements have been reduced by 3dBA to correct to free-field.

Table 4: External Noise Levels at Location MP2 (free-field)

Day	Period	Duration	L_{Aeq} , dB	L_{AFmax} , dB, 10 exceedances of level
Monday 14 th – Wednesday 15 th May	Day (10:45 to 23:00, 23:00 to 10:45)	16 hrs	51.6	-
	Night (23:00 to 07:00)	8 hrs	43.5	61.0
Monday 15 th – Wednesday 16 th May	Day (10:45 to 23:00, 23:00 to 10:45)	16 hrs	54.3	-
	Night (23:00 to 07:00)	8 hrs	43.9	62.4

The L_{AFmax} value and the spectra have been derived the same way as at MP1. The spectra are shown in Table 5.

Table 5: Sound Spectra Corrections relative to dB(A) level measured on Site at MP2

Parameter	Corrections						
	Octave band centre frequency, Hz (dB)						
	63	125	250	500	1000	2000	4000
Day, L_{Aeq}	+3.1	±0.0	-6.1	-5.3	-6.7	-8.0	-8.9
Night, L_{Aeq}	+7.1	-1.0	-1.9	-3.4	-4.3	-7.8	-12.1
Night, L_{AFmax}	+8.6	-1.1	-1.7	-6.4	-3.9	-7.1	-11.6

5.3 Typical Current Environmental Noise Levels

The summarised noise levels incident on the facades used to derive the internal noise levels for the building calculations are shown below in Table 6, which are given as the $L_{Aeq,16hr}$, $L_{Aeq,8hr}$, and the L_{AFmax} . The values at MP1 are used as shown with no correction. However, MP2 was set back from the motorcycle workshop and there are affected windows proposed which would be closer. Therefore, a distance correction is proposed for that position to represent the worst affected levels. The levels measured, and those used in the building envelope calculation are both shown based on a point source distance loss. The locations they apply are colour coded and shown in Figure 10.

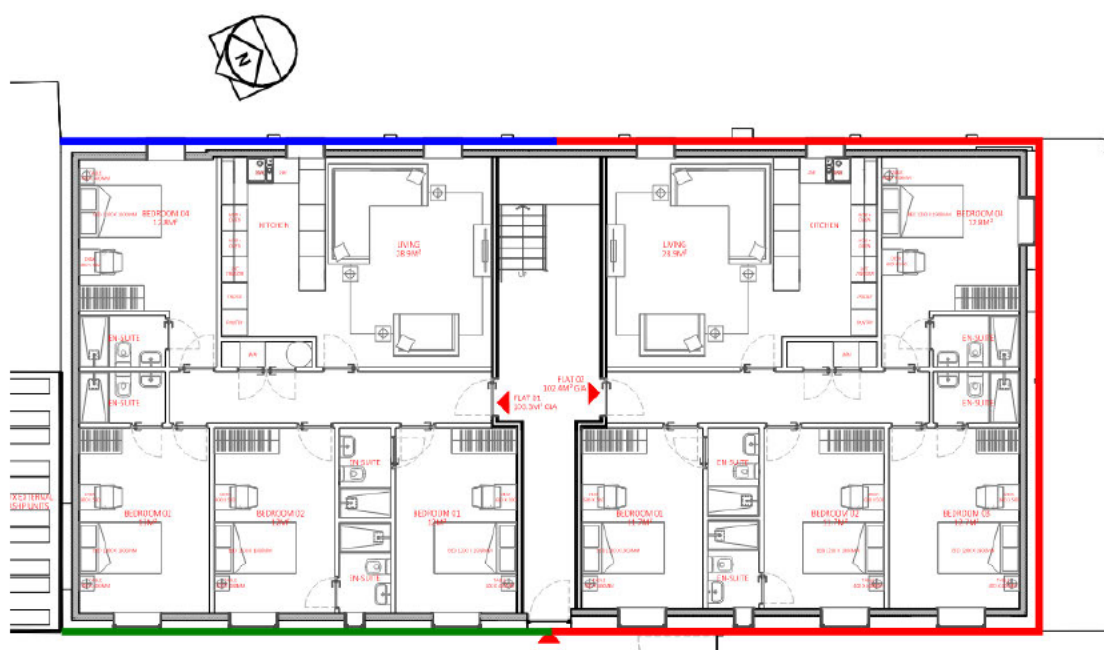


Figure 10 – Facades Used in Calculations

Table 6: Summary Noise Levels at 2A Merton Road

Location	Period	Values Used in Building Envelope Calculation (Free-Field)
Front – MP1 (red façade)	Day	$L_{Aeq,16hr}$ 57.9dB
	Night	$L_{Aeq,8hr}$ 56.1dB
	Night	L_{Amax} 73.7dB
Rear – MP2 (green façade)	Day	$L_{Aeq,16hr}$ 54.3dB
	Night	$L_{Aeq,8hr}$ 43.9dB
	Night	L_{Amax} 62.4dB
Rear – Closest window to workshop (blue façade)	Day	$L_{Aeq,16hr}$ 60.8dB
	Night	$L_{Aeq,8hr}$ 43.9dB
	Night	L_{Amax} 62.4dB

6 Background Sound Levels

The background sound levels measured can be used to determine noise limits for any fixed plant that may be proposed. The typical background sound levels are derived based on guidance in BS4142.

The typical background sound level has been determined by plotting the frequency distribution of the integer L_{A90} values. The frequency distribution histogram for the measurement period, from which the typical background noise levels are derived, is provided in Appendix B.

The background noise level, L_{A90} , is the value in this case exceeded no more than 30% of the overall time period which is considered here to be 'typical'. This method of determining the typical background noise level ensures a conservative assessment as, based on this data, the background noise level will be higher 70% of the time.

The background sound levels measured at each monitoring position is given in Table 7.

Table 7: Background Sound Measurements at MP1 and MP2

Monitoring Position	Time Period	Background Sound Level, L_{A90} dB
MP1	Day (07:00 – 23:00)	45
	Night (23:00 – 07:00)	33
MP2	Day (07:00 – 23:00)	44
	Night (23:00 – 07:00)	41

7 Building Envelope Sound Insulation Assessment

We have prepared building envelope calculations based on the methodology in BS EN 12354 to determine the performance requirements of the building envelope and ventilation paths to meet the internal noise limits.

To assess the noise intrusion, consideration has been made for existing noise levels on the different facades of the building, shown in Figure 10.

The noise levels incident on the facades in Figure 10 have been derived as follows:

Red Façade – The worst-case day and night time noise levels as measured at MP1

Green Façade – The worst-case day and night noise levels as measured at MP2



Blue Façade – The worst-case day and night time noise levels corrected from measurements at MP2. The daytime noise levels are heavily affected by the motorcycle workshop. The daytime noise levels have been distance corrected to the most affected window. The assumed daytime noise levels incident on the blue façade are $L_{Aeq,16hr}$ 60.8dB.

