



59-61 SOUTHAMPTON STREET READING

BS8233 NOISE ASSESSMENT REPORT

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BS8233 NOISE ASSESSMENT REPORT

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1.0 INTRODUCTION

Aran Acoustics have been appointed to carry out a noise assessment for the proposed residential development at 59-61 Southampton Street Reading.

The purpose of this assessment is to determine any appropriate noise control measures to protect the future occupants against noise ingress from the local environment and meet Planning Conditions relating to noise. Such to undertake this assessment an environmental noise survey was carried out at the site on 12 February 2024.

A review of the requirements of the building façade has then been provided, such to enable compliance with guidance given within BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'.

This report therefore describes the noise survey and its results. Section 4.0 provides the results of the noise survey. Section 6.0 provides a review of current legislation applicable to this type of development. Section 6.0 provides an assessment of internal noise levels in accordance with guidelines set out in BS8233.

2.0 SITE DESCRIPTION

The proposed site for development is located at 59-61 Southampton Street in Reading. The scheme includes a conversion of a mixed-use development for residential (Class C3) use.

The site is located in a built-up area of mixed use. The A327 Southampton Street and Crown Street to the south runs along the western boundary of site and carries a moderately high volume of road traffic. The site is bounded by other properties with a car parking area to the rear.

A subjective noise assessment undertaken on-site determined that the predominant noise source to impact the development is road traffic of the A327 Southampton Street and Crown Street to the south.. No significant noise from plant associated with nearby commercial units was observed during the site visit.

Figure 2.1 below shows a location map and aerial photo of the site and surrounding area.

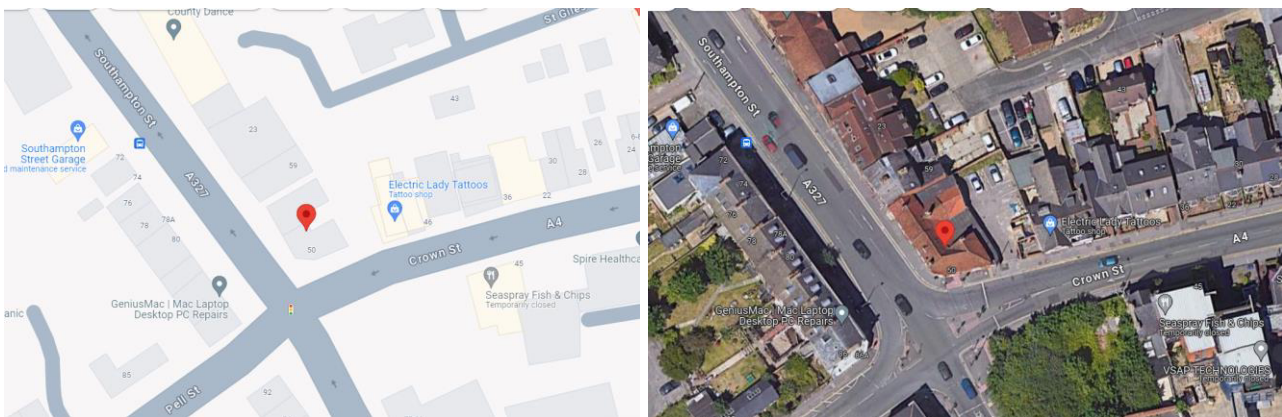


Figure 2.1 - Location map and aerial photo of proposed site*

**Imagery courtesy of Google Maps*

3.0 NOISE SURVEY

An environmental noise survey was carried out between Monday 12 and Tuesday 13 February 2024. The survey incorporated both day and night time measurements.

3.1 Measurement Position

A fixed noise monitor was placed at the front elevation of the building overlooking Southampton Street. The microphone was extended approximately 1.2m from the façade with a clear line of sight to passing traffic. Temporary scaffolding is current in place however was not considered to impact the measured results. Noise levels measured at this location are considered worst case to impact the proposed development.

A site plan showing the microphone location is provided in Appendix A. Site photos of the measurement position are provided in Appendix B.

3.2 Measurement Equipment

The following measurement equipment was used, which complies with the performance specifications for Class 1 devices in accordance with BS EN 61672-1:2003.

Name	Serial Number	Last Calibrated	Calibration Due
Norsonic Precision Sound Analyser Type 140	1404425	Feb 2022	Feb 2023
Norsonic Type 1209 Pre-amplifier	13231	Jun 2023	Jun 2025
Norsonic Type 1225 Microphone	128783	Jun 2023	Jun 2025
Norsonic Type 1251 Calibrator	32994	Jun 2023	Jun 2024

Table 3.1 - Measurement equipment used on site

The meter was calibrated before and after the noise survey where no significant deviations were found. The meters were set to measure consecutive 'A' weighted 10-minute time samples.

3.3 Weather Conditions

The weather was mainly overcast and dry for the duration of the survey. Wind speeds remained below 5 m/s. The temperature range was approximately 07 - 18 °C.

The weather conditions were considered suitable for environmental noise surveying in accordance with BS 7445-1:2003 '*Description and measurement of environmental noise*'.

4.0 SURVEY RESULTS

The noise levels measured at the fixed measurement position are shown in Figure 4.1 below. The full set of acoustic data measured on site is available upon request.

