



Acoustic Survey and Assessment for Proposed conversion to residential dwellings at Royd Arms, 158 Rooley Moor Road, Rochdale, OL12 7DQ.

Prepared for:

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August 2024



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1. Introduction

- 1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic survey and assessment to support a planning application for the conversion to residential accommodation of the Royd Arms, 158 Rooley Moor Road, Rochdale, OL12 7DQ.

Site Location and Context

- 1.2. The development site is situated to the north of Rooley Moor Road. To the south are existing residential units, on the opposite side of the road a convenience store and additional residential properties. To the rear a dilapidated factory
- 1.3. An aerial Photograph is enclosed in Figure 1, together with a proposed layout drawing in Figure 2.
- 1.4. The report has been produced to clarify the potential impact on the proposed development and to identify mitigation measures if required to ensure the development is appropriate in terms of noise impact.



2. Policy and Guidance

- 2.1. The impact of noise can be a material consideration in the determination of planning applications. The planning system has the task of guiding development to the most appropriate locations. It is recognised that on occasions it will be difficult to reconcile some land uses, such as housing, hospitals, or schools, with other activities that generate high levels of noise. However, the planning system is tasked to ensure that, wherever practicable, noise-sensitive developments are separated from major sources of noise (such as road, rail and air transport and certain types of industrial development).
- 2.2. The Government's publication of the National Planning Policy Framework (NPPF), updated in December 2023, states that planning policies and decisions should prevent new and existing development from contributing to or being put at unacceptable risk from, of being adversely affected by unacceptable levels of noise pollution.
- 2.3. The Government have also issued the Noise Policy Statement for England (NPSE). The NPSE clarifies the Government's underlying principles and aims in relation to noise and sets a vision to promote good health and a good quality of life through the effective management of noise while having regard to the Government's sustainable development strategy. The NPSE aims to mitigate and minimise adverse impacts on health and quality of life through the effective management and control of noise.
- 2.4. The NPSE introduces the following terms, although no sound levels are given to represent these, many authorities have identified the sound level criteria in line with the World Health Organisation, BS8233:2014 and BS4142: 2014 levels. The terms introduced by the NPSE are:
- NOEL – No Observed Effect Level (<30dB(A) inside <50dB(A) outside, 10dB below background)
- LOAEL – Lowest Observed Adverse Effect Level (30-35dB(A) inside 50-55dB(A) outside, background to +5dB)
- SOAEL – Significant Observed Adverse Effect Level (>35dB(A) inside, >55dB(A) outside, >+10dB above background)
- 2.5. The sound levels within the brackets of the previous paragraph are those determined as appropriate levels to indicate the relevant effect levels represented by the NPSE.



- 2.6. Other commonly used examples of standards utilised by Local Planning authorities for the consideration of noise impacts include comparison of the likely noise levels to be experienced at a development, with levels that have been recommended by the World Health Organisation (WHO) as Guidelines for the prevention of Community Noise Annoyance and within BS8233: 2014.
- 2.7. The WHO recommended noise levels for outdoor amenity areas (gardens) that should not be exceeded are 55dB(A) $L_{Aeq,16hr}$ in order to avoid 'Serious Community Annoyance' or 50dB(A) $L_{Aeq,16hr}$ to avoid 'Moderate Community Annoyance' during the day. For indoor levels WHO set 35dB(A) $L_{Aeq,16hr}$ during the day to prevent Moderate Annoyance and 30 dB(A) $L_{Aeq,8hr}$ at night to prevent sleep disturbance.
- 2.8. The WHO guidance also recommends that maximum sound levels at night should not regularly exceed 45dB(A) within bedrooms to prevent sleep disturbance. Regularly is considered to be more than 10 times during any 8-hour night-time period.
- 2.9. BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' also specifies desirable noise levels to be achieved inside dwellings.
- 2.10. BS 8233:2014 'Sound insulation and noise reduction for buildings – Code of Practice' also specifies desirable noise levels to be achieved inside dwellings. BS 8233 presents two levels, the first between the hours of 07:00 – 23:00 and the second between 23:00 -07:00.
- 2.11. The daytime period suggests internal noise levels of 35dB $L_{Aeq,16hr}$, for resting in living rooms and bedrooms while for night-time a level of 30dB $L_{Aeq,8hr}$ is recommended. Criteria for external areas mirrors that within the WHO guidance.
- 2.12. In addition, the 'ProPG Planning & Noise, Professional Practice Guidance on Planning & Noise, New Residential Development' provides a 4-staged approach to undertaking a risk assessment in relation to anticipated sound levels at new residential development and the provision of mitigation measures. The guidance is principally aimed at sites exposed predominantly to noise from transportation sources.

