



Acoustic Survey and Assessment for Proposed change of use of the upper floors to residential at 62 Market Street, Heywood, OL10 4LY.

Prepared for:

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May 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 change of use of the upper floors to residential at 62 Market Street, Heywood, OL10 4LY.

Site Location and Context

- 1.2. The development site is situated to the north of Market Street, forming a mid-terrace property. To the north and rear the site backs onto Dawson Street. Market Street and Dawson Street form part of the busy A58 with Market Street heading west and Dawson Street east.
- 1.3. The development site is three storeys, with the ground floor being retail, currently a barber's. The adjacent properties to the west were constructed at the same time and mirror the proposed development with retail to the ground floor and residential above. The properties to the east are only two storeys and were built at a different time.
- 1.4. An aerial photograph is enclosed in Figure 1.
- 1.5. 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 September 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 will see the first and second floors of the building converted into residential apartments. A new staircase will be constructed allowing a separate access to the properties.
- 3.2 The front of the apartments overlooking Market Street will be kitchen/living room with the rear a bedroom and an annex bathroom.

Existing Situation.

- 3.3 In order to obtain representative background sound levels for the area on site monitoring was undertaken over the 9th-11th May 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 overlooking Market Street.
- 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 was dry with little to no wind <5m/s.
- 3.7 It was not possible to undertake monitoring to the rear of the site at the time, however the road to the rear is a mirror of that to the front just in the opposite direction and the nearest habitable room being slightly further from the edge of the carriage way. This façade will also be slightly protected by the rear annex of the building and that of the adjacent building. The results obtained for the front are therefore considered representative of both façade sound levels.
- 3.8 The full results are shown in Appendix A, with a summary in the tables below.

Start Time	End Time	Duration	L _{Aeq}	L _{A90}	L _{AMax}
09/05/2024 11:00	09/05/2024 23:00	11:59:59	69.3	57.3	109.3
09/05/2024 23:00	10/05/2024 07:00	08:00:00	64.1	39.4	89.8
10/05/2024 07:00	10/05/2024 23:00	16:00:00	70.0	59.4	107.2
10/05/2024 23:00	11/05/2024 07:00	08:00:00	65.9	41.3	105.9
11/05/2024 07:00	11/05/2024 11:00	04:00:00	69.6	56.0	98.0



- 3.9 Background sound levels were dominated by passing traffic with night-time maximum sound levels regularly exceeded at identified at 81.4dB(A).
- 3.10 The above results are very similar to those identified during previous monitoring in the area undertaken in February 2023 by Martin Environment Solutions,
- 3.11 Given a 15dB attenuation¹ for an open window the sound levels to be experienced by the future occupants are slightly above those identified within the guidance documents detailed in section 2 of the report. Therefore, further mitigation measures are required.
- 3.12 A consideration of the full façade of the property has been undertaken, based on a standard 6/12/6 double glazing unit being fitted and remaining closed. The results are shown in Appendix B and identify that the standard glazing will be sufficient to protect the future occupants from the surrounding sound levels.
- 3.13 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.
- 3.14 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.
- 3.15 Confirmation that the above will meet the requirements of Approved Document O will be required or an alternative ventilation system achieving the same level of attenuation will be required as a minimum. The above specification allows for windows to be opened for purge ventilation but not background ventilation.

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



Internal Transfer

- 3.16 In addition to assessing the impact of the external sound levels it is important to ensure the internal transfer of sound between units will not result in any adverse impact. As such a proposed separating structure has been devised for the floor/ceiling between the ground and first and first and second floors along with a proposed wall design around the staircase.
- 3.17 The above specifications are shown in Appendix C and will also provide a satisfactory level of fire protection between the units and means of escape.



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 In addition, a suggested specification for the dividing structures has been identified to ensure no adverse impact is experienced from internal transfer of sound.