4.1 Measured Noise Levels

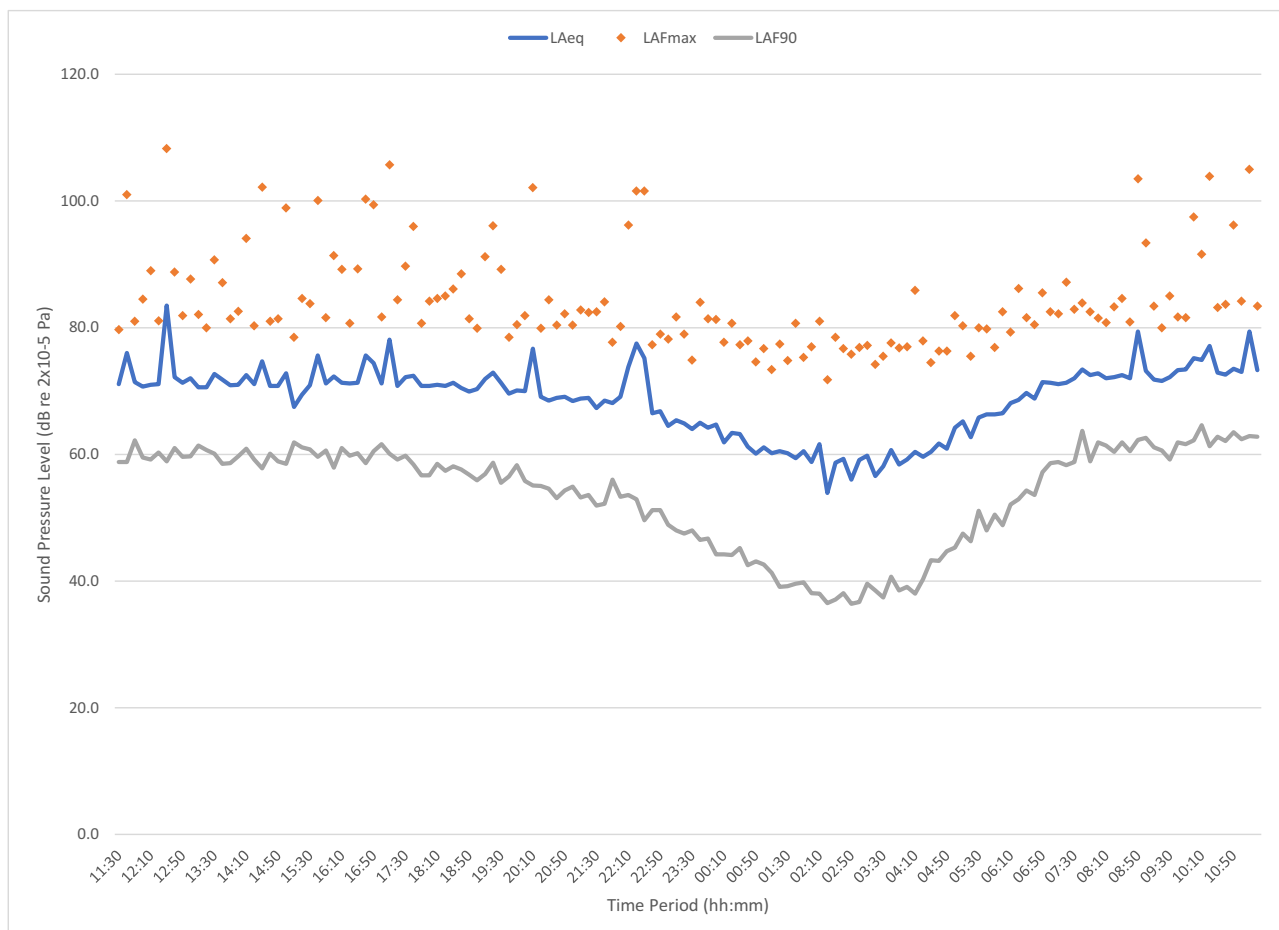


Figure 4.1 – Measured Noise Levels

The following table provides a summary of noise levels measured at the fixed measurement position including the logarithmically averaged equivalent noise level L_{Aeq} ; and maximum noise level, L_{Amax} .

Time Period	Average Noise Levels		Maximum Noise Level	
	L_{Aeq}		L_{Aeq}, dB	
Daytime $L_{Aeq,16 \text{ Hour}}$ (07:00 – 23:00 hours)	73		-	
Night time $L_{Aeq,8 \text{ Hour}}$ (23:00 – 07:00 hours)	64		86	

Table 4.1 – Summary of Measured Noise Levels

Based on the measured noise levels, further calculations have been carried out to determine internal noise levels within the proposed residential dwellings. Details of noise break in calculations are provided within Section 6.0 of this report.

5.0 GUIDANCE DOCUMENTATION – NOISE CONTROL

The section above provides a summary of the noise levels on site. The purpose of this section is to provide a summary of guidance documentation relating to this development.

5.1 National Planning Policy Framework

The Government published the National Planning Policy Framework (NPPF) which sets out the Government's planning policies for England and how these are expected to be applied.

The Framework replaced many of the Planning Policy documents including Planning Policy Guidance 24: Planning and Noise that provided guidance on the control of noise to sensitive developments which may be affected by noise and vice versa. The NPPF provides a framework within which local people and their council can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

With regards to noise, the Framework states that 'Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts²⁷ on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts²⁷ on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;²⁸ and
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

²⁷ See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

²⁸ Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.

With regards to 'adverse impacts' and 'significant adverse impacts' the NPPF does make reference to The Noise Policy Statement for England, published by Defra in March 2010.

5.2 Noise Policy Statement for England

The aim of the Noise Policy Statement for England (NPSE) is to provide clarity regarding current policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner and in a timely fashion. The NPSE applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise.

Noise Policy Vision: Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

Noise Policy Aims: Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life

The NPSE explanatory note provides further guidance on ‘adverse’ and ‘significant adverse’ impacts as follows:

- NOEL - No Observed Effect Level: the level below which no effect can be detected. Below this level there is no detectable effect on health and quality of life due to noise;
- LOAEL - Lowest Observable Adverse Effect Level: the level above which adverse effects on health and quality of life can be detected;
- SOAEL - Significant Observed Adverse Effect Level: the level above which significant adverse effects on health and quality of life occur.

The NPSE states that: *it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times.*

It can be concluded that the NPPF and NPSE define the concepts for the various levels of effect from noise however do not provide specific values. It is seen that it is up to the discretion of the Local Planning Authority to decide on what is deemed acceptable taking into account the specific circumstances for the proposed development.

5.3 World Health Organisation Guidelines

The World Health Organisation (WHO) document ‘Guidelines for Community Noise’ 1999 provides guidance to local authorities and professionals trying to protect people from the harmful effects of noise in non-industrial environments. Section 4 of the document provides guideline values with regards to specific environments and effects. The WHO document states the following:

In dwellings, the critical effects of noise are on sleep, annoyance and speech interference. To avoid sleep disturbance, indoor guideline values for bedrooms are 30 dB LAeq for continuous noise and 45 dB LMax for single sound events. Lower levels may be annoying, depending on the nature of the noise source.

WHO guidelines are typically adopted and applied to various noise sources with the criteria that indoor ambient noise levels in bedrooms at night does not exceed 30 dB LAeq and individual noise events should not normally exceed 45 dB LA_{Fmax}. For indoor areas during the daytime, noise levels should not generally exceed 35 dB LAeq.

5.4 British Standard 8233:2014

BS8233:2014 'Guidance for sound insulation and noise reduction for buildings' provides information on the design of buildings that have internal acoustic environments appropriate to their functions. It provides guidance on the control of noise from outside the building, noise from plant and services within it, and room acoustics for non-critical situations.