7.1 Sound Insulation Methodology

Sound insulation calculations for the residential rooms have been prepared in accordance with BS EN 12354-3 to determine the extent of the sound insulation required to control noise levels to meet the noise limits discussed earlier in the report. Examples of these calculations are provided in Appendix C. All dimensions and room labels have been taken off the architect's scaled drawings.

The window specification is given in terms of the sound reduction index, R_w , as determined in an acoustics laboratory.

7.2 Background Ventilation

Red façade (south)

The rooms overlooking Merton Road include bedrooms for all three floors. There is a kitchen on the second floor which also overlooks Merton Road.

Considering the noise levels shown in Table 6, the internal levels with windows open (assuming 13dB) are L_{Aeq} 45dB and 43dB for the day and the night time, respectively, which is over the standard internal BS8233 limits of $L_{Aeq,16hours}$ 35dB and $L_{Aeq,8hours}$ 30dB. So openable windows are not acceptable to provide standard background ventilation, although that is common in most urban areas.

However, the levels are not exceptionally high and compliance with the limits can be achieved with fairly standard double glazing and acoustic trickle ventilation. R_w 35dB (e.g. 6/12/8) would be required for the windows in all rooms to the front of the building. Trickle vents in the order of $D_{ne,w}$ 41dB would be required for the rooms on the blue façade.

Green Façade

The rooms on the green façade include bedrooms for all three floors.

Considering the noise levels shown in Table 6, the internal levels with windows open (again assuming 13dB) are L_{Aeq} 41dB and 31dB for the day and the night time, respectively, which is slightly over the standard internal BS8233 limits to rely on windows to be opened for background ventilation. So again, openable windows cannot be relied on for the standard background ventilation.

As the façade is fairly well shielded from major noise sources, compliance with the limits can be achieved with standard double glazing and trickle ventilation. R_w 33dB (e.g. 6/12/6) would be required for the windows in all rooms on the green façade. Standard trickle vents of at least $D_{ne,w}$ 25dB are recommended for the green façade.

Blue Façade

The blue façade is subject to noise from the motorcycle workshop. The daytime internal noise limit is L_{Aeq} 30dB, 5dBA lower than the standard BS8233 limits to provide additional control for this façade from the non-anonymous noise of the workshop. The daytime levels were corrected as described previously.

The daytime internal noise levels through an open window assuming 13dB attenuation would be 48dBA, which is again over the daytime internal noise limits of L_{Aeq} 30dB and therefore cannot rely on windows to be opened for standard background ventilation.

The internal noise limits can be met with reasonably standard double glazing and acoustic trickle ventilation. With R_w 33dB (e.g. 6/12/6) windows and $D_{ne,w}$ 41dB trickle ventilation internal noise limits L_{Aeq} 30dB can be achieved. We note that the windows are quite small which helps with the performance requirements, and they face the lane, but not directly to the motorcycle workshop.

7.3 AVOG Noise Limits

The scheme is a change of use, so the requirements of Building Regulation Part O do not apply. However, the requirements of AVOG commonly need to be considered. Regarding overheating control, a simplified assessment under the AVOG has been carried out in Table 7 including

considering attenuation through an open window (-13dB). The most affected room has been shown for each time period.

Table 7: External free-field noise levels with window attenuation and AVOG limits at the front of the building (MP1).

Façade	Time Period	External Noise Level (Free field)	Window Attenuation - 13dBA	AVOG Limit
Red	Day $L_{Aeq,16hours}$ dB	57.9	44.9	50
	Night $L_{Aeq,8hours}$ dB	56.1	43.1	42
	Night $L_{AFMax,8hours}$ dB	73.7	60.7	65
Green	Day $L_{Aeq,16hours}$ dB	54.3	41.3	50
	Night $L_{Aeq,8hours}$ dB	43.9	30.9	42
	Night $L_{AFMax,8hours}$ dB	62.4	49.4	65
Blue	Day $L_{Aeq,16hours}$ dB	60.8	47.8	50
	Night $L_{Aeq,8hours}$ dB	43.9	30.9	42
	Night $L_{AFMax,8hours}$ dB	62.4	49.4	65

The majority of the noise levels affecting the building are low enough for overheating to be controlled by open windows and still meet the AVOG limits. There is one slight exceedance of 1dBA where the noise levels are over the AVOG limits on the red façade during the night. It may be that this small excess is considered acceptable considering the development is formed by material change of use. AVOG is a guidance document, and it is not part of formal planning regulations. It is therefore noted that there is no building regulation or other formal mandatory requirement, in this case.

On each other façade, with the windows open for overheating control (again assuming 13dB attenuation), the internal equivalent noise level would comply with AVOG limits for daytime and night time. Windows would be permitted to be openable on other facades regarding overheating and noise.

7.4 Sound Insulation Requirements

Below are the R_w requirements and spectral values for the glazing and ventilation to meet the internal noise limits shown in Table 8. The calculations have been prepared to demonstrate that suitable conditions can be achieved, and an example form of construction provided. Other forms of construction with difference performance may also be suitable

The table shows the minimum performance values in each octave band, although, Other options may be acceptable subject to meeting the internal noise limits.

Table 8: Glazing and Trickle Vent Requirements

Facade	Element	Octave Band Centre Frequency							Sound Insulation
		63	125	250	500	1k	2k	4k	
Red	Window	23	23	23	30	39	36	43	R _w 35 dB e.g. 6/12/8
	Trickle Vent	33	33	34	40	44	40	40	D _{ne,w} 41 dB
Green	Window	24	24	22	29	39	33	38	R _w 33 dB e.g. 6/12/6
	Trickle Vent	29	29	22	32	30	29	29	D _{ne,w} 23 dB
Blue	Window	24	24	22	29	39	33	38	R _w 33 dB e.g. 6/12/6
	Trickle Vent	33	33	34	40	44	40	40	D _{ne,w} 41 dB

Secondary glazing or MVHR may be used in place of the construction as shown in Table 8. In both cases they will be improvements to the sound insulation.

8 Plant Noise Emissions Limits

There may be plant associated with the proposed development, such as MVHR if that were to be provided. Where individual ASHPs are proposed for each flat, then they can, however, be designed to a fixed limit at third party receptors in line with CIEH and MCS 020 Guidance.

With regard to ventilation for the proposed development, the noise limits proposed for new plant emissions have been derived from the background sound level, L_{A90}, measured for daytime (0700hrs – 2300hrs) and night-time (2300hrs - 0700hrs) periods.

Of the typical background noise levels, the lowest measured during each measurement period were L_{A90} 44dB at MP2 and L_{A90} 33dB at MP1 during the day and night, respectively (highlighted in red in Table 7). These values shall be used to set plant noise limits. As these are the lowest of the measured typical background noise levels it will form a robust assessment. The limit is derived in line with BS4142:2014 guidance which states that a rating level no higher than the background level is an indication of low noise impact.