2.13. The first stage consists of an initial noise risk assessment, based on indicative day and night-time *noise* levels. Simply put, the higher the ambient noise in an area the greater the impact. The levels given are shown below although it should be noted that these are in excess of both the WHO and BS 8233: 2014 guidance.

Noise Risk Category*	Potential Effect if Unmitigated	Pre-Planning Application Guidance
0 – Negligible $L_{Aeq,16hr} < 50dB$ $L_{Aeq,8hr} < 40dB$	May be noticeable but no adverse effect on health and quality of life	In this category the development is likely to be acceptable from a noise perspective, nevertheless a good acoustic design process is encouraged to improve the existing environment and/or safeguard against possible future deterioration and to protect any designated tranquil areas. A noise assessment may be requested to demonstrate no adverse impact from noise. Application need not normally be delayed on noise grounds.
1 – Low $L_{Aeq,16hr} 50-63dB$ $L_{Aeq,8hr} 40-55dB$	Adverse effect on health and quality of life	In this category the development may be refused unless a good acoustic design process is followed and is demonstrated via a Level 1 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised and that a significant adverse impact will not arise in the finished development. Planning conditions and other measures to control noise may be required.
2 – Medium $L_{Aeq,16hr} 63-69dB$ $L_{Aeq,8hr} 55-60dB$ $L_{AFmax} > 80dB^{**}$	Significant adverse effect on health and quality of life	In this category the development is likely to be refused unless good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement which confirms how the adverse impacts of noise on the new development will be mitigated and minimised, and clearly demonstrates that a significant adverse noise impact will not arise in the finished development. Planning conditions and other measures to control noise will normally be required.
3 – High $L_{Aeq,16hr} > 69dB$ $L_{Aeq,8hr} > 60dB$ $L_{AFmax} > 80dB^{**}$	Unacceptable adverse effect of health and quality of life	In this category the development is very likely to be refused on noise grounds, even if a good acoustic design process is followed and is demonstrated via a Level 2 Acoustic Design Statement. Applicants are advised to seek expert advice on possible mitigation measures. Advice on the circumstances when the refusal of a new housing on noise grounds should normally be anticipated is included in the ProPG.

2.14. Stage 2, consists of a full assessment of the prevailing ambient noise and requires 4 elements to be considered:

- I. Element 1 – Good Acoustic Design
- II. Element 2 – Internal Noise Level Guidelines
- III. Element 3 – External Amenity Area Noise Assessment
- IV. Element 4 – Assessment of Other Relevant Issues

2.15. A good acoustic design is implicit in meeting the requirements of the NPPF and can help to resolve many potential acoustic issues.



2.16. Details of the criteria considered suitable are provided above for both internal and external sound levels. Element 4 includes such issues as local and national policy, likely occupants, wider planning objectives.



3. The Assessment

The development

3.1 The proposed development consists of the conversion of the former Royd Arms, 158 Rooley Moor Road, into a three storey, six apartment property.

3.2 Figure 2 below provides an overview of the proposed development.

Existing Situation.

3.3 In order to obtain representative background sound levels for the area on site monitoring was undertaken over the 9th-10th August 2024.

3.4 A Cirrus Optimus Green sound level meter was utilised for the monitoring. The meter was placed over 1m from the first-floor façade of the building overlooking the main road.

3.5 The meter was field calibrated at the start and end of the monitoring period with no significant variation and full laboratory calibration certificates are available on request.

3.6 The weather during the monitoring started with rain over the first evening with the following day and night being dry, overcast with little to no wind <5m/s.