BS8233 provides a range of internal noise levels within unoccupied spaces depending on the buildings use. BS8233 states that for bedrooms at night, it is desirable that the indoor ambient noise level does not exceed 30 dB L_{Aeq} . For living rooms during the daytime, indoor ambient noise levels should not generally exceed 35 dB L_{Aeq} .

BS8233:2014 advises that: *Regular individual noise events can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values.*

5.5 Summary of Guidance Documentation and Conclusion

The Noise Policy Statement for England does not provide any specific guidance on noise levels for residential developments however there are a number of documents that provide guideline values.

It is proposed that the noise level criteria within the WHO Guidelines 1999 and BS8233:2014 are adopted. These noise level targets have been imposed upon similar developments and are seen as suitable design targets where disturbance to future habitants are unlikely. These target noise level values are tabulated within the table below.

Habitable Space	Time Period	Noise Level Target
Sleeping (night)	23:00 – 07:00 hours	30 dB $L_{Aeq\ 8hr}$ / 45 dB L_{AFmax}
Resting / Sleeping (day)	07:00 – 23:00 hours	35 dB $L_{Aeq\ 16hr}$

Table 5.1 - Proposed noise level targets

6.0 BS8233 FAÇADE ASSESSMENT

To determine internal noise levels, an indicative façade noise break-in assessment has been undertaken in accordance with the method given within BS8233:2014 for both day and night time noise levels. Window and room sizes are based on current layout drawings.

Sample calculations are shown in Appendix C and use the worst case noise levels for both the day and night time period given within Tables 4.1 along with measured spectral data. Note that distance corrections have been included in our calculations where applicable.

6.1 External Envelope Construction

Calculations show that to achieve a reasonable internal acoustic environment in habitable rooms as specified within BS 8233, the building envelope constructions should be selected to meet the sound reduction values R_w , presented in Table 6.1. Insul data sheets are provided in Appendix D.

Rooms Description	Octave Band Centre Frequency, dB						R_w
	125 Hz	250 Hz	500 Hz	1.0 K Hz	2.0 K Hz	4.0 K Hz	
Masonry Wall	45	43	47	56	67	77	53
Pitched Roof	27	41	47	52	53	55	49

Table 6.1 - Building envelope sound insulation performance requirements

To assist in selecting suitable constructions the following sample specifications are provided.

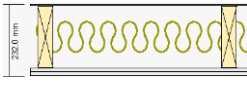
Wall Ref	Plan view	Construction Specification	Acoustic Rating
EW_01		100mm Brick (density $>1600 \text{ kg/m}^3$) 100mm Cavity (minimum) 100mm Concrete Block (density $>1250 \text{ kg/m}^3$) 1 layer of 12.5mm Plasterboard	53 dB R_w
RF_01		7mm Roof Slates 200mm Joists 100mm Mineral Wool (density $>10 \text{ kg/m}^3$) 2 layers of 12.5mm WallBoard	49 dB R_w

Table 6.2 - Sample Building envelope constructions

6.2 Glazing Specifications

Based on measured noise levels, calculations show glazing to habitable rooms should match or exceed the SRI values within Table 6.3.

Room Description	Octave Band Centre Frequency, dB						R _w
	125 Hz	250 Hz	500 Hz	1.0 K Hz	2.0 K Hz	4.0 K Hz	
Rear Elevation	27	21	29	40	39	43	34
Front Elevation & Atrium*	26	27	37	47	45	53	40

Table 6.3 – Minimum SRI for double glazing to habitable room

*The glazing specification for the Atrium assumes reverberation will be controlled using suitable acoustic absorption. Standard glazing will be sufficient between the Atrium and habitable rooms. Please see Section 6.5 for further details.

The SRI values in Table 6.3 above are based on a sealed double glazed system. The overall performance of the units is not only dependent on the glazing configuration. Window seals should be fitted correctly with no air gaps and the frame been fully sealed into the aperture when closed.

To achieve the SRI values in Table 6.3 above the following example glazing specifications are provided:

Example Glazing Specifications	Acoustic Performance, R _w
4mm Glass / 12mm Air Cavity / 6mm Glass	34
6mm Glass / 16mm Air Cavity / 8.4mm Acoustic Glass	40

Table 6.4 – Example Glazing Specifications

Verification should be provided by the glazing supplier to ensure the glazing achieves the sound insulation performance values in Tables 6.3 above.

6.3 Ventilation

It is generally accepted that a partially open window provides 10 – 15 dB attenuation from external noise sources. Where external noise levels are 15 dB higher than the internal noise target, openable windows should generally be avoided for background ventilation purposes.

Based on the measured results it is seen that external noise levels exceed BS8233 criteria for openable windows therefore alternative means of ventilation should be provided.

It is understood that an MVHR system will be installed within Flat to provide ventilation without the need for opening windows.

Approved Document F of the Building Regulations requires purge ventilation to be provided for occupants to quickly clear smoke and other air pollutants. The opening of windows is considered acceptable for purge ventilation as any increase of internal noise levels would be temporary.

6.4 Maximum Internal Noise Levels

For a reasonable standard in bedrooms at night, the World Health Organisation document 'Guidelines for Community Noise' advises that individual noise events should not regularly exceed 45 dB L_{Amax} . The WHO document references research by Vallet & Vernet which defines regularity as no more than 10 - 15 times per night.

Based on a maximum internal noise level of 45 dB L_{Amax} and a glazing specification that achieves 40 dB R_w sound reduction for Bedrooms, it is seen that external noise levels should not regularly exceed 85 dB L_{Amax} during the night time period.

Analysis of results shows that the external noise level did exceed 85 dB L_{Amax} on 2 no. occasions during the night time period which is not considered regular enough to cause disturbance therefore no further mitigation is proposed at this stage. It was further noted that the level of exceedance was within 1 dB.

6.5 Reverberation Control

To prevent noise build up within the Atrium suitable acoustic absorption should be provided to reduce the reverberation time to below 0.5 seconds. This can be in the form of acoustic wall panels or suspended mineral fibre ceiling tiles.

We calculate that a total of 31m² of Class A absorption will be required. For treatment to be effective it should be distributed evenly within the space.

7.0 PLANT NOISE

It is understood no external plant is to be installed at the property therefore it is considered that a full BS4142 plant noise assessment will not be required at this stage.

Kitchen and Bathroom extract fans along with MVHR duct inlets and outlets should be attenuated if they produce a noise level greater than 46 dBA when measured at 1m from the duct termination points.

To prevent noise break in, duct outlets should be located in areas away from the main noise sources. If this is not possible suitable attenuators should be fitted to the ducts.

Attention should be given to the installation of services to ensure there is no transmission of excessive tactile and audible frequency vibration to adjacent areas, due to the operation of equipment and/or its connection to pipe work, duct work or conduits.