The derived plant noise limits are shown below in Table 9.

Table 9: Derived noise limits for other nearby existing residential receptors

Period	Duration	Typical L _{A90} , dB	Plant noise requirement, dB	Plant noise limit, L _{Ar} , dB
Daytime	16 hr	44	+/-0	44
Night-time	8 hr	33		33

The plant noise limits for any given receptor shall be **L_{Ar} 44dB** and **L_{Ar} 33dB**, during the day (07:00 – 23:00) and night (23:00 – 07:00), respectively. The noise rating level, L_{Ar}, shall include the specific sound level, and any character corrections (tonality, impulsivity, intermittency, and other) at a given noise-sensitive receptor.



9 Summary

Ion Acoustics has undertaken a noise assessment for a proposed development at 2A Merton Road in Bristol. The assessment has considered the potential noise impact from road activity at the front of the development and industrial noises from a motorcycle workshop to the rear of the development. A noise survey to determine the existing noise levels on site was carried out.

The assessment has considered and set out the requirements of sound insulation for windows and ventilation in respect of acoustics.

Location MP1 – Overlooking Merton Road

Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
14/05/2025 11:00	57.7	77.5	47.7	14/05/2025 23:30	50.7	65.8	37.2
14/05/2025 11:15	56.6	77.5	46.0	14/05/2025 23:45	53.1	71.7	38.6
14/05/2025 11:30	59.4	81.4	48.0	15/05/2025 00:00	49.6	67.1	36.4
14/05/2025 11:45	60.9	88.7	46.8	15/05/2025 00:15	50.7	67.7	36.1
14/05/2025 12:00	56.8	80.1	46.3	15/05/2025 00:30	50.4	69.5	36.7
14/05/2025 12:15	59.7	77.6	47.4	15/05/2025 00:45	48.5	67.8	34.7
14/05/2025 12:30	55.8	76.9	47.2	15/05/2025 01:00	50.2	69.5	34.3
14/05/2025 12:45	54.5	75.8	47.4	15/05/2025 01:15	49.0	67.2	33.7
14/05/2025 13:00	56.0	75.7	44.5	15/05/2025 01:30	49.4	70.5	33.4
14/05/2025 13:15	54.6	75.0	44.6	15/05/2025 01:45	49.0	67.8	33.7
14/05/2025 13:30	60.5	85.7	45.9	15/05/2025 02:00	48.7	64.4	33.3
14/05/2025 13:45	60.1	87.5	46.3	15/05/2025 02:15	48.2	65.3	33.6
14/05/2025 14:00	57.7	78.1	46.7	15/05/2025 02:30	47.5	65.6	32.1
14/05/2025 14:15	55.6	73.8	45.7	15/05/2025 02:45	48.3	68.3	31.6
14/05/2025 14:30	51.9	70.8	44.4	15/05/2025 03:00	51.9	71.3	33.1
14/05/2025 14:45	54.2	74.5	45.1	15/05/2025 03:15	50.3	71.7	33.5
14/05/2025 15:00	54.7	71.6	45.3	15/05/2025 03:30	48.3	65.0	34.7
14/05/2025 15:15	56.3	83.1	46.8	15/05/2025 03:45	47.6	64.5	34.3
14/05/2025 15:30	53.9	72.1	46.2	15/05/2025 04:00	46.1	64.9	33.4
14/05/2025 15:45	56.7	75.5	46.6	15/05/2025 04:15	46.5	69.3	33.7
14/05/2025 16:00	58.2	83.1	47.7	15/05/2025 04:30	52.1	78.9	36.1
14/05/2025 16:15	57.8	81.9	47.4	15/05/2025 04:45	51.8	71.9	35.9
14/05/2025 16:30	55.1	77.0	47.0	15/05/2025 05:00	58.9	89.6	37.3
14/05/2025 16:45	55.2	74.8	47.4	15/05/2025 05:15	50.6	72.8	38.4
14/05/2025 17:00	56.8	82.3	47.6	15/05/2025 05:30	51.0	69.1	37.7
14/05/2025 17:15	56.2	73.6	47.7	15/05/2025 05:45	50.6	69.3	39.0
14/05/2025 17:30	60.1	83.8	47.8	15/05/2025 06:00	52.4	75.7	40.6
14/05/2025 17:45	59.6	89.6	47.0	15/05/2025 06:15	51.4	66.0	41.0
14/05/2025 18:00	59.0	78.6	48.4	15/05/2025 06:30	66.8	87.5	44.1
14/05/2025 18:15	59.2	84.0	45.7	15/05/2025 06:45	54.4	72.0	46.2
14/05/2025 18:30	57.3	75.3	45.6	15/05/2025 07:00	61.2	82.8	44.5
14/05/2025 18:45	58.0	87.6	45.7	15/05/2025 07:15	61.6	80.9	46.0
14/05/2025 19:00	59.4	80.4	46.7	15/05/2025 07:30	54.7	69.2	45.9
14/05/2025 19:15	55.8	79.3	44.3	15/05/2025 07:45	57.1	75.9	45.8
14/05/2025 19:30	57.9	79.3	45.2	15/05/2025 08:00	60.4	82.0	47.3
14/05/2025 19:45	56.9	76.6	45.6	15/05/2025 08:15	60.3	76.3	52.6
14/05/2025 20:00	58.3	80.5	47.8	15/05/2025 08:30	64.0	82.5	51.9
14/05/2025 20:15	64.0	88.1	45.6	15/05/2025 08:45	56.4	75.5	47.9
14/05/2025 20:30	56.3	75.3	45.1	15/05/2025 09:00	65.7	89.1	49.6
14/05/2025 20:45	55.4	78.5	43.3	15/05/2025 09:15	59.1	76.2	49.2
14/05/2025 21:00	58.5	77.4	44.8	15/05/2025 09:30	58.9	85.4	48.1
14/05/2025 21:15	58.5	78.8	43.4	15/05/2025 09:45	58.6	79.0	47.9
14/05/2025 21:30	61.2	87.6	43.1	15/05/2025 10:00	59.3	88.6	46.2
14/05/2025 21:45	53.5	71.3	43.3	15/05/2025 10:15	57.4	77.5	46.5
14/05/2025 22:00	54.0	69.0	42.4	15/05/2025 10:30	58.7	81.5	46.7
14/05/2025 22:15	57.1	76.2	44.2	15/05/2025 10:45	56.7	80.7	47.1
14/05/2025 22:30	53.7	71.1	42.9	15/05/2025 11:00	58.0	85.4	47.3
14/05/2025 22:45	61.4	92.5	40.4	15/05/2025 11:15	54.9	72.7	45.9
14/05/2025 23:00	54.5	70.9	41.1	15/05/2025 11:30	54.9	72.4	46.5
14/05/2025 23:15	52.4	69.0	39.3	15/05/2025 11:45	58.0	77.5	48.2