Figure 1 – Aerial Photograph



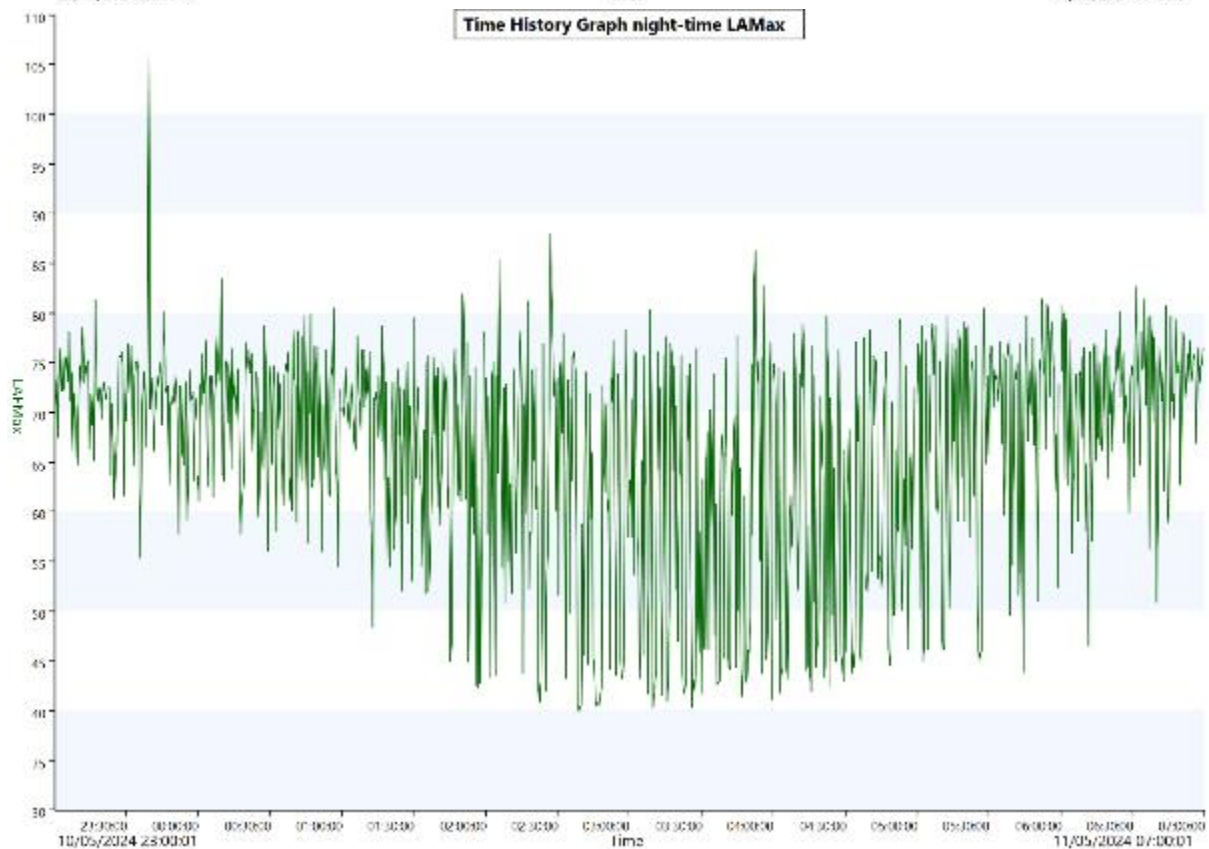