8.0 SUMMARY

A noise survey was carried out at a proposed residential development located at 59-61 Southampton Street, Reading on 12 February 2024.

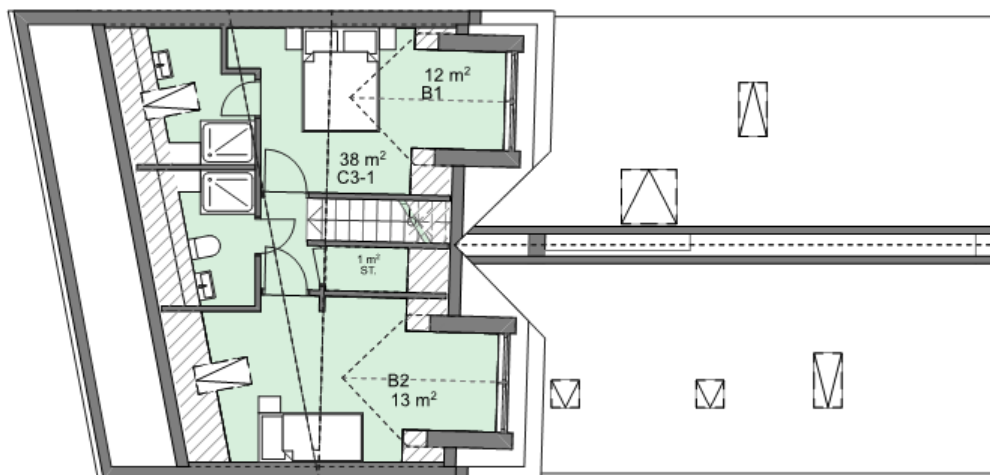
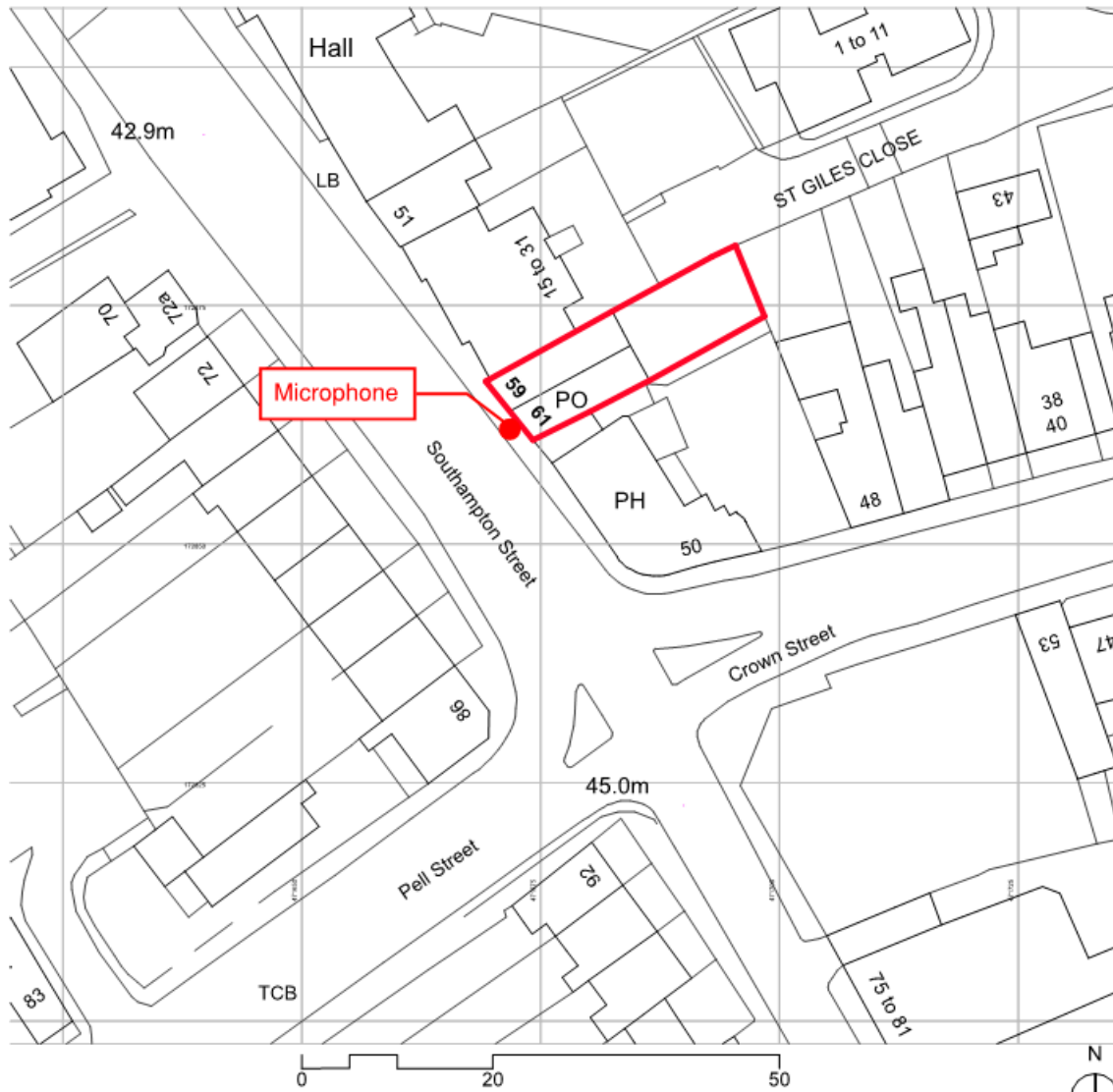
To determine internal noise levels, an indicative façade noise break-in assessment has been undertaken in accordance with the method given within BS8233:2014 for both day and night time noise levels.

To comply with the internal noise level criteria given in BS8233:2014, a suitable glazing system should be installed on all facades of the building that match or exceed the sound reduction values provided in Table 6.3 above.

Based on the measured results it is seen that external noise levels exceed BS8233 criteria for openable windows therefore alternative means of ventilation should be provided.

No external plant is to be installed at the property therefore it is considered that a full BS4142 plant noise assessment will not be required at this stage.