2A Merton Road, Bristol
Noise Report for Planning
Appendix A – Tabulated Noise Survey Data



Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
15/05/2025 12:00	59.5	84.3	49.5	16/05/2025 00:30	51.8	70.5	37.5
15/05/2025 12:15	59.3	85.5	46.0	16/05/2025 00:45	50.0	68.2	35.9
15/05/2025 12:30	57.7	78.6	46.7	16/05/2025 01:00	52.8	78.3	35.4
15/05/2025 12:45	60.8	86.9	48.6	16/05/2025 01:15	50.0	71.0	34.7
15/05/2025 13:00	60.7	81.0	48.8	16/05/2025 01:30	48.0	64.4	34.5
15/05/2025 13:15	59.8	82.9	46.3	16/05/2025 01:45	47.5	69.5	33.8
15/05/2025 13:30	57.0	77.0	46.4	16/05/2025 02:00	47.9	76.4	32.5
15/05/2025 13:45	54.7	80.7	46.4	16/05/2025 02:15	48.4	66.2	32.5
15/05/2025 14:00	58.3	75.0	47.2	16/05/2025 02:30	49.8	67.2	34.7
15/05/2025 14:15	58.4	80.0	47.5	16/05/2025 02:45	49.2	75.4	33.1
15/05/2025 14:30	54.8	72.6	46.9	16/05/2025 03:00	49.1	67.7	33.5
15/05/2025 14:45	67.1	89.9	51.0	16/05/2025 03:15	48.1	68.1	32.1
15/05/2025 15:00	56.2	74.3	47.2	16/05/2025 03:30	49.0	69.0	32.8
15/05/2025 15:15	59.4	84.2	47.1	16/05/2025 03:45	47.7	67.8	33.4
15/05/2025 15:30	53.6	70.5	46.4	16/05/2025 04:00	50.5	75.0	32.6
15/05/2025 15:45	55.7	80.8	47.4	16/05/2025 04:15	52.1	71.6	33.3
15/05/2025 16:00	56.7	75.3	48.5	16/05/2025 04:30	46.2	67.4	34.4
15/05/2025 16:15	59.0	78.3	49.5	16/05/2025 04:45	61.4	81.2	35.7
15/05/2025 16:30	58.8	77.9	48.0	16/05/2025 05:00	47.3	65.3	36.3
15/05/2025 16:45	59.2	81.7	47.5	16/05/2025 05:15	50.2	70.6	36.8
15/05/2025 17:00	58.9	78.7	49.1	16/05/2025 05:30	61.2	82.0	37.3
15/05/2025 17:15	58.9	78.2	48.1	16/05/2025 05:45	63.0	85.2	39.1
15/05/2025 17:30	61.1	84.2	46.3	16/05/2025 06:00	65.2	92.5	41.9
15/05/2025 17:45	59.1	85.8	48.4	16/05/2025 06:15	52.7	68.1	41.7
15/05/2025 18:00	59.5	82.6	49.3	16/05/2025 06:30	63.2	81.6	43.6
15/05/2025 18:15	58.3	75.1	47.3	16/05/2025 06:45	68.8	87.0	45.3
15/05/2025 18:30	58.2	81.8	46.0	16/05/2025 07:00	60.4	83.7	45.2
15/05/2025 18:45	60.4	81.5	46.8	16/05/2025 07:15	58.7	78.2	54.0
15/05/2025 19:00	59.2	78.8	47.2	16/05/2025 07:30	55.4	70.6	46.3
15/05/2025 19:15	58.0	80.8	46.0	16/05/2025 07:45	55.4	69.2	46.4
15/05/2025 19:30	57.0	77.8	45.2	16/05/2025 08:00	57.9	77.4	46.9
15/05/2025 19:45	55.3	74.0	44.8	16/05/2025 08:15	55.6	73.7	46.5
15/05/2025 20:00	55.6	73.0	46.1	16/05/2025 08:30	57.3	72.2	48.4
15/05/2025 20:15	59.4	84.2	45.3	16/05/2025 08:45	55.3	77.5	47.3
15/05/2025 20:30	59.8	82.9	45.5	16/05/2025 09:00	74.8	109.4	46.8
15/05/2025 20:45	56.7	77.9	42.8	16/05/2025 09:15	60.1	82.7	47.3
15/05/2025 21:00	53.5	71.0	43.2	16/05/2025 09:30	61.3	90.3	46.8
15/05/2025 21:15	54.8	76.5	43.6	16/05/2025 09:45	66.7	95.5	47.3
15/05/2025 21:30	53.7	78.6	43.8	16/05/2025 10:00	58.7	82.3	46.7
15/05/2025 21:45	53.4	71.3	42.8	16/05/2025 10:15	55.9	71.6	46.8
15/05/2025 22:00	52.4	74.8	40.6	16/05/2025 10:30	56.4	73.7	46.1
15/05/2025 22:15	54.8	76.0	41.9	16/05/2025 10:45	60.5	87.9	47.2
15/05/2025 22:30	52.4	71.1	42.5	16/05/2025 11:00	66.0	97.0	47.3
15/05/2025 22:45	52.9	67.4	42.9	16/05/2025 11:15	67.0	96.2	43.8
15/05/2025 23:00	52.9	71.2	41.0				
15/05/2025 23:15	53.9	75.7	42.7				
15/05/2025 23:30	67.4	89.0	41.1				
15/05/2025 23:45	55.8	76.0	39.4				
16/05/2025 00:00	51.2	65.9	37.9				
16/05/2025 00:15	50.9	68.4	38.8				

