



Acoustic Survey and Assessment for Proposed conversion to two apartments at 35 Church Stile, Rochdale, OL16 1FF.

Prepared for:

Buckley Developments,
3 Rosemere Avenue,
Oakenrod,
Rochdale,
OL11 4BT.

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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 of existing offices to two residential apartments at 35 Church Stile, Rochdale, OL16 1FF.

Site Location and Context

- 1.2. The development site is situated to the north of Church Stile, forming part of a terrace row of two storey properties. To the west on the far side of the road is open parkland, to the south at the end of the road is the busy Drake Street with existing residential properties to the north and south. To the east the site backs onto the former Rochdale Catholic Club.
- 1.3. An aerial Photograph is enclosed in Figure 1.
- 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.



3. The Assessment

The development

- 3.1 The proposed development consists of the conversion of existing offices into two separate residential units, one on each floor.

Existing Situation.

- 3.2 In order to obtain representative background sound levels for the area on site monitoring was undertaken over the 21st-23rd November 2024.
- 3.3 Two Cirrus Optimus Green sound level meters were utilised for the monitoring. The first meter was placed over 1m from the front first floor façade overlooking the road in front with a clear view of Drake Street to the south. The second meter was again placed 1m from the first-floor façade to the rear over looking the yard and the club to the east.
- 3.4 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.
- 3.5 The weather during the first night was wet and cold. The second day was largely dry with a couple of showers. There was little to no wind with wind speed <5m/s.
- 3.6 The full results are shown in Appendix A, with a summary in the tables below.

Front

Start Time	End Time	Duration	L _{Aeq}	L _{A90}	L _{AMax}
21/11/2024 17:00	21/11/2024 23:00	05:59:58	61.4	50.5	89.2
21/11/2024 23:00	22/11/2024 07:00	08:00:00	54.3	37.1	81.7
22/11/2024 07:00	22/11/2024 23:00	16:00:00	62.9	52.9	99.7
22/11/2024 23:00	23/11/2024 07:00	08:00:00	57.5	42.5	82.3
23/11/2024 07:00	23/11/2024 09:44	02:44:56	63.3	54.6	81.8

Rear

Start Time	End Time	Duration	L _{Aeq}	L _{A90}	L _{AMax}
21/11/2024 17:00	21/11/2024 23:00	05:59:59	50.5	45.7	70.8
21/11/2024 23:00	22/11/2024 07:00	08:00:00	45.1	35.8	65.9
22/11/2024 07:00	22/11/2024 23:00	16:00:00	54.9	47.2	91.5
22/11/2024 23:00	23/11/2024 07:00	08:00:00	49.5	41.8	87.2
23/11/2024 07:00	23/11/2024 09:00	02:00:01	57.1	52.9	79.2



- 3.7 Background sound levels were dominated by nearby traffic to the front and rear of the site. No plant was observed to the rear façade. Night-time maximum sound levels regularly exceeded at identified at 77.7dB(A) to the front and 71.2dB(A) to the rear.
- 3.8 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.
- 3.9 A standard 6/12/6 double glazing unit will provide, when closed, a sound reduction, $R_w(C;C_{tr})$, of 33(-1;-3). Therefore, adequate to protect the future occupants of the apartments to both the front and rear of the property for the average day and night-time prevailing sound levels.
- 3.10 In relation to the night-time maximum sound levels recorded the glazing will be sufficient for the rear and when taken as part of the full façade sufficient to protect the internal environment at the front, see Appendix B.
- 3.11 The monitoring was undertaken over a Friday evening when a live music act was playing at the club. A review of the audio recordings and sound level data did not identify any music sound from the club, and no tonal or low frequency noise. As a result, no further assessment is required.
- 3.12 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 area available.
- 3.13 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

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



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.

- 3.14 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.
- 3.15 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.

Transfer of sound Internally.