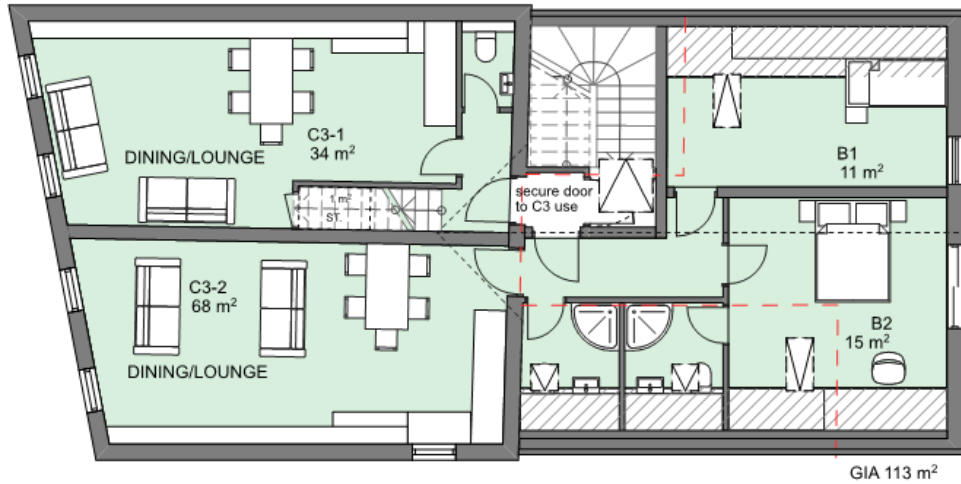
APPENDIX A – SITE PLANS



L03 - LOFT PLAN

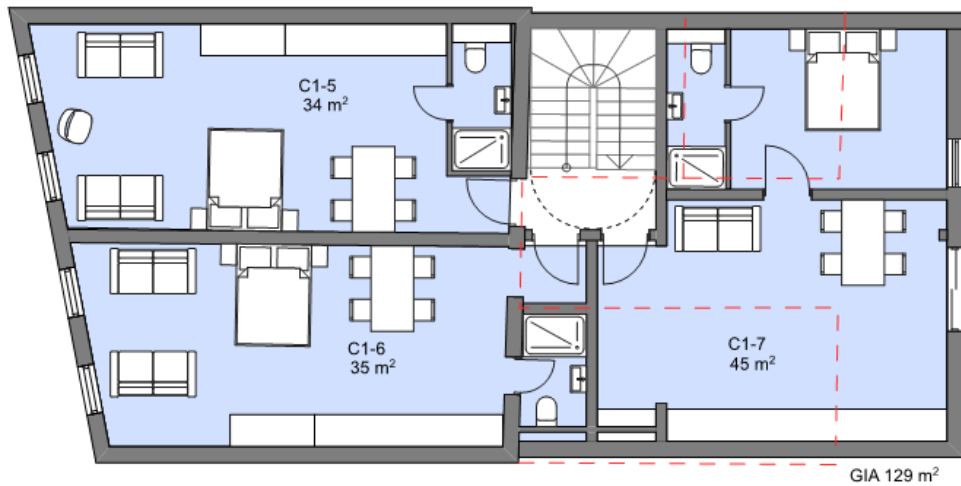
GIA 38 m²

1:100



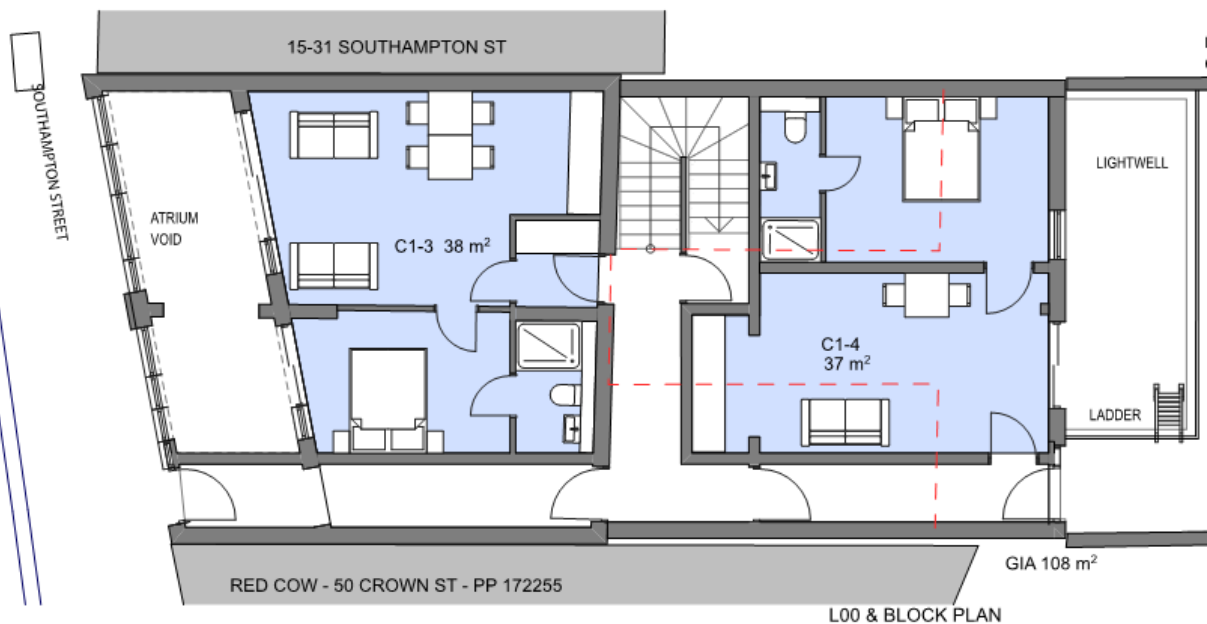
L02 - SECOND FLOOR PLAN

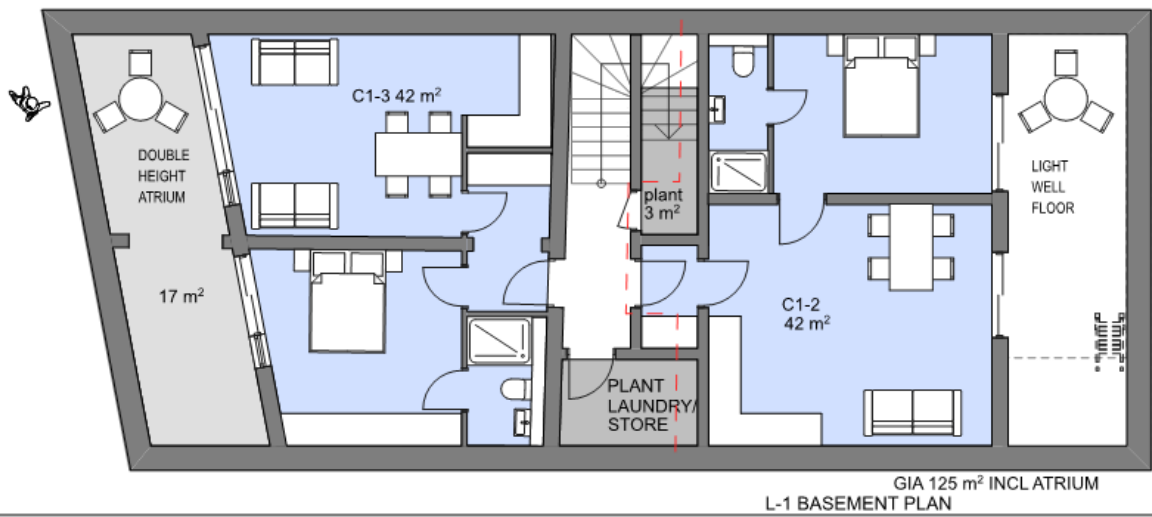
1:100



L01 - FIRST FLOOR PLAN

1:100





APPENDIX B – SITE PHOTOS



APPENDIX C – CALCULATION SHEETS

C:\Projects\BS8233 Assessments\240215 - 59-61 Southampton Street Reading\Noise Data\Overview\40_240215_172451.xlsx>Data							
59-61 Southampton St Reading: C1.5 Studio (Day)							
BS8233 Facade Noise Break In Calculation	125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}	66.5	67.0	67.6	69.6	67.0	59.3	73.1
Maximum External Noise Level - L_{max}							6.3
Safety Tolerance	3 dB						
Correction Factors							
Microphone Freefield Correction K	0.0 dB						
Distance Correction $L_2 = L_1 - 10 \log(D_1/D_2)$	0.0 dB						
Barrier Correction $A_b = 10 \log(10 (D + d) \text{ dB})$	0.0 dB						
Angle of View Correction $A_v = 10 \log(\theta/180)$	180						
Noise Level at Façade	69.5	70.0	70.6	72.6	70.0	62.3	76.1
Calculation of environmental noise break-in to residential rooms							
$L_2 = L_1 - R + 10 \log(S/A) + 3 \text{ dB (Freefield version)}$							
Room Volume =	72.5 m ³						
Reverberation Time =	0.6 s						
$10 \log(S/A)$	-2.7	-2.7	-2.7	-2.7	-2.7	-2.7	
FAÇADE Elements							
Total Façade Area 1	10.6 m ²						
Glazing Area, S_g - Façade 1	3.0 m ²						
6mm Glass / 16mm Air Cavity / 8.4mm Glass							
Predicted noise level in building from glazing 1							
Solid Area, S_w - Façade 1	7.6 m ²						
300mm Brick / Block cavity Wall/PB Lining							
Predicted noise level through solid façade 1							
Roof/Floor Area, S_c - Façade 1	0.0 m ²						
No Roof							
Predicted noise level through solid façade 3 / Roof							
Trickle Vent(s) - Façade 1	0 Vent						
No Trickle Vent							
Predicted noise level through trickle vents							
$L_{ff-Dne} + 10 \log(A_0/A) + K$							
Combined Internal Noise Level - L_{eq}	38.5	38.1	29.4	21.8	20.2	9.4	33
Target Internal Noise Level (dBA)							35
							Pass

C:\Projects\BS8233 Assessments\240215 - 59-61 Southampton Street Reading\Noise Data\Overview\140_240215_172451.xlsx>Data