MP2 – Rear of Merton Road

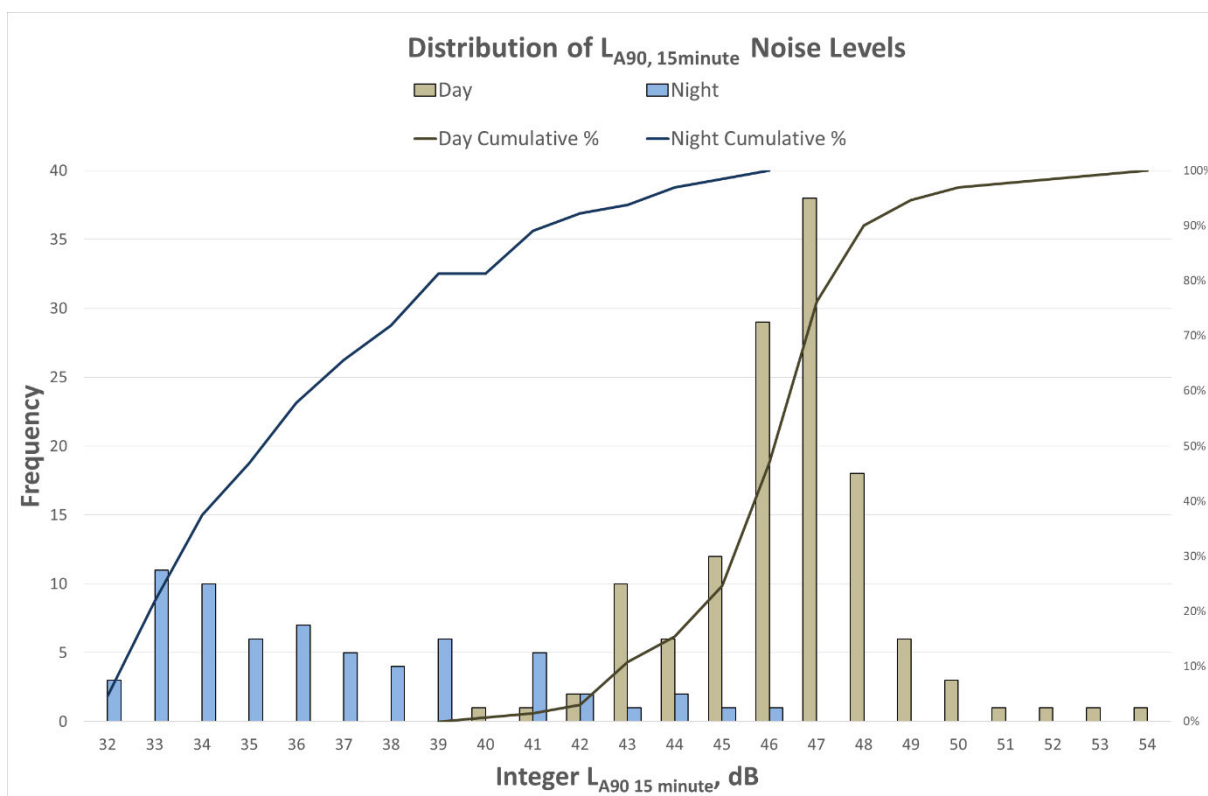
Time	L _{Aeq} dB	L _{Amax,F} dB	L _{Af90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{Af90} dB
14/05/2025 10:45	56.0	70.9	46.9	14/05/2025 23:15	48.6	70.1	42.1
14/05/2025 11:00	54.8	75.8	45.1	14/05/2025 23:30	43.0	51.1	41.9
14/05/2025 11:15	53.0	71.1	45.0	14/05/2025 23:45	43.1	59.4	41.9
14/05/2025 11:30	54.8	81.2	45.5	15/05/2025 00:00	43.4	56.2	41.9
14/05/2025 11:45	52.7	71.4	45.4	15/05/2025 00:15	42.9	58.4	41.4
14/05/2025 12:00	54.1	72.1	46.0	15/05/2025 00:30	42.9	62.3	41.4
14/05/2025 12:15	56.2	76.5	46.6	15/05/2025 00:45	43.3	53.1	41.3
14/05/2025 12:30	57.9	80.4	45.1	15/05/2025 01:00	42.0	48.2	40.9
14/05/2025 12:45	57.6	77.2	44.8	15/05/2025 01:15	41.7	49.9	40.8
14/05/2025 13:00	61.0	77.8	46.1	15/05/2025 01:30	42.7	61.4	40.9
14/05/2025 13:15	53.8	76.0	43.6	15/05/2025 01:45	41.9	55.5	40.8
14/05/2025 13:30	54.6	77.0	44.1	15/05/2025 02:00	42.5	52.7	41.0
14/05/2025 13:45	56.1	78.0	43.9	15/05/2025 02:15	42.6	53.3	41.0
14/05/2025 14:00	52.1	72.9	44.0	15/05/2025 02:30	41.7	47.2	40.8
14/05/2025 14:15	51.4	67.8	43.9	15/05/2025 02:45	41.5	50.4	40.6
14/05/2025 14:30	55.3	78.6	43.3	15/05/2025 03:00	42.9	59.6	40.9
14/05/2025 14:45	51.2	69.1	43.6	15/05/2025 03:15	42.3	56.1	41.1
14/05/2025 15:00	51.0	72.4	43.9	15/05/2025 03:30	42.7	49.1	41.4
14/05/2025 15:15	49.5	67.3	44.3	15/05/2025 03:45	42.2	50.6	41.1
14/05/2025 15:30	51.0	72.0	43.4	15/05/2025 04:00	41.9	50.2	40.9
14/05/2025 15:45	59.0	77.7	44.1	15/05/2025 04:15	42.2	49.7	41.1
14/05/2025 16:00	54.9	73.8	44.8	15/05/2025 04:30	45.2	69.2	41.9
14/05/2025 16:15	51.2	78.1	43.6	15/05/2025 04:45	55.3	72.7	41.3
14/05/2025 16:30	51.7	76.1	43.7	15/05/2025 05:00	43.7	60.1	42.0
14/05/2025 16:45	53.3	77.4	44.5	15/05/2025 05:15	44.1	58.2	42.5
14/05/2025 17:00	52.8	79.9	44.3	15/05/2025 05:30	44.4	60.1	43.2
14/05/2025 17:15	53.2	73.9	45.0	15/05/2025 05:45	48.2	71.8	44.3
14/05/2025 17:30	51.4	69.7	45.2	15/05/2025 06:00	47.7	62.3	45.0
14/05/2025 17:45	57.0	77.7	44.7	15/05/2025 06:15	46.6	65.0	44.8
14/05/2025 18:00	61.6	75.3	44.3	15/05/2025 06:30	51.1	68.9	46.3
14/05/2025 18:15	52.1	74.9	43.5	15/05/2025 06:45	48.2	66.1	45.9
14/05/2025 18:30	51.4	69.3	44.0	15/05/2025 07:00	48.3	66.8	45.0
14/05/2025 18:45	52.6	73.2	44.7	15/05/2025 07:15	47.8	64.6	45.0
14/05/2025 19:00	50.1	75.1	43.9	15/05/2025 07:30	46.5	66.0	44.4
14/05/2025 19:15	52.4	76.7	44.2	15/05/2025 07:45	47.0	63.3	44.5
14/05/2025 19:30	54.7	89.3	43.9	15/05/2025 08:00	49.2	70.1	44.5
14/05/2025 19:45	47.7	64.9	44.4	15/05/2025 08:15	49.3	77.4	45.2
14/05/2025 20:00	50.8	76.1	44.8	15/05/2025 08:30	50.4	65.0	44.6
14/05/2025 20:15	50.5	70.0	44.8	15/05/2025 08:45	47.5	58.4	44.5
14/05/2025 20:30	47.8	65.3	44.4	15/05/2025 09:00	57.4	81.3	44.4
14/05/2025 20:45	50.3	71.8	44.8	15/05/2025 09:15	53.6	81.9	44.2
14/05/2025 21:00	51.8	76.7	44.8	15/05/2025 09:30	52.7	71.6	44.8
14/05/2025 21:15	59.2	84.3	44.8	15/05/2025 09:45	59.8	79.9	44.6
14/05/2025 21:30	51.5	79.9	44.6	15/05/2025 10:00	50.6	73.9	44.5
14/05/2025 21:45	50.3	75.3	45.0	15/05/2025 10:15	58.0	73.5	44.5
14/05/2025 22:00	45.8	55.4	44.6	15/05/2025 10:30	52.1	75.0	44.7
14/05/2025 22:15	60.9	87.2	44.5	15/05/2025 10:45	59.4	85.2	45.0
14/05/2025 22:30	50.6	77.5	44.4	15/05/2025 11:00	53.4	74.6	44.8
14/05/2025 22:45	49.8	74.2	44.2	15/05/2025 11:15	53.1	75.0	44.3
14/05/2025 23:00	53.0	76.2	42.7	15/05/2025 11:30	52.7	79.5	44.5