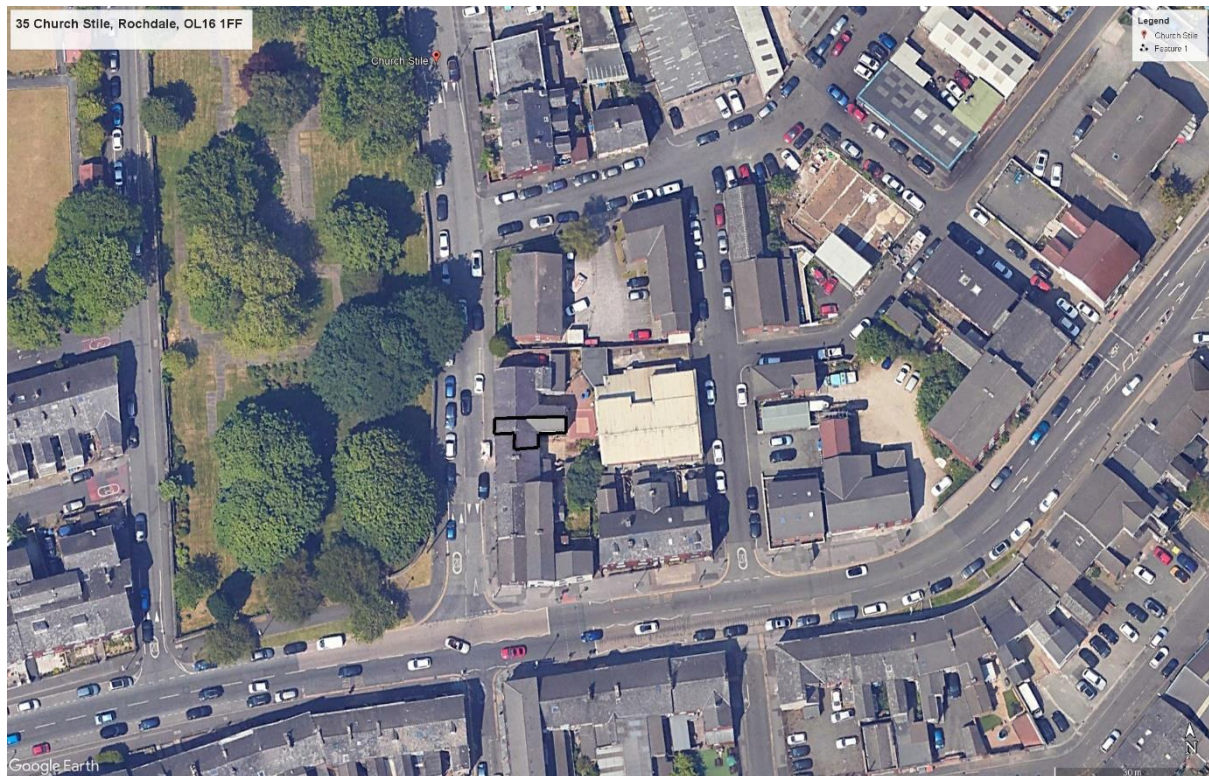
- 3.16 It is important to ensure that the internal transfer of sound between the two apartments does not result in any adverse impact. To this end specifications for the separating structures have been identified and are included within Appendix C. These cover a replacement first floor to the front and retrofitting to the rear along with a new dividing wall between the stairwell and ground floor flat.
- 3.17 The specifications provide a reduction of 50/44dB R_w to the floor and 49dB R_w to the wall, meeting the requirements of the Building Regulations and ensuring the recommended internal night-time sound level of 30dB(A) is achieved.



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 In additional specifications for the internal separating structures have been identified to ensure the transfer of sound internally will not result in any adverse impact.
- 4.4 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.
- 4.5 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.