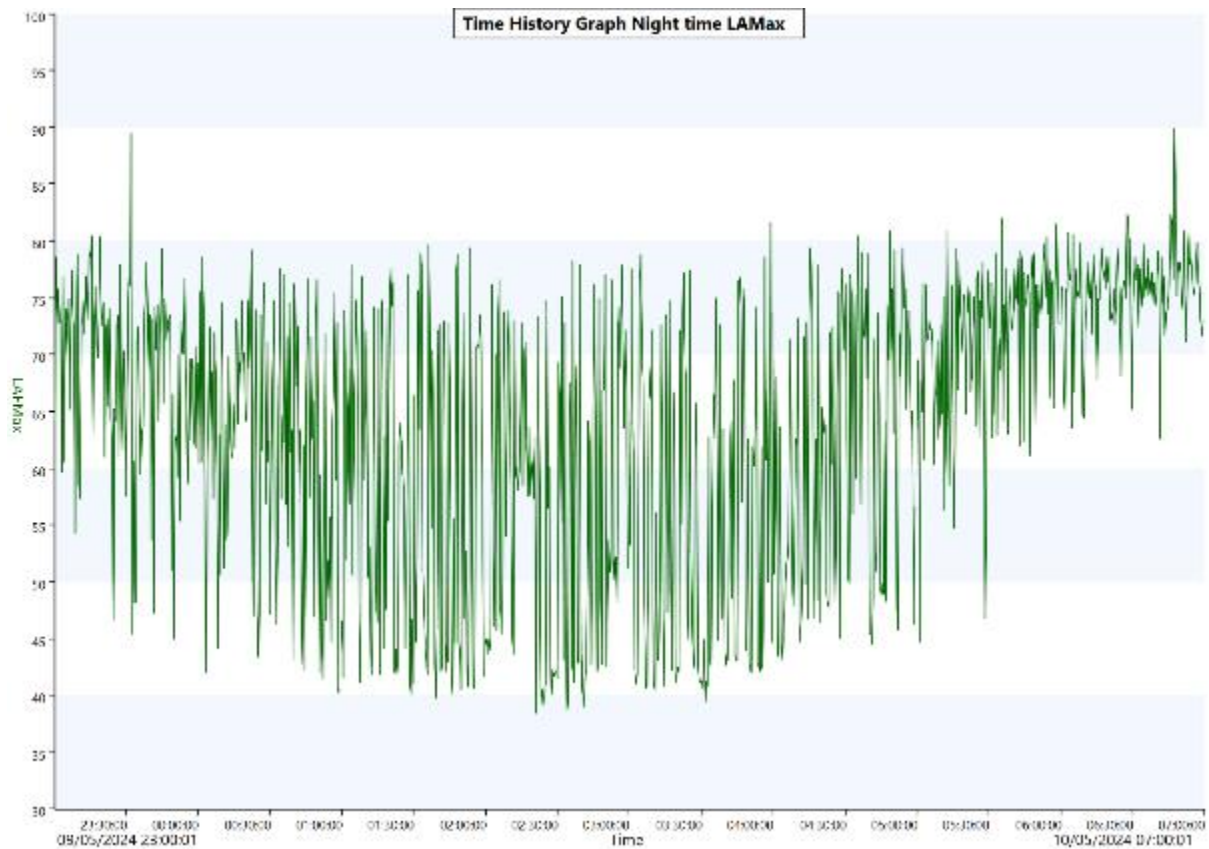