59-61 Southampton St Reading: C1.5 Studio (Night)

BS8233 Facade Noise Break In Calculation		125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}		57.8	57.6	58.2	60.8	57.6	49.6	64.0
Maximum External Noise Level - L_{max}								6.3
Safety Tolerance	3 dB	3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors								
Microphone Freefield Correction K	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction $L2 = L1 - 10 \log(D1/D2)$	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Barrier Correction $A_b = 10 \log(10 (D + d))$ dB	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction $A_v = 10 \log(\theta/180)$	180	0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade		60.8	60.6	61.2	63.8	60.6	52.6	67.0
Calculation of environmental noise break-in to residential rooms								
$L2 = L1 - R + 10 \log(S/A) + 3dB$ (Freefield version)								
Room Volume =	72.5 m ³							
Reverberation Time =	0.6 s	0.6	0.6	0.6	0.6	0.6	0.6	
$10 \log(S/A)$		-2.7	-2.7	-2.7	-2.7	-2.7	-2.7	
FAÇADE Elements								
Total Façade Area 1		10.6 m ²						
Glazing Area, S_g - Façade 1		3.0 m ²						
6mm Glass / 16mm Air Cavity / 8.4mm Glass		SRI	26	27	37	47	45	53
		Sg/Sf	-31	-32	-42	-52	-50	-58
Predicted noise level in building from glazing 1			29.6	28.4	19.0	11.6	10.4	-5.6
Solid Area, S_w - Façade 1		7.6 m ²						
300mm Brick / Block cavity Wall/PB Lining		SRI	45	43	47	56	67	77
		Sw/Sf	-46	-44	-48	-57	-68	-78
Predicted noise level through solid façade 1			14.6	16.4	13.0	6.6	-7.6	-25.6
Roof/Floor Area, S_c - Façade 1		0.0 m ²						
No Roof		SRI	44	42	49	57	64	68
		Sc/Sf	0	0	0	0	0	0
Predicted noise level through solid façade 3 / Roof			0.0	0.0	0.0	0.0	0.0	0.0
Trickle Vent(s) - Façade 1		0 Vent						
No Trickle Vent		Dne	0	0	0	0	0	0
		Ao/S	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
Predicted noise level through trickle vents $L_{ff-Dne} + 10 \log(A0/A) + K$			0.0	0.0	0.0	0.0	0.0	0.0
Combined Internal Noise Level - L_{eq}		29.8	28.7	20.3	14.0	12.4	8.0	24
Target Internal Noise Level (dBA)								30
								Pass

C:\Projects\BS8233 Assessments\240215 - 59-61 Southampton Street Reading\Noise Data\Overview\140_240215_172451.xlsx>Data

59-61 Southampton St Reading: Atrium (Day)