Figure 1 – Aerial Photograph





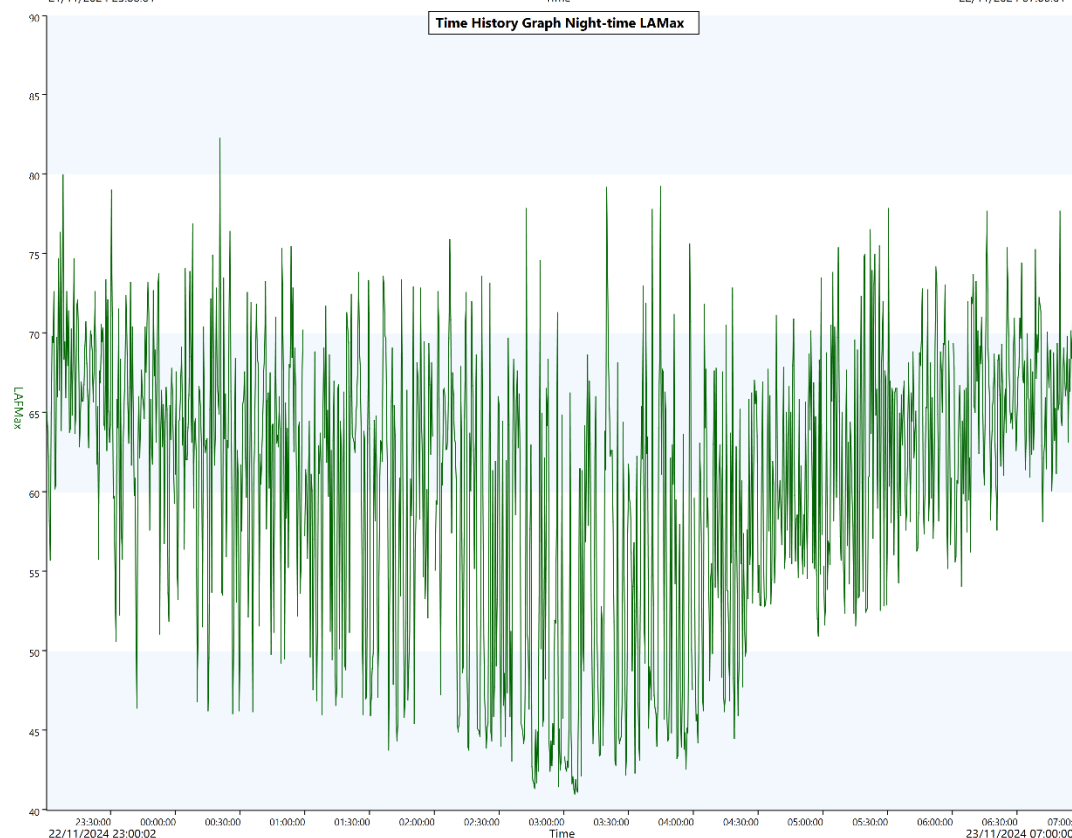
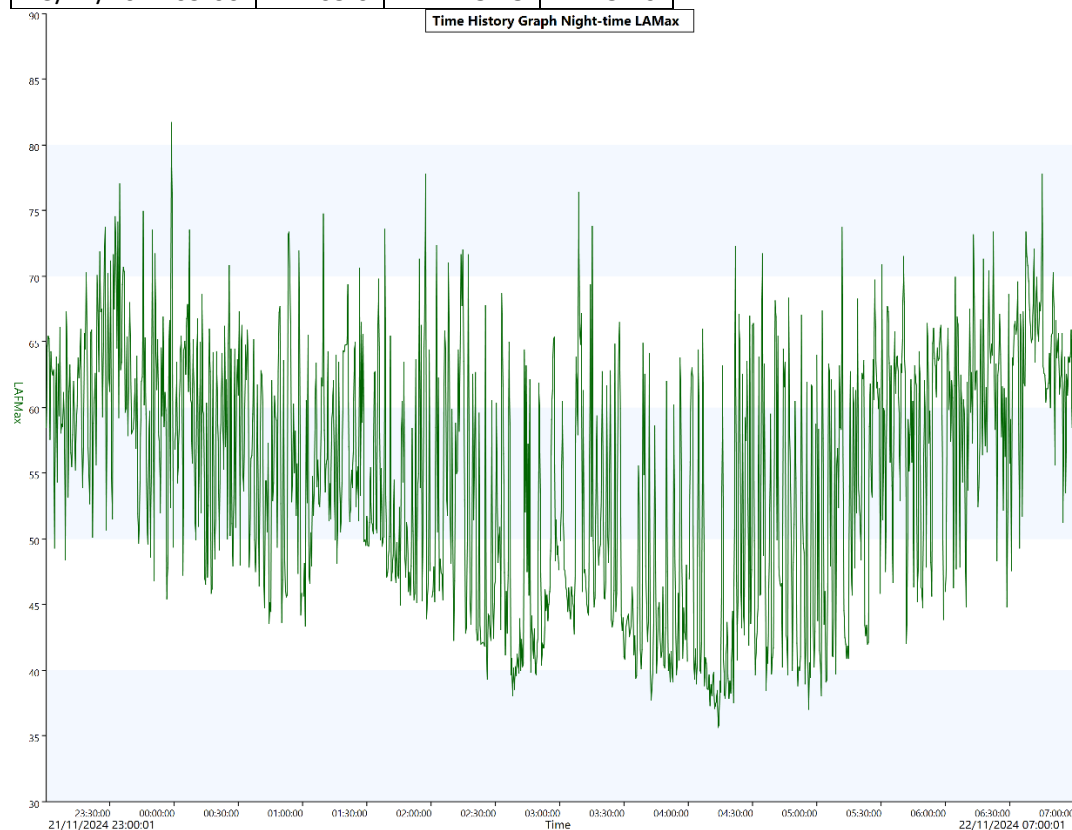
Appendix A – Full Monitoring Results