Appendix A – Full Monitoring Results

Time	L _{Aeq} (dB)	L _{AMax} (dB)	L _{A90} (dB)
09/05/2024 11:00	68.7	81.7	58.7
09/05/2024 12:00	69.1	84.5	59.6
09/05/2024 13:00	68.9	83.7	58.5
09/05/2024 14:00	68.8	91.7	59.5
09/05/2024 15:00	69.1	97.9	58.6
09/05/2024 16:00	67.8	87.7	59.1
09/05/2024 17:00	67.5	94.4	59.1
09/05/2024 18:00	69.7	83.0	60.5
09/05/2024 19:00	69.2	87.9	58.3
09/05/2024 20:00	74.2	109.3	57.0
09/05/2024 21:00	66.9	80.9	52.7
09/05/2024 22:00	66.3	82.5	48.1
09/05/2024 23:00	64.7	89.4	42.7
10/05/2024 00:00	60.9	79.2	39.8
10/05/2024 01:00	60.2	79.6	38.3
10/05/2024 02:00	59.3	78.2	37.9
10/05/2024 03:00	59.5	81.6	37.6
10/05/2024 04:00	61.7	80.9	41.2
10/05/2024 05:00	66.1	82.0	45.9
10/05/2024 06:00	69.1	89.8	51.8
10/05/2024 07:00	71.6	88.9	60.1
10/05/2024 08:00	69.9	91.2	60.0
10/05/2024 09:00	70.8	96.9	59.8
10/05/2024 10:00	69.4	91.5	60.1
10/05/2024 11:00	68.4	85.4	59.4
10/05/2024 12:00	69.2	94.0	59.4
10/05/2024 13:00	69.3	101.4	59.1
10/05/2024 14:00	69.7	96.4	60.0
10/05/2024 15:00	68.7	86.9	60.4
10/05/2024 16:00	72.2	107.2	60.2
10/05/2024 17:00	68.9	88.1	60.2
10/05/2024 18:00	69.9	97.0	60.7
10/05/2024 19:00	69.7	94.1	59.3
10/05/2024 20:00	72.5	105.8	58.6
10/05/2024 21:00	67.7	91.1	57.5
10/05/2024 22:00	67.1	83.0	57.1
10/05/2024 23:00	72.0	105.9	52.4
11/05/2024 00:00	64.3	83.4	47.9
11/05/2024 01:00	62.3	81.9	43.0
11/05/2024 02:00	62.0	87.8	39.5
11/05/2024 03:00	60.9	86.2	39.4



11/05/2024 04:00	60.4	79.6	40.8
11/05/2024 05:00	64.6	81.4	43.1
11/05/2024 06:00	65.7	82.6	45.6
11/05/2024 07:00	67.2	84.2	49.3
11/05/2024 08:00	69.5	88.9	57.3
11/05/2024 09:00	71.5	98.0	59.5
11/05/2024 10:00	69.1	88.1	60.3



Appendix B – Break in sound calculations

First floor, front kitchen/living

Day

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

– Key No. 2594

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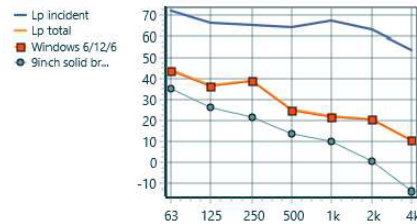
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Date: 03/06/2024

File Name:

Comment:

Initials: info



Octave Band Centre Frequency (Hz)								
Source	63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	71.9	65.9	65.1	64.1	67.2	62.9	53.7	70
Path								
Element 1 , STL	-24	-25	-22	-35	-41	-38	-39	32
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [4.5 m²]	6	6	6	6	6	6	6	
Element sound level contribution	43	36	38	24	22	20	10	
Element 2 , STL	-37	-40	-44	-51	-58	-63	-68	18
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [14 m²]	11	11	11	11	11	11	11	
Element sound level contribution	35	26	21	13	10	0	-14	
Receiver								
Room volume(-10LogV) [80 m³]	-19	-19	-19	-19	-19	-19	-19	32
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	44	37	39	25	22	20	10	
Level difference								
D2m,nT	31	32	30	42	49	46	47	38
** Element descriptions: #1: Windows 6/12/6 #2: 9inch solid brick wall								

Night

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

- Key No. 2594

Job Name:

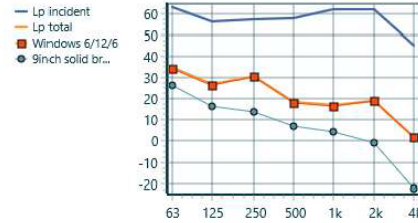
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Date:03/06/2024