BS8233 Facade Noise Break In Calculation		125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}		66.5	67.0	67.6	69.6	67.0	59.3	73.1
Maximum External Noise Level - L_{max}								6.3
Safety Tolerance	3 dB	3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors								
Microphone Freefield Correction K	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction $L2 = L1 - 10 \log(D1/D2)$	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Barrier Correction $A_b = 10 \log(10 (D + d) \text{ dB})$	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction $A_v = 10 \log(\theta/180)$	180	0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade		69.5	70.0	70.6	72.6	70.0	62.3	76.1
Calculation of environmental noise break-in to residential rooms								
$L2 = L1 - R + 10 \log(S/A) + 3 \text{ dB}$ (Freefield version)								
Room Volume =	91.8 m ³							
Reverberation Time =	0.3 s	0.3	0.3	0.3	0.3	0.3	0.3	
$10 \log(S/A)$		-3.4	-3.4	-3.4	-3.4	-3.4	-3.4	
FAÇADE Elements								
Total Façade Area 1		22.8 m ²						
Glazing Area, S_g - Façade 1		16.4 m ²						
6mm Glass / 16mm Air Cavity / 8.4mm Glass		SRI	26	27	37	47	45	53
Predicted noise level in building from glazing 1		Sg/Sf	-27	-28	-38	-48	-46	-54
Solid Area, S_w - Façade 1			41.7	41.2	31.8	23.8	23.2	7.5
300mm Brick / Block cavity Wall/PB Lining		SRI	45	43	47	56	67	77
Predicted noise level through solid façade 1		Sw/Sf	-51	-49	-53	-62	-73	-83
Roof/Floor Area, S_c - Façade 1			18.6	21.1	17.7	10.7	-2.9	-20.6
No Roof		SRI	44	42	49	57	64	68
Predicted noise level through solid façade 3 / Roof		Sc/Sf	0	0	0	0	0	0
Trickle Vent(s) - Façade 1			0.0	0.0	0.0	0.0	0.0	0.0
No Trickle Vent		Dne	0	0	0	0	0	0
Predicted noise level through trickle vents		Ao/S	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
$L_{ff-Dne} + 10 \log(A_0/A) + K$			0.0	0.0	0.0	0.0	0.0	0.0
Combined Internal Noise Level - L_{eq}		41.7	41.2	32.0	24.1	23.3	10.6	35
Target Internal Noise Level (dBA)								35
								Pass

C:\Projects\BS8233 Assessments\240215 - 59-61 Southampton Street Reading\Noise Data\Overview\140_240215_172451.xlsx>Data

59-61 Southampton St Reading: Atrium (Night)

BS8233 Facade Noise Break In Calculation		125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}		57.8	57.6	58.2	60.8	57.6	49.6	64.0
Maximum External Noise Level - L_{max}								6.3
Safety Tolerance	3 dB	3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors								
Microphone Freefield Correction K	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction $L_2 = L_1 - 10 \log(D_1/D_2)$	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Barrier Correction $A_b = 10 \log_{10}(D + d)$ dB	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction $A_v = 10 \log(\theta/180)$	180	0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade		60.8	60.6	61.2	63.8	60.6	52.6	67.0
Calculation of environmental noise break-in to residential rooms								
$L_2 = L_1 - R + 10 \log(S/A) + 3 \text{ dB}$ (Freefield version)								
Room Volume =	91.8 m ³							
Reverberation Time =	0.3 s	0.3	0.3	0.3	0.3	0.3	0.3	
$10 \log(S/A)$		-3.4	-3.4	-3.4	-3.4	-3.4	-3.4	
FAÇADE Elements								
Total Façade Area 1		22.8 m ²						
Glazing Area, S_g - Façade 1		16.4 m ²						
6mm Glass / 16mm Air Cavity / 8.4mm Glass		SRI	26	27	37	47	45	53
Predicted noise level in building from glazing 1		Sg/Sf	-27	-28	-38	-48	-46	-54
Solid Area, S_w - Façade 1			33.0	31.8	22.4	15.0	13.8	-2.2
300mm Brick / Block cavity Wall/PB Lining		SRI	45	43	47	56	67	77
Predicted noise level through solid façade 1		Sw/Sf	-51	-49	-53	-62	-73	-83
Roof/Floor Area, S_c - Façade 1			9.9	11.7	8.3	1.9	-12.3	-30.3
No Roof		SRI	44	42	49	57	64	68
Predicted noise level through solid façade 3 / Roof		Sc/Sf	0	0	0	0	0	0
Trickle Vent(s) - Façade 1			0.0	0.0	0.0	0.0	0.0	0.0
No Trickle Vent		Dne	0	0	0	0	0	0
Predicted noise level through trickle vents		Ao/S	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
$L_{ff-Dne} + 10 \log(A_0/A) + K$			0.0	0.0	0.0	0.0	0.0	0.0
Combined Internal Noise Level - L_{eq}		33.0	31.8	22.7	15.9	14.8	8.2	26
Target Internal Noise Level (dBA)								30
								Pass

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59-61 Southampton St Reading: C1.7 Living (Day)

BS8233 Facade Noise Break In Calculation		125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}		66.5	67.0	67.6	69.6	67.0	59.3	73.1
Maximum External Noise Level - L_{max}								6.3
Safety Tolerance	3 dB	3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors								
Microphone Freefield Correction K	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction $L_2 = L_1 - 10 \log(D_1/D_2)$	-6.8 dB	-6.8	-6.8	-6.8	-6.8	-6.8	-6.8	
Barrier Correction $A_b = 10 \log(10 (D + d) \text{ dB})$	0.0 dB	0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction $A_v = 10 \log(\theta/180)$	180	0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade		62.7	63.2	63.8	65.8	63.2	55.5	69.3
Calculation of environmental noise break-in to residential rooms								
$L_2 = L_1 - R + 10 \log(S/A) + 3 \text{ dB}$ (Freefield version)								
Room Volume =	67.2 m ³							
Reverberation Time =	0.6 s							
$10 \log(S/A)$		0.6	0.6	0.6	0.6	0.6	0.6	
FAÇADE Elements								
Total Façade Area 1	12.2 m ²							
Glazing Area, S_g - Façade 1								
4mm Glass / 12mm Air Cavity / 6mm Glass		SRI	27	21	29	40	39	43
Predicted noise level in building from glazing 1		Sg/Sf	-33	-27	-35	-46	-45	-49
Solid Area, S_w - Façade 1			30.8	37.3	29.9	20.9	19.3	7.6
300mm Brick / Block cavity Wall/PB Lining		SRI	45	43	47	56	67	77
Predicted noise level through solid façade 1		Sw/Sf	-46	-44	-48	-57	-68	-78
Roof/Floor Area, S_c - Façade 1			17.7	20.2	16.8	9.8	-3.8	-21.5
No Roof		SRI	44	42	49	57	64	68
Predicted noise level through solid façade 3 / Roof		Sc/Sf	0	0	0	0	0	0
Trickle Vent(s) - Façade 1			0.0	0.0	0.0	0.0	0.0	0.0
No Trickle Vent		Dne	0	0	0	0	0	0
Predicted noise level through trickle vents		Ao/S	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!
Combined Internal Noise Level - L_{eq}			0.0	0.0	0.0	0.0	0.0	0.0
Target Internal Noise Level (dBA)			31.0	37.4	30.1	21.4	19.6	10.7
			32					
			35					
			Pass					