Front

Time	L _{Aeq} (dB)	L _{AMax} (dB)	L _{A90} (dB)
21/11/2024 17:00	61.8	83.0	55.9
21/11/2024 18:00	63.6	79.8	55.4
21/11/2024 19:00	62.2	82.3	52.2
21/11/2024 20:00	60.4	80.3	50.4
21/11/2024 21:00	59.5	76.8	48.6
21/11/2024 22:00	59.4	89.2	47.9
21/11/2024 23:00	57.4	81.7	45.3
22/11/2024 00:00	54.1	73.5	42.0
22/11/2024 01:00	52.9	77.8	41.4
22/11/2024 02:00	51.5	72.3	36.8
22/11/2024 03:00	49.1	76.4	36.3
22/11/2024 04:00	50.6	72.2	34.2
22/11/2024 05:00	53.2	73.7	38.7
22/11/2024 06:00	57.7	77.8	45.1
22/11/2024 07:00	61.4	85.7	49.1
22/11/2024 08:00	63.1	89.9	54.6
22/11/2024 09:00	62.5	78.2	53.8
22/11/2024 10:00	62.8	76.2	53.2
22/11/2024 11:00	63.3	82.5	54.6
22/11/2024 12:00	63.2	80.5	55.2
22/11/2024 13:00	64.2	90.3	55.7
22/11/2024 14:00	64.1	81.8	56.0
22/11/2024 15:00	63.8	89.1	55.1
22/11/2024 16:00	62.5	78.1	54.7
22/11/2024 17:00	62.6	79.6	54.9
22/11/2024 18:00	62.4	76.7	53.7
22/11/2024 19:00	63.4	99.7	51.6
22/11/2024 20:00	62.8	90.0	51.0
22/11/2024 21:00	62.1	89.2	49.2
22/11/2024 22:00	61.4	88.9	49.1
22/11/2024 23:00	59.9	80.0	46.5
23/11/2024 00:00	58.9	82.3	44.7
23/11/2024 01:00	56.2	73.8	43.1
23/11/2024 02:00	55.2	77.9	40.5
23/11/2024 03:00	54.7	79.2	40.2
23/11/2024 04:00	54.2	73.5	44.0
23/11/2024 05:00	58.4	77.8	48.7
23/11/2024 06:00	58.6	77.7	52.0
23/11/2024 07:00	60.0	76.9	53.4
23/11/2024 08:00	63.4	80.2	55.9