3.7 The full results are shown in Appendix A, with a summary in the tables below.

Start Time	End Time	L _{Aeq}	L _{A90}	L _{AMax}
09/08/2024 01:00	09/08/2024 07:00	56.1	39.8	80.2
09/08/2024 07:00	09/08/2024 23:00	64.3	48.0	95.5
09/08/2024 23:00	10/08/2024 07:00	55.9	31.0	79.1
10/08/2024 07:00	10/08/2024 08:42	60.4	38.6	80.2

3.8 Background sound levels were dominated by passing traffic on Rooley Moor Road, with night-time maximum sound levels regularly exceeded at identified at 76.4dB(A).

3.9 Given a 15dB attenuation¹ for an open window the sound levels to be experienced by the future occupants are above those identified within the guidance documents detailed in section 2 of the report. Therefore, further mitigation measures are required.

¹ BS8233: 2014; Guidance on sound insulation and noise reduction for buildings



- 3.10 A standard 6/12/6 double glazing unit will provide a sound reduction, $R_w(C;C_{tr})$, of 33(-1;-3). Therefore, adequate to protect the future occupants of the property from the prevailing environmental average day and night-time sound levels. $L_{A_{Max}}$ sound levels will at the front of the property be 46.4dB(A), slightly above the recommended 45dB. However, when the full façade of the property is taken into consideration the resulting internal sound is 38.9-40.3dB(A), see Appendix B.
- 3.11 In order to be able to keep windows closed additional ventilation provision must be made for the property. As such it is recommended that a ventilation system is used incorporating acoustic trickle ventilators for all windows to habitable rooms to the proposed properties. The ventilators must achieve a similar or better performance to the windows when open and a number of suitable models are available from suppliers including the Greenwood DN Vent providing 34dB (C_{tr}) attenuation or the Titon, Trimvent Select S13 Ventilator providing 33dB (C_{tr}) attenuation. Other models and manufacturers are available.
- 3.12 Care must be taken to ensure that windows are well fitted and gaps between the window frame and the brick work are minimised. Where gaps do occur, these should be filled with a suitable acoustic material, not expandable foam. The window frame should be sealed across the full depth of the frame and not just around the edges. This will ensure that sound does not 'leak' around the edge of the frame.
- 3.13 It is worth noting that the above provision does not prohibit the short opening of windows for purge ventilation of the property. The recommended trickle ventilation is design to achieve the required background ventilation for the property.
- 3.14 A consideration of the Building Regulations, and Approved Document O requirements around overheating is essential given the need for closed windows. The Regulations require adequate provision to be made for the removal of heat from the building and to limit solar gain.
- 3.15 Where the trickle ventilators do not provide sufficient 'free area', then additional provision to remove excess heat is required. Should additional wall or mechanical ventilation be used to achieve the 'free area' requirements, the chosen system must ensure that adequate acoustic attenuation is provided to achieve the required internal 35/30dB(A) day/night-time recommended levels.



Internal Sound Transfer

- 3.16 It is important to ensure suitable levels of attenuation exist between the proposed apartments to prevent any adverse impact from sound transference.
- 3.17 Appendix C contains proposed specifications for dividing walls between apartments and communal areas and floors/ceilings to ensure the building regulation requirements are met and no adverse impact will be experienced between the apartments.



4 Conclusion

- 4.1 On-site monitoring has identified existing background sound levels will result in an adverse impact on the proposed development. As such additional mitigation measures are required.
- 4.2 These have been identified as standard double-glazing units with trickle window vents to ensure a suitable level of ventilation is achieved.
- 4.3 The inclusion of the above mitigation measures to all habitable rooms will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England.
- 4.4 As such the development will meet the objectives of the National Planning Policy Framework in ensuring that no significant adverse impact is experienced by the future residents. The development is therefore considered to be acceptable in terms of noise.
- 4.5 A consideration of sound transfer between apartments has also been made and suggested specification for the party structures included within the report to ensure no adverse impact and compliance with the requirements of the building regulations.