Reverberation Time Calculation

RT Target = 0.5 s

Calculated Reverberation Time = 0.50 s

Project :

Room Number	L	W	H	Volume	Reverberation Time:	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz
Atrium	6.8	2.5	5.4	92 m ³		0.57	0.52	0.45	0.48	0.47	0.52
Surface	Materials	W	L/H	Surface Area	Noise Absorption Coefficient	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz
Wall 1	Glass	1	16.4	16 m ²	0.05	0.03	0.02	0.02	0.03	0.02	0.02
Wall 1	Plaster board	1	6.4	6 m ²	0.20	0.15	0.10	0.05	0.04	0.05	1.3
Wall 2	Glass	1	21.6	22 m ²	0.05	0.03	0.02	0.02	0.03	0.02	1.1
Wall 2	Plaster board	1	14.8	15 m ²	0.20	0.15	0.10	0.05	0.04	0.05	3.0
Wall 3 Side Left	Plaster board	2.5	5.4	14 m ²	0.20	0.15	0.10	0.05	0.04	0.05	2.7
Wall 3 Side right	Glass	2.5	5.4	14 m ²	0.05	0.03	0.02	0.02	0.03	0.02	0.7
Floor	Smooth concrete	1	17	17 m ²	0.10	0.05	0.06	0.07	0.09	0.08	1.7
Ceiling	Absorption Class A	1	17	17 m ²	0.50	0.70	0.92	0.92	0.92	0.82	8.5
Wall Panels	Absorption Class A	1	12	12 m ²	0.50	0.70	0.92	0.92	0.92	0.82	6.0
		0	0	-	-	-	-	-	-	-	-
		0	0	-	-	-	-	-	-	-	-
		0	0	-	-	-	-	-	-	-	-
		0	0	-	-	-	-	-	-	-	-
Total Surfaces						26	28	32	31	31	28

APPENDIX D – INSUL DATA SHEETS

Sound Insulation Prediction (v8.0.7)

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- Key No. 1548

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Job No.:

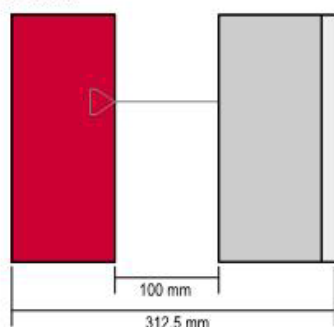
Page No.:

Date: 26 Feb 24

Initials: dhesn

File Name: insul

Notes:



R_w	53 dB	
C	-1 dB	
C_{tr}	-4 dB	
D_{nTw}	55 dB	[N50m3] [K:11m2]

System description

Panel 1 : 1 x 100.0 mm Brick (Solid) (ρ :1600 kg/m³, E:8.9GPa, ρ :0.02)

Cavity: Butterfly Tie: Stud spacing 600 mm

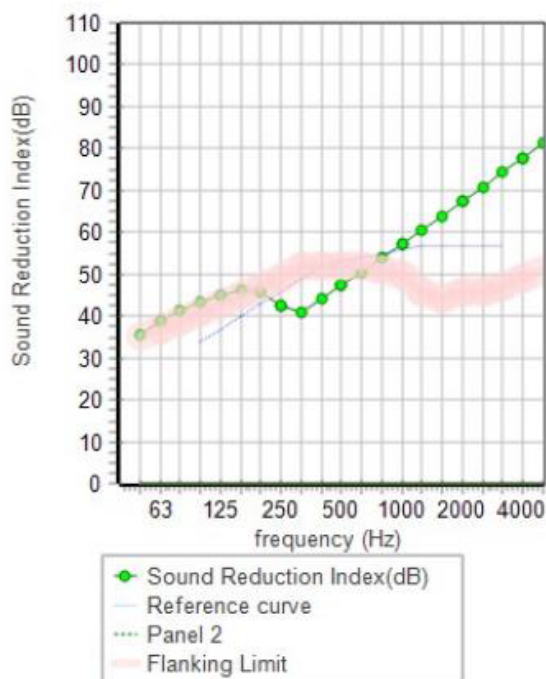
Panel 2 + 1 x 100.0 mm mm Concrete Block (ρ :1250 kg/m³, E:8.3GPa, ρ :0.02)

+ 1 x 12.5 mm Gyproc Wallboard 12.5mm (ρ :640 kg/m³, E:1.6GPa, ρ :0.01)

Mass-air-mass resonant frequency =21 Hz

Panel Size 2.7x4 m; Mass 293.0 kg/m²

frequency (Hz)	R(dB)	R(dB)
50	36	
63	39	38
80	41	
100	44	
125	45	45
160	46	
200	46	
250	42	43
315	41	
400	44	
500	47	47
630	50	
800	54	
1000	57	56
1250	61	
1600	64	
2000	67	67
2500	71	
3150	74	
4000	78	77
5000	81	



Sound Insulation Prediction (v8.0.7)

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- Key No. 1548

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Job No.:

Page No.:

Notes:

Date: 26 Feb 24

Initials:

File Name: insul



R_w 49 dB

C -2 dB

C_{tr} -8 dB

D_{nTW} 51 dB

[V:50m3]
[A:11m2]

System description

Panel 1 : 1 x 7.0 mm Roofing Slates (? : 2910 kg/m³, E: 68 GPa, ? : 0.01)

Cavity: Solid joist (timber or Twinaplate): Stud spacing 600 mm, Infill Fibreglass (10 kg/m³) Thickness 100 mm (? : 10 kg/m³, Rf: 4000 Pa.s/m²)

Panel 2 : 2 x 12.5 mm Gyproc Wallboard 12.5 mm (? : 640 kg/m³, E: 1.6 GPa, ? : 0.01)

Mass-air-mass resonant frequency = 39 Hz

frequency (Hz)	R(dB)	R(dB)
50	14	
63	10	12
80	12	
100	23	
125	30	27
160	35	
200	38	
250	41	41
315	44	
400	46	
500	48	47
630	49	
800	51	
1000	53	52
1250	53	
1600	53	
2000	51	53
2500	59	
3150	54	
4000	53	55
5000	57	

Panel Size 2.7x4 m; Mass 37.4 kg/m²