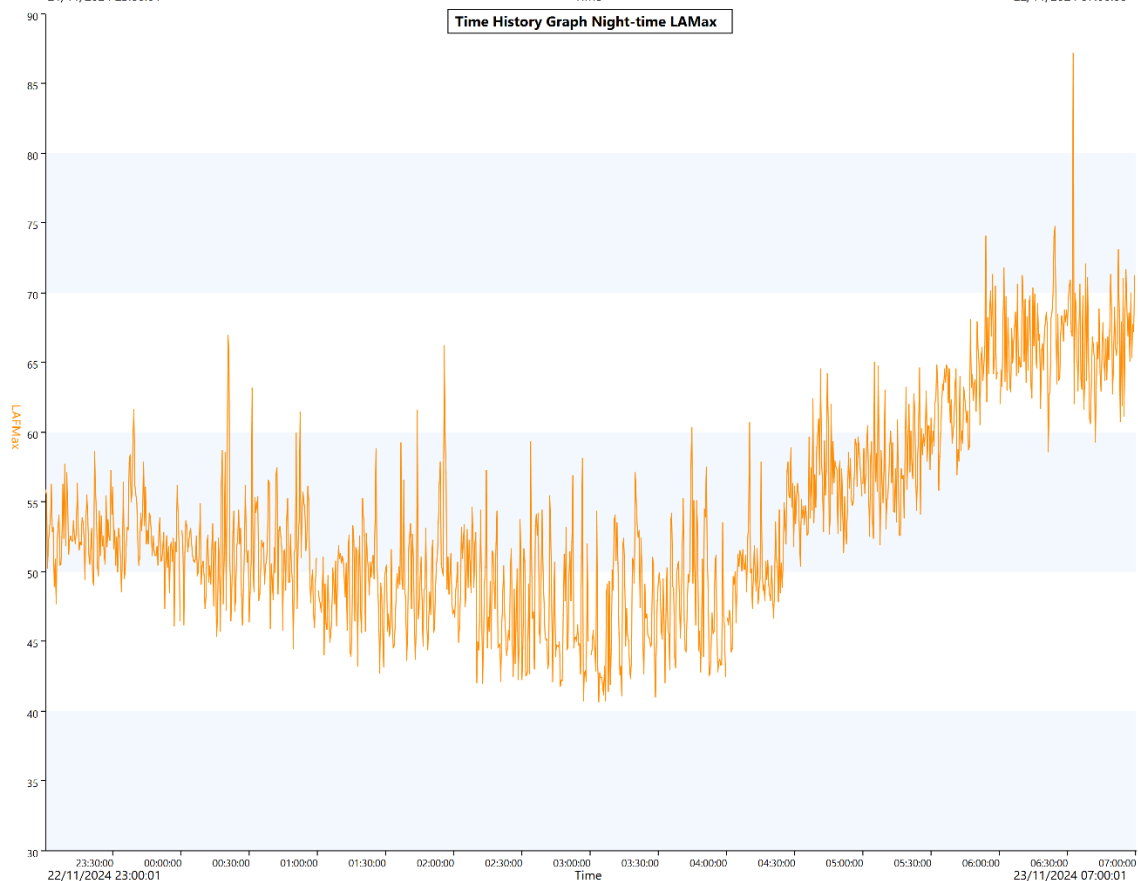
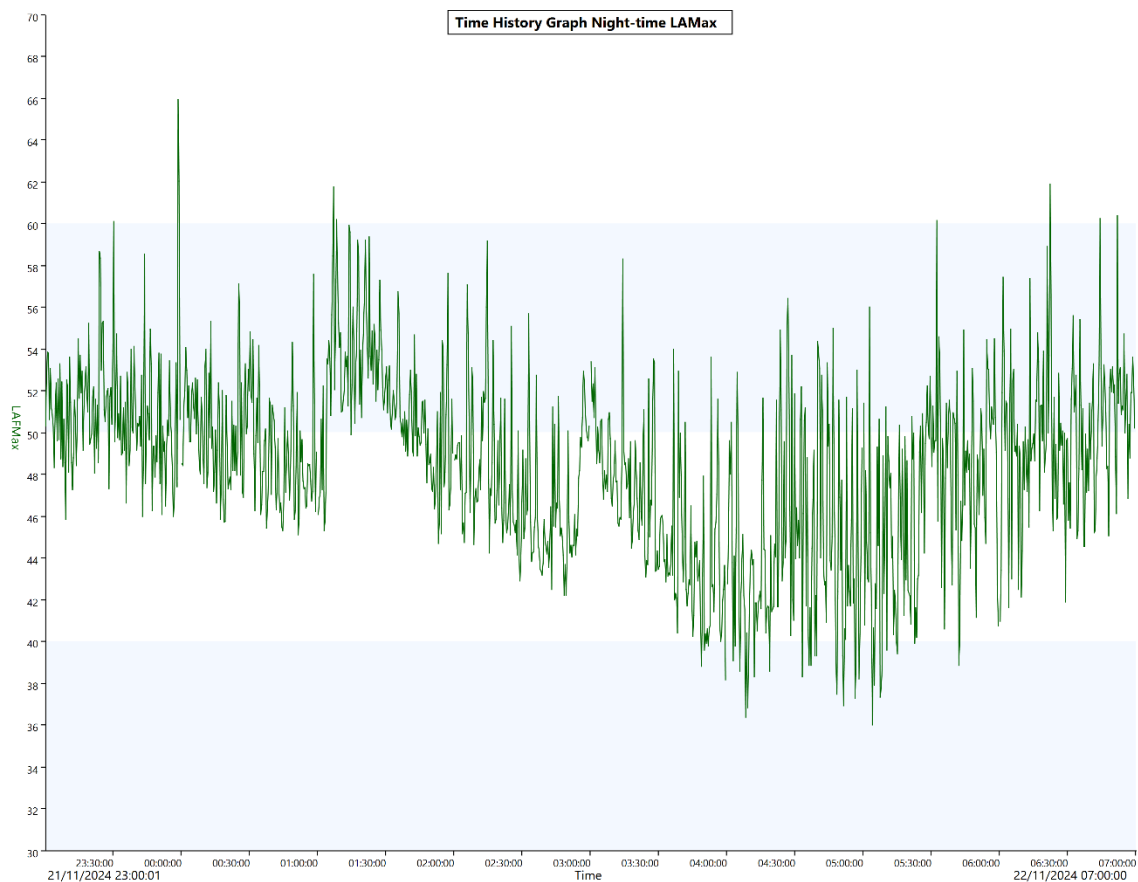
23/11/2024 09:00	65.6	81.8	57.0
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Rear