Figure 1 – Aerial Photograph

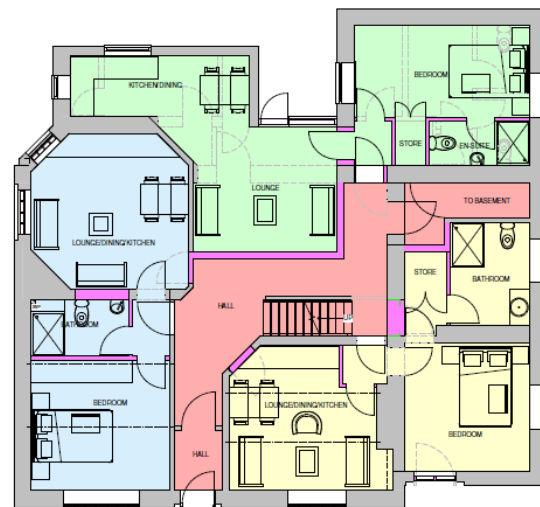




Figure 2 – Proposed Layout Plan

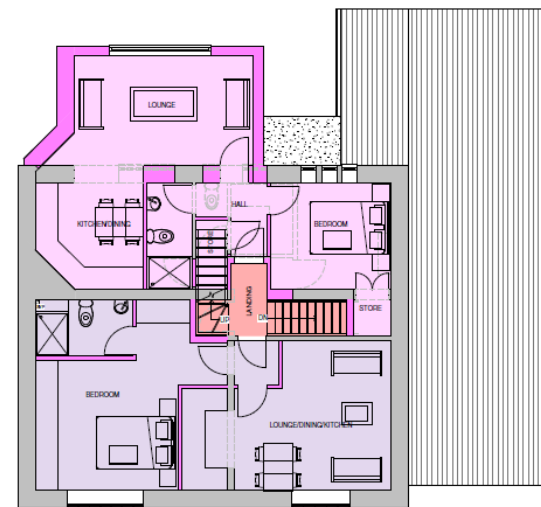
PROPOSED: GROUND & FIRST FLOOR PLANS

Royds Arms, 158 Rooley Moor Road, Rochdale, OL12 7DQ



GROUND FLOOR PLAN

	COMMUNAL AREA
	UNIT 1 - 1 BEDROOM 39.67 SQ. M
	UNIT 2 - 1 BEDROOM 37.00 SQ. M
	UNIT 3 - 1 BEDROOM 39.98 SQ. M



FIRST FLOOR PLAN Copy 1

	UNIT 4 - 1 BEDROOM 44.07 SQ. M
	UNIT 5 - 1 BEDROOM 42.62 SQ. M

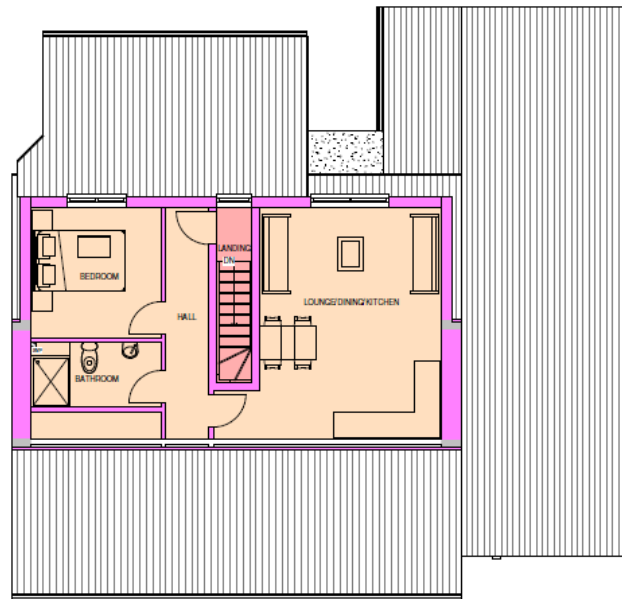
0m 1m 2m 3m 4m 5m
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Client	158 Rooley Moor Road, Rochdale, OL12 7DQ
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Drawn	15/08/2024
Checked	15/08/2024
Approved	15/08/2024
Scale	1:50
Sheet	1 of 1