2A Merton Road, Bristol
Noise Report for Planning
Appendix A – Tabulated Noise Survey Data

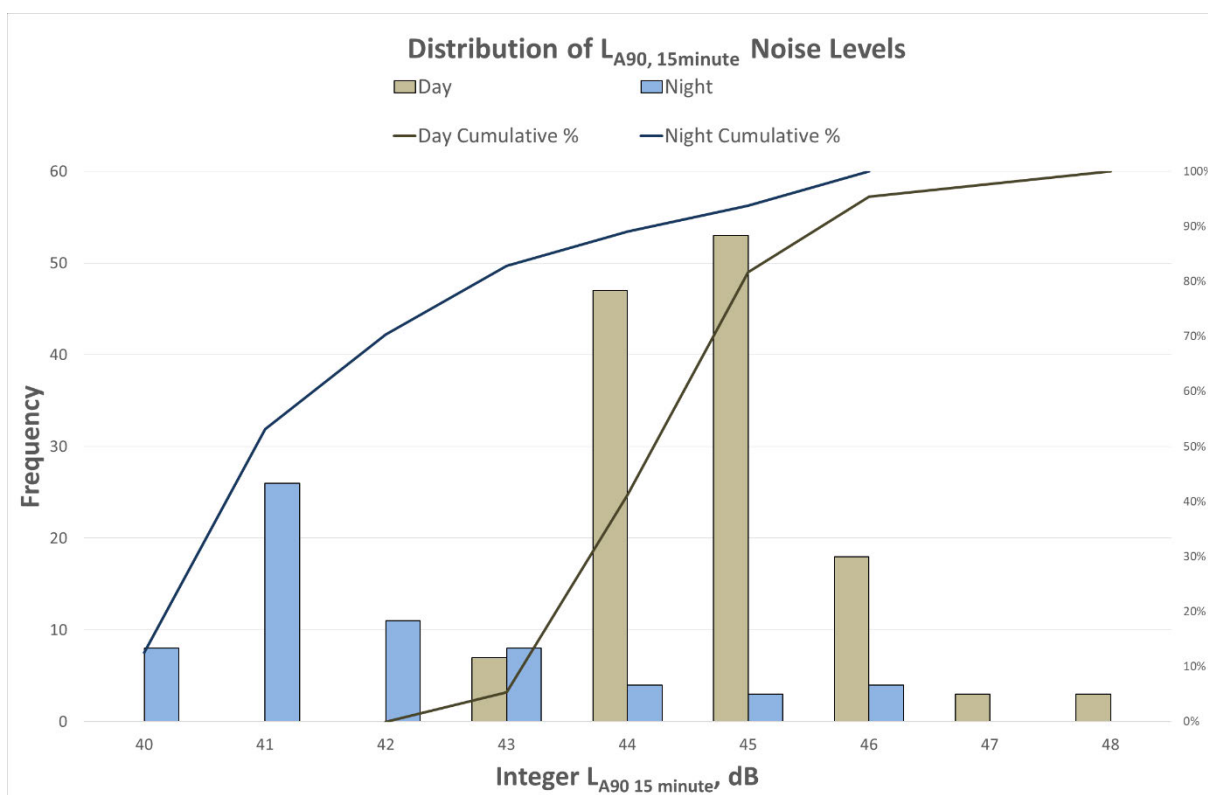


Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB	Time	L _{Aeq} dB	L _{Amax,F} dB	L _{AF90} dB
15/05/2025 11:45	57.3	82.7	45.3	16/05/2025 00:15	43.8	56.1	41.9
15/05/2025 12:00	59.9	78.3	45.0	16/05/2025 00:30	43.4	51.4	42.0
15/05/2025 12:15	50.7	67.5	45.2	16/05/2025 00:45	42.8	52.9	41.4
15/05/2025 12:30	51.0	71.4	45.2	16/05/2025 01:00	44.4	63.7	41.0
15/05/2025 12:45	49.5	70.1	45.5	16/05/2025 01:15	41.8	58.4	40.6
15/05/2025 13:00	53.2	72.9	45.3	16/05/2025 01:30	42.7	59.3	40.6
15/05/2025 13:15	54.1	76.3	46.0	16/05/2025 01:45	41.9	56.9	40.4
15/05/2025 13:30	59.8	83.5	46.2	16/05/2025 02:00	41.0	51.7	40.2
15/05/2025 13:45	53.8	72.4	46.1	16/05/2025 02:15	41.1	48.0	40.2
15/05/2025 14:00	61.1	77.2	45.1	16/05/2025 02:30	41.9	56.5	40.5
15/05/2025 14:15	60.8	73.9	45.5	16/05/2025 02:45	41.6	60.3	40.3
15/05/2025 14:30	60.2	76.1	46.2	16/05/2025 03:00	42.1	55.8	40.3
15/05/2025 14:45	62.3	76.1	48.4	16/05/2025 03:15	41.0	52.5	40.1
15/05/2025 15:00	53.5	76.2	46.6	16/05/2025 03:30	41.3	48.1	40.4
15/05/2025 15:15	60.3	74.8	46.3	16/05/2025 03:45	41.8	52.8	40.5
15/05/2025 15:30	50.2	69.2	45.6	16/05/2025 04:00	41.3	53.8	40.3
15/05/2025 15:45	58.5	73.2	45.7	16/05/2025 04:15	42.2	58.4	40.5
15/05/2025 16:00	53.4	74.3	46.3	16/05/2025 04:30	43.5	65.6	41.2
15/05/2025 16:15	71.2	86.4	47.7	16/05/2025 04:45	47.0	68.3	41.8
15/05/2025 16:30	56.5	72.5	48.4	16/05/2025 05:00	44.7	62.7	42.3
15/05/2025 16:45	53.3	70.7	46.1	16/05/2025 05:15	44.0	62.6	42.5
15/05/2025 17:00	54.5	83.7	45.1	16/05/2025 05:30	47.8	68.2	43.0
15/05/2025 17:15	55.6	75.6	44.6	16/05/2025 05:45	48.2	68.3	43.9
15/05/2025 17:30	55.3	77.3	44.2	16/05/2025 06:00	50.0	70.9	44.3
15/05/2025 17:45	50.0	72.2	44.4	16/05/2025 06:15	47.9	65.5	45.1
15/05/2025 18:00	50.1	75.8	44.9	16/05/2025 06:30	49.8	68.1	45.9
15/05/2025 18:15	51.7	68.5	45.3	16/05/2025 06:45	57.0	75.2	45.5
15/05/2025 18:30	50.5	70.4	45.8	16/05/2025 07:00	47.7	71.5	44.8
15/05/2025 18:45	52.6	82.7	45.2	16/05/2025 07:15	45.8	64.0	44.0
15/05/2025 19:00	50.8	66.5	44.9	16/05/2025 07:30	45.4	60.7	43.4
15/05/2025 19:15	47.9	63.0	44.2	16/05/2025 07:45	44.8	64.5	43.1
15/05/2025 19:30	46.9	61.3	44.1	16/05/2025 08:00	51.8	72.4	43.5
15/05/2025 19:45	46.6	61.6	43.9	16/05/2025 08:15	51.3	74.2	43.3
15/05/2025 20:00	49.4	70.8	44.4	16/05/2025 08:30	46.6	68.2	43.7
15/05/2025 20:15	47.3	67.0	44.5	16/05/2025 08:45	46.5	73.5	43.5
15/05/2025 20:30	50.1	69.8	44.4	16/05/2025 09:00	58.9	83.7	43.5
15/05/2025 20:45	46.8	57.3	44.0	16/05/2025 09:15	55.8	84.8	44.1
15/05/2025 21:00	47.1	65.0	43.8	16/05/2025 09:30	57.5	88.3	44.6
15/05/2025 21:15	47.3	64.5	43.9	16/05/2025 09:45	61.2	84.1	44.4
15/05/2025 21:30	46.6	62.9	43.7	16/05/2025 10:00	62.0	77.2	45.8
15/05/2025 21:45	48.8	69.4	43.2	16/05/2025 10:15	53.8	85.2	44.9
15/05/2025 22:00	45.5	65.7	43.2	16/05/2025 10:30	51.7	69.8	45.1
15/05/2025 22:15	47.3	65.8	43.6	16/05/2025 10:45	57.5	71.4	45.2