Time	L _{Aeq} (dB)	L _{AMax} (dB)	L _{A90} (dB)
21/11/2024 17:00	50.0	69.5	46.6
21/11/2024 18:00	52.0	68.1	48.3
21/11/2024 19:00	51.5	70.8	47.1
21/11/2024 20:00	50.6	70.6	46.0
21/11/2024 21:00	48.7	63.4	44.5
21/11/2024 22:00	49.3	70.6	44.1
21/11/2024 23:00	48.0	65.9	42.5
22/11/2024 00:00	45.7	57.6	39.8
22/11/2024 01:00	46.0	61.8	40.1
22/11/2024 02:00	43.1	59.2	35.1
22/11/2024 03:00	41.8	58.3	33.7
22/11/2024 04:00	41.8	56.4	32.3
22/11/2024 05:00	43.7	60.2	36.8
22/11/2024 06:00	46.6	61.9	41.3
22/11/2024 07:00	49.5	69.5	43.7
22/11/2024 08:00	52.0	68.4	48.5
22/11/2024 09:00	52.9	78.6	48.0
22/11/2024 10:00	59.2	91.3	48.0
22/11/2024 11:00	62.8	91.5	49.5
22/11/2024 12:00	54.8	78.3	49.3
22/11/2024 13:00	52.8	80.6	49.0
22/11/2024 14:00	52.3	73.8	48.3
22/11/2024 15:00	52.5	76.1	47.3
22/11/2024 16:00	50.2	62.5	46.6
22/11/2024 17:00	50.7	63.4	47.4
22/11/2024 18:00	51.3	70.2	46.9
22/11/2024 19:00	51.8	83.2	47.1
22/11/2024 20:00	51.4	72.1	47.3
22/11/2024 21:00	50.7	72.5	46.4
22/11/2024 22:00	50.2	69.7	45.7
22/11/2024 23:00	48.8	61.6	44.6
23/11/2024 00:00	47.7	66.9	43.5
23/11/2024 01:00	46.1	66.2	42.0
23/11/2024 02:00	44.9	59.3	40.3
23/11/2024 03:00	44.6	60.3	39.3
23/11/2024 04:00	47.3	64.5	42.6
23/11/2024 05:00	50.3	74.0	46.2
23/11/2024 06:00	54.9	87.2	49.6
23/11/2024 07:00	56.1	77.9	52.1
23/11/2024 08:00	58.0	79.2	53.6



Appendix B – Break-in Calculations

Outdoor To Indoor Sound Transmission (v10.0.5)

Program copyright Marshall Day Acoustics

Margin of error is generally within ± 3 dB

- Key No. 2594

Job Name:

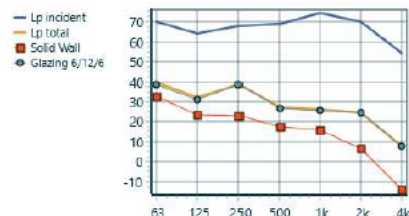
Job No.:

Date: 06/12/2024

File Name:

Comment:

Initials: info



Octave Band Centre Frequency (Hz)								
Source	63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	70.2	63.9	68.1	69.1	74.4	69.9	54.5	77
Path								
Element 1 , STL	-37	-40	-45	-51	-58	-63	-68	20
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [10 m²]	10	10	10	10	10	10	10	
Element sound level contribution	33	24	23	18	16	7	-14	
Element 2 , STL	-24	-25	-22	-35	-41	-38	-39	33
Facade Shape factor Level diff.	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	
Area(+10LogA) [2.0 m²]	3	3	3	3	3	3	3	
Element sound level contribution	39	31	39	27	26	24	8	
Receiver								
Room volume(-10LogV) [70 m³]	-18	-18	-18	-18	-18	-18	-18	33
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	40	32	39	27	26	24	8	
Level difference								
D2m,nT	34	35	33	45	51	49	50	LpAinc - LpARev,T0
** Element descriptions:								
#1: Solid Wall								
#2: Glazing 6/12/6								

Appendix C – Proposed Separating Structure Specifications

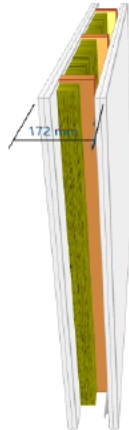
Internal Wall

Sound Insulation Prediction (v10.0.5)

Program copyright Marshall Day Acoustics 2023 | Margin of error is generally within $R_w \pm 3$ dB

Date: 24/11/2024

Job Name:



R_w 58 dB

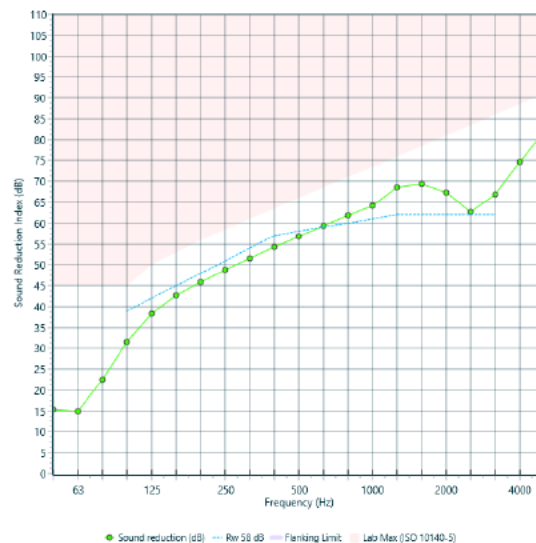
C -2 dB

Ctr -9 dB

System description

Panel 1 2 x 15 mm Gyproc Fireline 15mm
Frame Timber stud + Resilient rail/bar (100 mm x 47 mm), Stud spacing 600 mm, Cavity Width 112 mm + 60 mm Fibreglass (10kg/m3) 60mm
Panel 2 2 x 15 mm Gyproc Fireline 15mm
Details Panel Size 2.7 m x 4.0 m, Partition surface mass = 47.4 kg/m², Mass-air-mass resonant frequency = 51 Hz

freq. (Hz)	R (dB)	Roct (dB)
50	15	
63	15	17
80	22	
100	32	
125	38	35
160	43	
200	46	
250	49	48
315	52	
400	54	
500	57	56
630	59	
800	62	
1000	64	64
1250	69	
1600	69	
2000	67	66
2500	63	
3150	67	
4000	75	71
5000	82	



Floor/ceiling Front

Sound Insulation Prediction (v10.0.5)

Program copyright Marshall Day Acoustics 2023 | Margin of error is generally within $R_w \pm 3$ dB