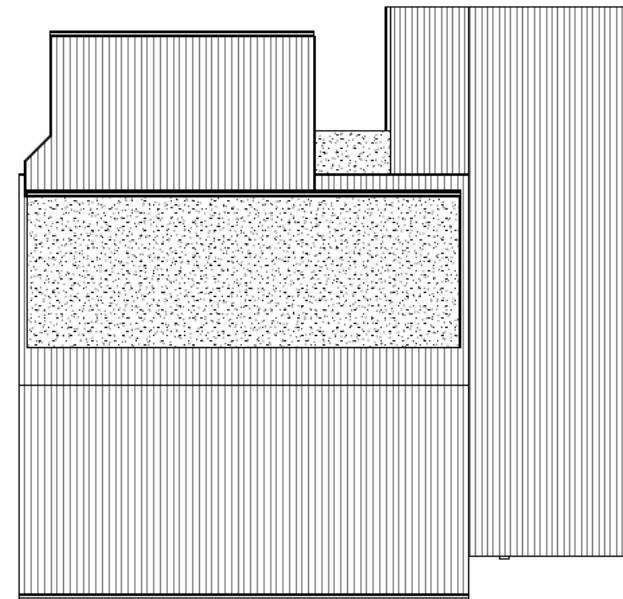
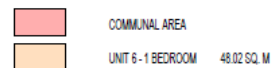


PROPOSED: SECOND FLOOR & ROOF PLANS

Royds Arms, 158 Rooley Moor Road, Rochdale, OL12 7DQ



SECOND FLOOR PLAN



ROOF PLAN



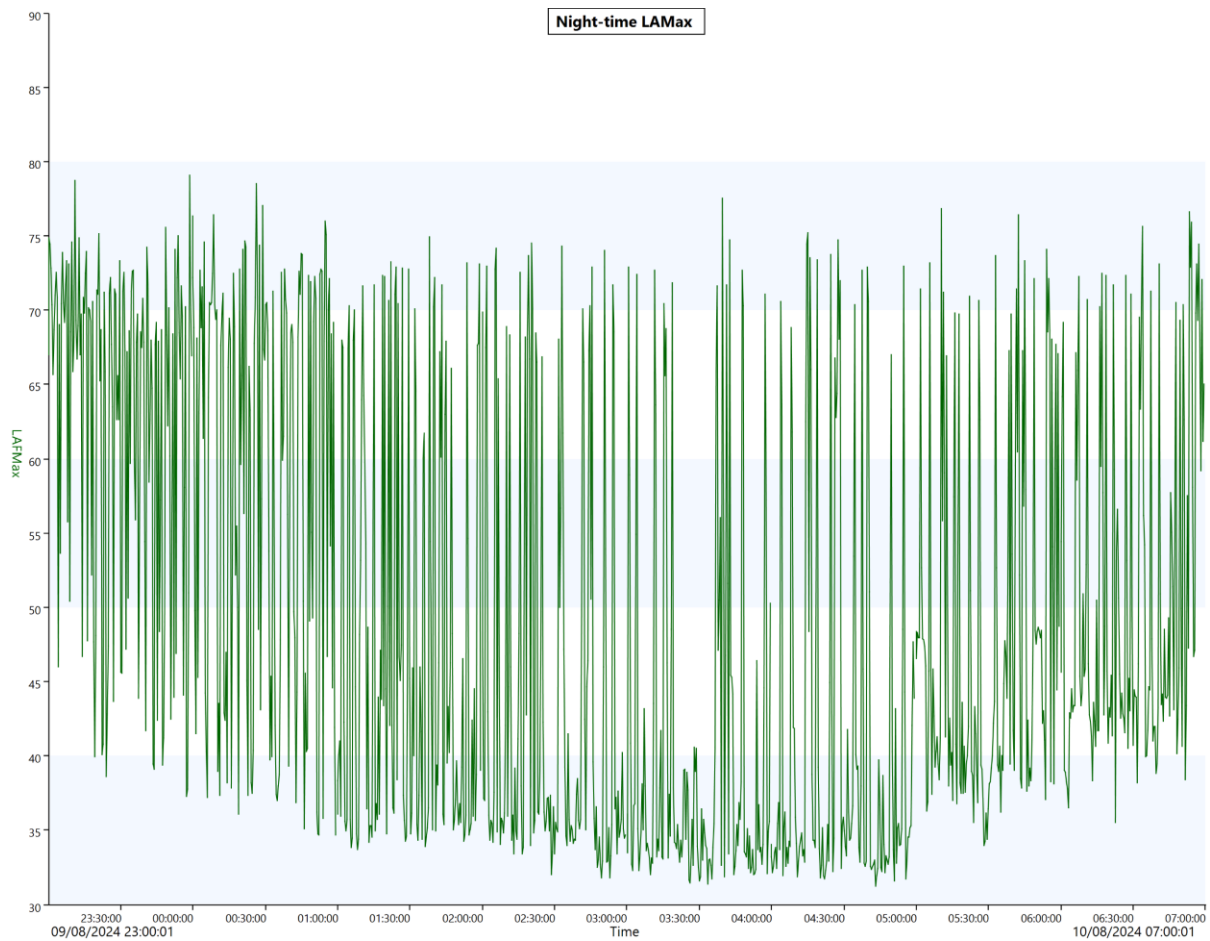
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14/05/24		CS	
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Title: PROPOSED SECOND FLOOR & ROOF PLANS			
Client: United Ventures (UK) Ltd			
Issue: PLANNING APPLICATION		Scale: 1:50	
Drawing Number: 1.00		Page: 6 of 6	
Rev: 001		Date: 14/05/2024 11:25:24	
Rev: 001		Drawn: CS	
Rev: 001		Checked: CS	