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Initials:info



Octave Band Centre Frequency (Hz)								
Source	63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	62.9	56.2	57.3	57.6	62.1	61.6	45.4	66
Path								
Element 1 , STL	-24	-25	-22	-35	-41	-38	-39	26
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [4.5 m²]	6	6	6	6	6	6	6	
Element sound level contribution	34	27	31	18	16	19	2	
Element 2 , STL	-37	-40	-44	-51	-58	-63	-68	11
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [14 m²]	11	11	11	11	11	11	11	
Element sound level contribution	26	17	14	7	4	-1	-22	
Receiver								
Room volume(-10LogV) [80 m³]	-19	-19	-19	-19	-19	-19	-19	26
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	35	27	31	18	17	19	2	
Level difference								
D2m,nT	31	32	30	42	49	46	47	40
** Element descriptions: #1: Windows 6/12/6 #2: 9inch solid brick wall								

First floor, rear bedroom

Day

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

- Key No. 2594

Job Name:

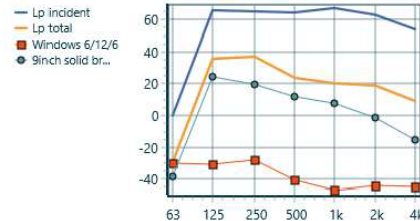
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Octave Band Centre Frequency (Hz)							
Source	63	125	250	500	1k	2k	4k
Incident sound level (freefield)	0.0	65.9	65.1	64.1	67.2	62.9	53.7
Path							
Element 1, STL	-24	-25	-22	-35	-41	-38	-39
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [2.1 m²]	3	3	3	3	3	3	3
Element sound level contribution	-30	-31	-28	-41	-47	-44	-45
Element 2, STL	-37	-40	-44	-51	-58	-63	-68
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [6.0 m²]	8	8	8	8	8	8	8
Element sound level contribution	-38	25	20	12	8	-1	-16
Receiver							
Room volume(-10LogV) [50 m³]	-17	-17	-17	-17	-17	-17	-17
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	-29	35	37	24	21	19	9
Level difference							
D2m,nT	32	34	31	44	50	47	48
							LpAinc - LpArev,T0

** Element descriptions:

#1: Windows 6/12/6

#2: 9inch solid brick wall

Night

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

- Key No. 2594

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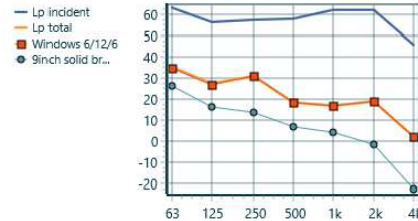
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Octave Band Centre Frequency (Hz)							
Source	63	125	250	500	1k	2k	4k
Incident sound level (freefield)	62.9	56.2	57.3	57.6	62.1	61.6	45.4
Path							
Element 1, STL	-24	-25	-22	-35	-41	-38	-39
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [2.1 m²]	3	3	3	3	3	3	3
Element sound level contribution	34	27	31	18	17	19	2
Element 2, STL	-37	-40	-44	-51	-58	-63	-68
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [6.0 m²]	8	8	8	8	8	8	8
Element sound level contribution	26	16	13	7	4	-1	-22
Receiver							
Room volume(-10LogV) [36 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	35	27	31	18	17	19	2
Level difference							
D2m,nT	31	32	30	42	48	46	47
LpAinc - LpARex,T0							40

** Element descriptions:

#1: Windows 6/12/6
#2: 9 inch solid brick wall

Night-time L_{Amax}

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

- Key No. 2594

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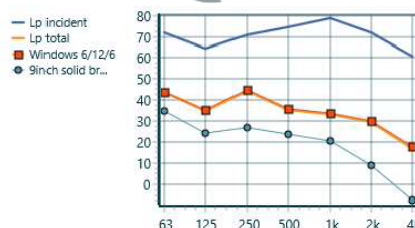
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Date: 03/06/2024

File Name:

Comment:

Initials: info



Octave Band Centre Frequency (Hz)								
Source	63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	71.6	64.3	70.7	74.7	78.7	72.1	60.7	81
Path								
Element 1 , STL	-24	-25	-22	-35	-41	-38	-39	40
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [2.1 m²]	3	3	3	3	3	3	3	
Element sound level contribution	44	36	45	36	34	30	18	
Element 2 , STL	-37	-40	-44	-51	-58	-63	-68	25
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [6.0 m²]	8	8	8	8	8	8	8	
Element sound level contribution	35	24	27	24	21	9	-7	
Receiver								
Room volume(-10LogV) [36 m³]	-16	-16	-16	-16	-16	-16	-16	40
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	44	35	44	36	33	30	17	
Level difference								
D2m,nT	31	32	30	42	48	46	47	41
** Element descriptions: #1: Windows 6/12/6 #2: 9inch solid brick wall								

Second floor, front kitchen/living

Day

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:

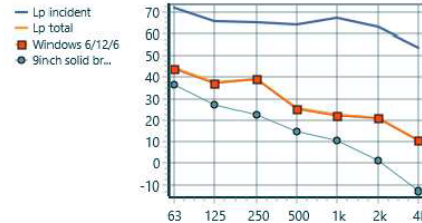
Job No.:

Date: 03/06/2024

File Name:

Comment:

Initials: info



Octave Band Centre Frequency (Hz)							
Source	63	125	250	500	1k	2k	4k
Incident sound level (freefield)	71.9	65.9	65.1	64.1	67.2	62.9	53.7
Overall dBA							
70							
Path							
Element 1, 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) [3.2 m²]	5	5	5	5	5	5	5
Element sound level contribution	44	37	39	25	22	21	11
33							
Element 2, STL	-37	-40	-44	-51	-58	-63	-68
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [11 m²]	10	10	10	10	10	10	10
Element sound level contribution	36	27	23	15	11	1	-13
19							
Receiver							
Room volume(-10LogV) [49 m³]	-17	-17	-17	-17	-17	-17	-17
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	45	37	39	25	22	21	11
33							
Level difference							
D2m,nT	30	32	29	42	48	45	46
LpAinc - LpARev,T0							
37							
** Element descriptions:							
#1: Windows 6/12/6							
#2: 9inch solid brick wall							

Night

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

- Key No. 2594

Job Name:

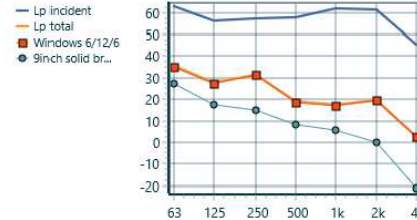
Job No.:

Date:03/06/2024

File Name:

Comment:

Initials:info



Octave Band Centre Frequency (Hz)							
Source	63	125	250	500	1k	2k	4k
Incident sound level (freefield)	62.9	56.2	57.3	57.6	62.1	61.6	45.4
Path							
Element 1, 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) [3.2 m²]	5	5	5	5	5	5	5
Element sound level contribution	35	27	31	19	17	20	2
Element 2, STL	-37	-40	-44	-51	-58	-63	-68
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [11 m²]	10	10	10	10	10	10	10
Element sound level contribution	27	18	15	8	6	0	-21
Receiver							
Room volume(-10LogV) [49 m³]	-17	-17	-17	-17	-17	-17	-17
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	36	28	31	19	17	20	2
Level difference							
D2m,nT	30	32	29	42	48	45	46
LpAinc - LpARev,T0							40
** Element descriptions: #1: Windows 6/12/6 #2: 9inch solid brick wall							

Second floor, rear bedroom

Day

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

- Key No. 2594

Job Name:

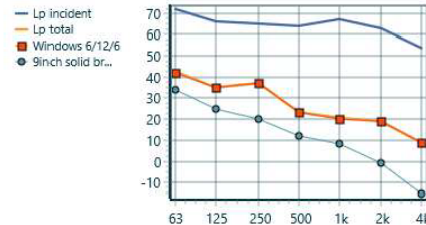
Job No.:

Initials:info

Date:03/06/2024

File Name:

Comment:



Octave Band Centre Frequency (Hz)							
Source	63	125	250	500	1k	2k	4k
Incident sound level (freefield)	71.9	65.9	65.1	64.1	67.2	62.9	53.7
Overall dBA							
70							
Path							
Element 1 , 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) [1.5 m²]	2	2	2	2	2	2	2
Element sound level contribution	42	35	37	23	20	19	9
31							
Element 2 , STL	-37	-40	-44	-51	-58	-63	-68
Facade Shape factor Level diff.	0	0	0	0	0	0	0
Insertion Loss	0	0	0	0	0	0	0
Area(+10LogA) [4.8 m²]	7	7	7	7	7	7	7
Element sound level contribution	34	25	20	12	8	-1	-15
16							
Receiver							
Room volume(-10LogV) [36 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	43	35	37	23	20	19	9
31							
Level difference							
D2m,nT	33	34	31	44	50	47	48
LpAinc - LpARev,T0							
39							

** Element descriptions:

#1: Windows 6/12/6
#2: 9inch solid brick wall

Night

Outdoor To Indoor Sound Transmission (v10.0.3)

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- Key No. 2594

Job Name:

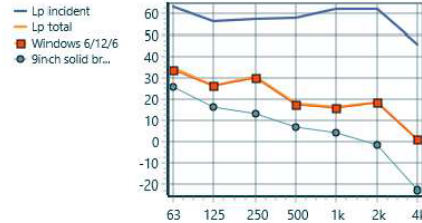
Job No.:

Initials:info

Date:03/06/2024

File Name:

Comment:



Octave Band Centre Frequency (Hz)								
Source	63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	62.9	56.2	57.3	57.6	62.1	61.6	45.4	66
Path								
Element 1 , STL	-24	-25	-22	-35	-41	-38	-39	25
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [1.5 m²]	2	2	2	2	2	2	2	
Element sound level contribution	34	26	30	17	16	18	1	
Element 2 , STL	-37	-40	-44	-51	-58	-63	-68	10
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [4.8 m²]	7	7	7	7	7	7	7	
Element sound level contribution	26	16	13	7	4	-1	-23	
Receiver								
Room volume(-10LogV) [30 m³]	-15	-15	-15	-15	-15	-15	-15	25
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	26	30	18	16	18	1	
Level difference								
D2m,nT	32	33	30	43	49	46	47	41
** Element descriptions: #1: Windows 6/12/6 #2: 9inch solid brick wall								

Night-time L_{Amax}

Outdoor To Indoor Sound Transmission (v10.0.3)

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Margin of error is generally within ± 3 dB

- Key No. 2594

Job Name:

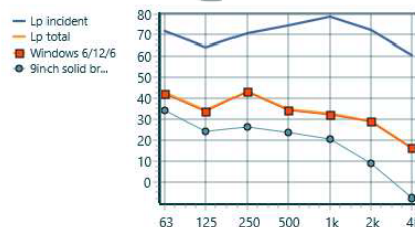
Job No.:

Date: 03/06/2024

File Name:

Comment:

Initials: info



Octave Band Centre Frequency (Hz)								
Source	63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	71.6	64.3	70.7	74.7	78.7	72.1	60.7	81
Path								
Element 1 , STL	-24	-25	-22	-35	-41	-38	-39	39
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [1.5 m²]	2	2	2	2	2	2	2	
Element sound level contribution	42	34	43	34	32	29	16	
Element 2 , STL	-37	-40	-44	-51	-58	-63	-68	25
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [4.8 m²]	7	7	7	7	7	7	7	
Element sound level contribution	35	24	27	24	21	9	-7	
Receiver								
Room volume(-10LogV) [30 m³]	-15	-15	-15	-15	-15	-15	-15	39
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	43	34	44	35	33	29	16	
Level difference								
D2m,nT	32	33	30	43	49	46	47	42
** Element descriptions: #1: Windows 6/12/6 #2: 9inch solid brick wall								