15/05/2025 22:30	45.1	55.9	43.7	16/05/2025 11:00	61.1	92.3	45.5
15/05/2025 22:45	45.6	55.1	43.9	16/05/2025 11:15	79.3	103.4	45.5
15/05/2025 23:00	45.5	57.9	44.0				
15/05/2025 23:15	45.3	67.7	43.3				
15/05/2025 23:30	45.8	61.7	42.9				
15/05/2025 23:45	51.7	75.4	42.7				
16/05/2025 00:00	44.4	55.4	42.2				

MP1 – Background Sound Level Histogram



MP2 – Background Sound Level Histogram



Red Façade – Night

2A Merton Road			Date	06/06/2025						
Third Floor			Room	Bedroom						
Incident noise levels										
	Term	Label	Octave band centre frequency (Hz)							dB(A)
			63	125	250	500	1 k	2 k	4 k	
L _{eq,ff}	Measured L _{eq}	Measured at MP1	59.2	49.7	52.9	47.5	49.8	49.2	49.9	56.1
	Measured spectrum		3.1	-6.4	-3.2	-8.6	-6.3	-6.9	-6.2	
		L	59	50	53	48	50	49	50	55.9
		K	3	3	3	3	3	3	3	
L _{max,ff}	Measured L _{max}	Measured at MP1	75.7	67.1	68.4	66.1	66.7	69.5	64.9	73.7
	Measured spectrum		2.0	-6.6	-5.3	-7.6	-7.0	-4.2	-8.8	
		M	76	67	68	66	67	70	65	73.7
		K	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
		0								
Room Details										
	Term	Derivation	Value	Term	Derivation	Value				
	V	Volume (m ³)	36.48	Sew	Sf - Swi	2.06				
	RT	RT (secs)	0.5	Srr	Area of ceiling (m ²)	12.8				
	Sf	Facade area (inc. window) (m ²)	3.56	S	Sf + Srr	16.36				
	Sr	Roof area (m ²)	0	Ao	Ref Area for Dnew	10				
	Swi	Window area (m ²)	1.5							
Sound Insulation Calculation elements										
	Term	Label/element	Octave band centre frequency (Hz)							Rw
			63	125	250	500	1 k	2 k	4 k	
Trickle vent	D _{n,e}	Corto 10	32.8	32.8	33.7	39.5	44.4	40	40	41
	A ₀ /S x 10 ^{-Dn/10}	B	0.00032	0.00032	0.00026	0.00007	0.00002	0.00006	0.00006	
		L _{eq} Internal SPL	28.7	19.2	21.5	10.3	7.7	11.5	12.2	21.7
		L _{max} Internal SPL	45.2	36.6	37.0	28.9	24.6	31.8	27.2	42.2
Window	R _{wi}	6/12/8 double glazing	23	23	23	30	39	36	43	35
	S _{wi} /S x 10 ^{-Rwi/10}	C	0.00046	0.00046	0.00046	0.00009	0.00001	0.00002	0.00000	
		L _{eq} Internal SPL	33.3	23.8	27.0	14.6	7.9	10.3	4.0	20.7
		L _{max} Internal SPL	46.8	38.2	39.5	30.2	21.8	27.6	16.0	40.7
External wall	R _{ew}	Standard masonry constuction	37	37	42	52	60	63	68	54
	S _{ew} /S x 10 ^{-Rew/10}	D	0.00003	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	
		L _{eq} Internal SPL	20.6	11.1	9.3	-6.1	-11.8	-15.4	-19.7	3.1
		L _{max} Internal SPL	34.1	25.5	21.8	9.5	2.1	1.9	-7.7	22.5
Roof area	R _{rr}	N/A	100	100	100	100	100	100	100	101
	S _r /S x 10 ^{-Rrr/10}	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
		L _{eq} Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		L _{max} Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Internal Noise Levels										
	10 Log (B+C+D+E)	F	-30.94	-30.94	-31.38	-37.93	-44.7	-40.75	-41.82	
	A (furnished)	Room Absorption	12	12	12	12	12	12	12	
	10 log (S/A)	G	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
L _{eq}	Calc Tolerance	T	3	3	3	3	3	3	3	
	Internal L _{eq,2}	L+F+G+K+T	35.7	26.2	29.0	17.0	12.5	15.9	15.5	24
L _{max}	Calc Tolerance	T	3	3	3	3	3	3	3	
	Internal L _{max,2}	M+F+G+K+T	55.2	46.6	47.5	38.6	32.4	39.2	33.5	45