Appendix A – Full Monitoring Results

Time	L _{Aeq} (dB)	L _{AMax} (dB)	L _{A90} (dB)
09/08/2024 01:00	51.5	73.5	39.6
09/08/2024 02:00	53.8	78.8	38.1
09/08/2024 03:00	52.3	72.3	39.0
09/08/2024 04:00	54.7	75.4	42.9
09/08/2024 05:00	57.5	80.2	42.1
09/08/2024 06:00	60.2	78.4	39.4
09/08/2024 07:00	63.7	78.5	44.4
09/08/2024 08:00	64.0	78.4	47.5
09/08/2024 09:00	64.3	79.2	50.6
09/08/2024 10:00	63.8	78.5	51.1
09/08/2024 11:00	64.2	79.0	52.4
09/08/2024 12:00	64.4	88.5	51.8
09/08/2024 13:00	65.0	81.6	53.5
09/08/2024 14:00	65.2	85.2	53.4
09/08/2024 15:00	66.3	95.5	52.4
09/08/2024 16:00	65.3	79.3	53.6
09/08/2024 17:00	65.0	81.0	52.7
09/08/2024 18:00	64.9	89.5	51.1
09/08/2024 19:00	63.4	83.3	47.6
09/08/2024 20:00	62.3	83.7	44.5
09/08/2024 21:00	61.3	80.5	40.7
09/08/2024 22:00	62.5	92.3	39.6
09/08/2024 23:00	59.6	79.1	36.4
10/08/2024 00:00	58.9	78.5	33.9
10/08/2024 01:00	54.1	74.9	32.3
10/08/2024 02:00	53.3	74.5	31.2
10/08/2024 03:00	52.1	77.5	30.1
10/08/2024 04:00	53.1	75.2	30.2
10/08/2024 05:00	53.9	76.8	31.8
10/08/2024 06:00	55.2	76.6	35.6
10/08/2024 07:00	59.9	80.2	37.9
10/08/2024 08:00	61.0	76.5	41.5



Appendix B – Combined Facade Calculation, Night-time L_AMax.

Ground floor (unit 1)

Outdoor To Indoor Sound Transmission (v10.0.3)

Program copyright Marshall Day Acoustics 2017

Margin of error is generally within ±3 dB

- Key No. 2594

Job Name:

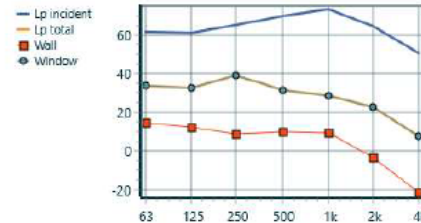
Job No.:

Date: 12/08/2024

File Name:

Comment:

Initials: info



Octave Band Centre Frequency (Hz)							
Source	63	125	250	500	1k	2k	4k
Incident sound level (freefield)	61.6	61.1	64.9	69.9	73.2	64.4	50.6
Path							
Element 1, STL	-51	-53	-60	-64	-68	-72	-76
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [16 m²]	12	12	12	12	12	12	12
Element sound level contribution	15	12	9	10	9	-3	-21
Element 2, STL	-24	-25	-22	-35	-41	-38	-39
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [2.7 m²]	4	4	4	4	4	4	4
Element sound level contribution	34	32	39	31	29	23	8
Receiver							
Room volume(-10LogV) [38 m³]	-16	-16	-16	-16	-16	-16	-16
Reverberation time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
RT (+10LogT)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Equation Constant	11	11	11	11	11	11	11
Room sound level	34	33	39	31	29	23	8
Level difference							
D2m,nT	31	32	29	42	48	45	46

** Element descriptions: #1: Wall
#2: Window

Ground Floor Unit 3 and Second floor unit 5

Outdoor To Indoor Sound Transmission (v10.0.3)

Program copyright Marshall Day Acoustics 2017

Margin of error is generally within ± 3 dB

- Key No. 2594

Job Name:

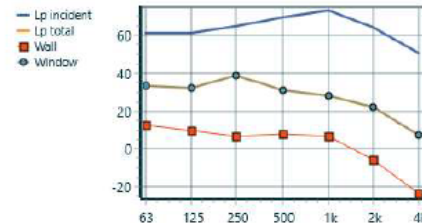
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Date: 12/08/2024

File Name:

Comment:

Initials: info



Octave Band Centre Frequency (Hz)								
Source	63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	61.6	61.1	64.9	69.9	73.2	64.4	50.6	75
Path								
Element 1 , STL	-51	-53	-60	-64	-68	-72	-76	10
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [12 m²]	11	11	11	11	11	11	11	
Element sound level contribution	12	10	7	8	7	-6	-24	
Element 2 , STL	-24	-25	-22	-35	-41	-38	-39	34
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [2.4 m²]	4	4	4	4	4	4	4	
Element sound level contribution	33	32	39	31	28	22	7	
Receiver								
Room volume(-10LogV) [38 m³]	-16	-16	-16	-16	-16	-16	-16	34
Reverberation time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
RT (+10LogT)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	
Equation Constant	11	11	11	11	11	11	11	
Room sound level	34	32	39	31	28	22	8	
Level difference								
D2m,nT	31	32	29	42	48	45	46	41
** Element descriptions: #1: Wall #2: Window								

Appendix C – Proposed Separating Structure Designs.

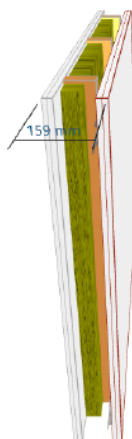
Internal Separating Walls

Sound Insulation Prediction (v10.0.3)

Program copyright Marshall Day Acoustics 2017 | Margin of error is generally within $R_w \pm 3$ dB

Date: 12/08/2024

Job Name:



R_w 58 dB

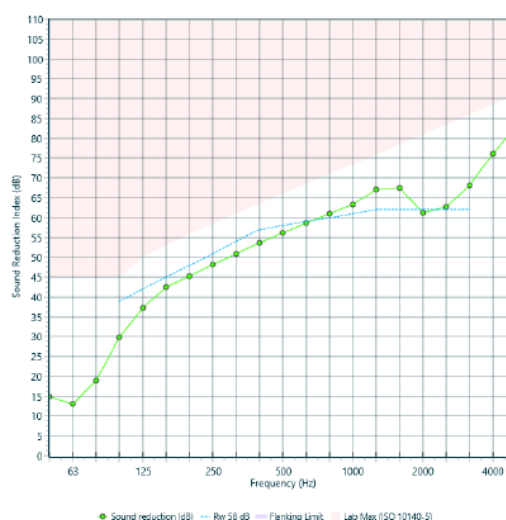
C -3 dB

Ctr -10 dB

System description

Panel 1 1 x 12.5 mm Gyproc Fireline 12.5mm + 1 x 15 mm Gyproc SoundBloc 15mm
Frame Timber stud + Resilient rail/bar (90 mm x 45 mm), Stud spacing 600 mm, Cavity Width 102 mm + 60 mm Fibreglass (10kg/m3) 60mm
Panel 2 2 x 15 mm Gyproc SoundBloc 15mm
Details Panel Size 2.7 m x 4.0 m, Partition surface mass = 48.2 kg/m², Mass-air-mass resonant frequency = 47 Hz