Appendix C – Proposed separating structure specifications

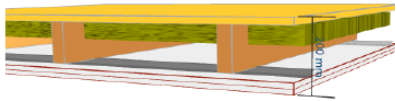
Proposed Ceiling

Sound Insulation Prediction (v10.0.3)

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Date: 03/06/2024

Job Name:



R_w 56 dB

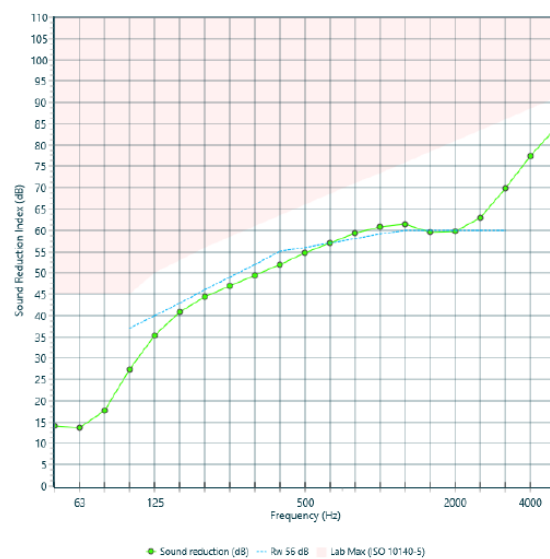
C -3 dB

Ctr -10 dB

System description

Panel 1 1 x 20 mm Flooring Particle Board
Frame Solid Joist with resilient rail (132 mm x 45 mm), Stud spacing 600 mm, Cavity Width 150 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 = 40 kg/m², Mass-air-mass resonant frequency = 45 Hz

freq.(Hz)	R(dB)	Roct (dB)
50	14	
63	14	15
80	18	
100	27	
125	35	31
160	41	
200	44	
250	47	46
315	49	
400	52	
500	55	54
630	57	
800	59	
1000	61	60
1250	61	
1600	59	
2000	60	60
2500	63	
3150	70	
4000	77	74
5000	84	



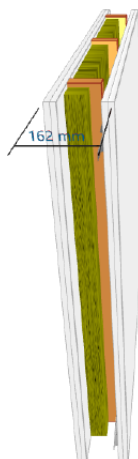
Proposed wall

Sound Insulation Prediction (v10.0.3)

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

Date: 03/06/2024

Job Name:



R_w 58 dB

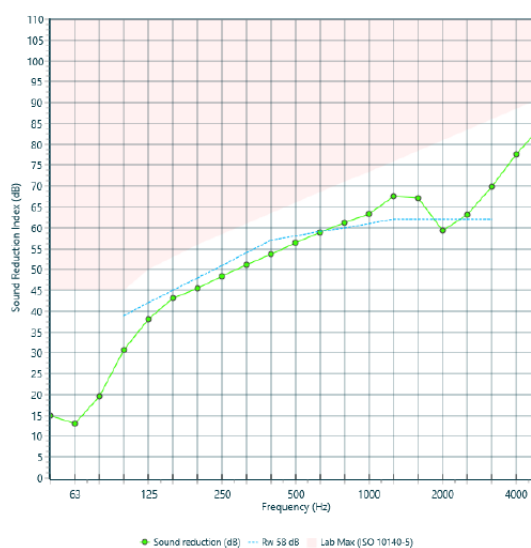
C -3 dB

Ctr -9 dB

System description

Panel 1 2 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 = 51 kg/m², Mass-air-mass resonant frequency = 46 Hz

freq.(Hz)	R(dB)	Roct (dB)
50	15	
63	13	15
80	20	
100	31	
125	38	35
160	43	
200	45	
250	48	48
315	51	
400	54	
500	56	56
630	59	
800	61	
1000	63	63
1250	67	
1600	67	
2000	59	62
2500	63	
3150	70	
4000	78	74
5000	84	



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



Appendix D – Report Author 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.