Green Façade – Day

2A Merton Road - Green Façade			Date	06/06/2025							
Third Floor			Room	Bedroom							
Incident noise levels											
	Term		Label	Octave band centre frequency (Hz)						dB(A)	
				63	125	250	500	1 k	2 k		4 k
Leq,ff	Measured L _{eq}		Measured at MP2	57.4	54.3	48.2	49	47.6	46.3	45.4	54.3
	Measured spectrum			3.1	0.0	-6.1	-5.3	-6.7	-8.0	-8.9	
			L	57	54	48	49	48	46	45	53.3
			K	3	3	3	3	3	3	3	
Lmax,ff	Measured L _{max}										
	Measured spectrum										
			M								
		0	K								
Room Details											
	Term		Derivation	Value	Term		Derivation		Value		
	V		Volume (m³)	36.48	Sew		Sf - Swi		2.06		
	RT		RT (secs)	0.5	Srr		Area of ceiling (m²)		12.8		
	Sf		Facade area (inc. window) (m²)	3.56	S		Sf + Srr		16.36		
	Sr		Roof area (m²)	0	Ao		Ref Area for Dnew		10		
	Swi		Window area (m²)	1.5							
Sound Insulation Calculation elements											
	Term		Label/element	Octave band centre frequency (Hz)						Rw	
				63	125	250	500	1 k	2 k		4 k
Trickle vent	D _{n,e}		lowest	29	29	21.7	31.9	29.8	29.3	29.3	25
	A ₀ /S x 10 ^{-Dn/10}		B	0.00077	0.00077	0.00413	0.00039	0.00064	0.00072	0.00072	
			L _{eq} Internal SPL	30.7	27.6	28.8	19.4	20.1	19.3	18.4	29.7
			L _{max} Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Window	R _{wi}		6/12/6 double glazing	24	24	22	29	39	33	38	33
	S _{wi} /S x 10 ^{-Rwi/10}		C	0.00037	0.00037	0.00058	0.00012	0.00001	0.00005	0.00001	
			L _{eq} Internal SPL	30.5	27.4	23.3	17.1	5.7	10.4	4.5	19.6
			L _{max} Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
External wall	R _{ew}		Standard masonry constuction	37	37	42	52	60	63	68	54
	S _{ew} /S x 10 ^{-Rew/10}		D	0.00003	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000	
			L _{eq} Internal SPL	18.8	15.7	4.6	-4.6	-14.0	-18.3	-24.2	2.4
			L _{max} Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roof area	R _{rr}		N/A	100	100	100	100	100	100	100	101
	S _r /S x 10 ^{-Rrr/10}		E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	
			L _{eq} Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			L _{max} Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Internal Noise Levels											
	10 Log (B+C+D+E)		F	-29.36	-29.36	-23.26	-32.92	-31.86	-31.17	-31.35	
	A (furnished)		Room Absorption	12	12	12	12	12	12	12	
	10 log (S/A)		G	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
Leq	Calc Tolerance	3	T	3	3	3	3	3	3	3	
	Internal L _{eq,2}		L+F+G+K+T	35.5	32.4	32.4	23.5	23.2	22.6	21.5	30
Lmax	Calc Tolerance	3	T	3	3	3	3	3	3	3	
	Internal L _{max,2}		M+F+G+K+T	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Blue Façade – Day

2A Merton Road - Blue Façade			Date	06/06/2025							
Third Floor			Room	Bedroom							
Incident noise levels											
	Term	Label	Octave band centre frequency (Hz)							dB(A)	
			63	125	250	500	1 k	2 k	4 k		
Leq,ff	Measured Leq	Measured at MP2	63.92	60.82	54.72	55.52	54.12	52.82	51.92	60.8	
	Measured spectrum		3.1	0.0	-6.1	-5.3	-6.7	-8.0	-8.9		
		L	64	61	55	56	54	53	52	59.8	
		K	3	3	3	3	3	3	3		
Lmax,ff	Measured Lmax										
	Measured spectrum										
		M									
		0	K								
Room Details											
	Term	Derivation	Value	Term	Derivation	Value					
	V	Volume (m³)	36.48	Sew	Sf - Swi	2.06					
	RT	RT (secs)	0.5	Srr	Area of ceiling (m²)	12.8					
	Sf	Facade area (inc. window) (m²)	3.56	S	Sf + Srr	16.36					
	Sr	Roof area (m²)	0	Ao	Ref Area for Dnew	10					
	Swi	Window area (m²)	1.5								
Sound Insulation Calculation elements											
	Term	Label/element	Octave band centre frequency (Hz)							Rw	
			63	125	250	500	1 k	2 k	4 k		
Trickle vent	Dn,e	Corto 10	32.8	32.8	33.7	39.5	44.4	40	40	41	
	A0/S x 10 ^{-Dn/10}	B	0.00032	0.00032	0.00026	0.00007	0.00002	0.00006	0.00006		
		Leq Internal SPL	33.4	30.3	23.3	18.3	12.0	15.1	14.2	25.7	
		Lmax Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Window	Rwi	6/12/6 double glazing	24	24	22	29	39	33	38	33	
	Swi/S x 10 ^{-Rwi/10}	C	0.00037	0.00037	0.00058	0.00012	0.00001	0.00005	0.00001		
		Leq Internal SPL	37.0	33.9	29.8	23.6	12.2	16.9	11.0	26.1	
		Lmax Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
External wall	Rew	Standard masonry constuction	37	37	42	52	60	63	68	54	
	SeW/S x 10 ^{-Rew/10}	D	0.00003	0.00003	0.00001	0.00000	0.00000	0.00000	0.00000		
		Leq Internal SPL	25.4	22.3	11.2	2.0	-7.4	-11.7	-17.6	8.9	
		Lmax Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Roof area	Rrr	N/A	100	100	100	100	100	100	100	101	
	Sr/S x 10 ^{-Rrr/10}	E	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000		
		Leq Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		Lmax Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Calculated Internal Noise Levels											
	10 Log (B+C+D+E)	F	-31.48	-31.48	-30.72	-37.33	-44.7	-39.7	-41.21		
	A (furnished)	Room Absorption	12	12	12	12	12	12	12		
	10 log (S/A)	G	1.4	1.4	1.4	1.4	1.4	1.4	1.4		
Leq	Calc Tolerance	3	T	3	3	3	3	3	3		
	Internal Leq,2		L+F+G+K+T	39.9	36.8	31.4	25.6	16.9	20.6	18.2	29
Lmax	Calc Tolerance	3	T	3	3	3	3	3	3		
	Internal Lmax,2		M+F+G+K+T	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A