freq.(Hz)	R(dB)	Roct (dB)
50	15	
63	13	15
80	19	
100	30	
125	37	34
160	42	
200	45	
250	48	48
315	51	
400	54	
500	56	56
630	59	
800	61	
1000	63	63
1250	67	
1600	68	
2000	61	63
2500	63	
3150	68	
4000	76	72
5000	83	



- Key No. 2594 | Initials:info | File Name:insul

Separating Floors

Sound Insulation Prediction (v10.0.3)

Program copyright Marshall Day Acoustics 2017 | Margin of error is generally within $R_w \pm 3$ dB

Date: 12/08/2024

Job Name:



R_w 56 dB

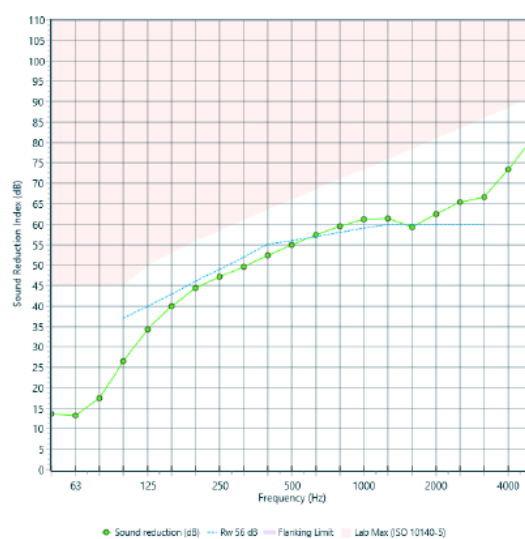
C -4 dB

Ctr -11 dB

System description

Panel 1 1 x 20 mm Flooring Particle Board
Frame Solid Joist with resilient rail (144 mm x 47 mm), Stud spacing 600 mm, Cavity Width 162 mm + 60 mm Fibreglass (10kg/m3) 60mm
Panel 2 2 x 12.5 mm Gyproc Fireline 12.5mm
Details Panel Size 2.7 m x 4.0 m, Partition surface mass = 34.4 kg/m², Mass-air-mass resonant frequency = : 46 Hz

freq.(Hz)	R(dB)	Roct (dB)
50	14	
63	13	14
80	17	
100	27	
125	34	30
160	40	
200	44	
250	47	47
315	50	
400	52	
500	55	54
630	57	
800	60	
1000	61	61
1250	61	
1600	59	
2000	62	62
2500	65	
3150	67	
4000	73	70
5000	81	



- Key No. 2594 | Initials:info | File Name:insul



- Acoustic Flanking strip to be used on edges of the floor and under walls to reduce flanking transmissions.
- Plaster boards to be overlayed,
- Acoustic sealant to be used around the edges and any gaps reduced to <3mm.



Appendix D – Report Authors Details.

This report has been produced by Neil Martin, BSc (Hons), PGDip, CEnvH MCIEH, MIOA.

Neil is the principal acoustic consultant at Martin Environmental Solutions Ltd, a consultancy company specialising in Environmental Health disciplines including environmental noise assessment and control. He holds a Bachelor's degree in Environmental Health and Diploma in Acoustics. He is a Chartered Member of the Chartered Institute of Environmental Health and a Full member of the Institute of Acoustics.

Neil has over 20 years' experience working within a Local Authority Environmental Health setting, principally in the Environmental Protection and Public Health areas and has been working as an acoustic consultant since 2011.

Since its formation, Martin Environmental Solutions has advised and assisted many groups including residents, developers and local authorities about the problems of noise and vibration in the environment and the possible solutions. Neil also acts as an expert witness in the area of acoustics.