Date: 24/11/2024

Job Name: Heversham Skelmersdale



R_w 58 dB

C -2 dB

Ctr -8 dB

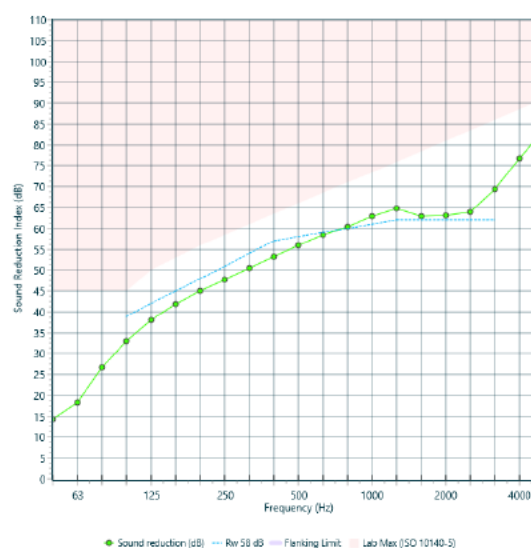
Notes:

Proposed Separating Wall

System description

Panel 1 1 x 18 mm Flooring Particle Board
Frame Solid Joist with resilient rail (219 mm x 47 mm), Stud spacing 600 mm, Cavity Width 237 mm + 50 mm Rockwool (33kg/m³)
Panel 2 2 x 15 mm Gyproc Fireline 15mm
Details Panel Size 2.7 m x 4.0 m, Partition surface mass = 37.8 kg/m², Mass-air-mass resonant frequency = 41 Hz

freq. (Hz)	R (dB)	Roct (dB)
50	14	
63	18	17
80	27	
100	33	
125	38	36
160	42	
200	45	
250	48	47
315	50	
400	53	
500	56	55
630	58	
800	60	
1000	63	62
1250	65	
1600	63	
2000	63	63
2500	64	
3150	69	
4000	77	73
5000	83	



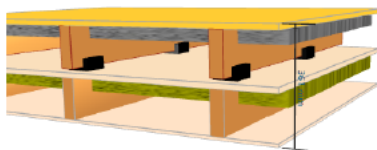
Floor/ceiling Rear

Sound Insulation Prediction (v10.0.5)

Program copyright Marshall Day Acoustics 2023 | Margin of error is generally within $R_w \pm 3$ dB

Date: 24/11/2024

Job Name:



R_w 55 dB

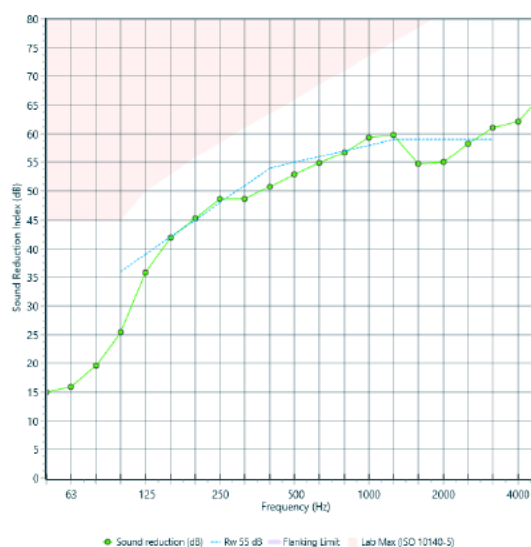
C -4 dB

C_{tr} -11 dB

System description

Panel 1	1 x 18 mm Flooring Particle Board
Frame	Batten and Cradle (150 mm x 47 mm), Stud spacing 600 mm, Cavity Width 165 mm + 50 mm Rockwool (33kg/m3)
Panel 2	1 x 17.5 mm Plywood
Frame	Solid Joist (150 mm x 47 mm), Stud spacing 600 mm, Cavity Width 150 mm + 60 mm Fibreglass (10kg/m3) 60mm
Panel 3	1 x 10 mm Plasterboard
Details	Panel Size 2.7 m x 4.0 m, Partition surface mass = 31.9 kg/m ² , Mass-air-mass resonant frequency = : 47 Hz, 84 Hz

freq. (Hz)	R (dB)	Roct (dB)
50	15	
63	16	16
80	20	
100	25	
125	36	30
160	42	
200	45	
250	49	47
315	49	
400	51	
500	53	53
630	55	
800	57	
1000	59	58
1250	60	
1600	55	
2000	55	56
2500	58	
3150	61	
4000	62	63
5000	67	



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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.