



Acoustic Survey and Assessment for Proposed Residential Development at, 71 Halifax Road, Rochdale, OL12 9BA.

Prepared for:

Nawab Khan
69-71 Halifax Road
Rochdale
OL12 9BA.

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1. Introduction

- 1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic assessment to support a planning application for the change of use to the ground floor of 71 Halifax Road, Rochdale, OL12 9BA from public house to retail unit and restaurant, planning application 21/01770/FUL.

Site Location and Context

- 1.2. The development site is situated within a terrace of properties. The row has a mixed use of commercial to the ground floor and residential to the first. The first and second floors have recently been converted to residential accommodation.
- 1.3. An aerial Photograph is enclosed in Figure 1.
- 1.4. The local planning authority have raised concerns over the potential impact of the ground floor change of use on the first-floor accommodation, hence the production of this report.



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 July 2021, 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 Lancashire guidance, WHO and BS 8233: 2014.

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 Proposed Development

- 3.1 The proposed development will consist of a change of use to the ground floor of the property into a retail unit and adjacent restaurant including extraction system to the rear.
- 3.2 The hours of trading will be 13:00-20:00 7 days a week. This equates to the daytime period and will not result in any adverse impact during the night-time period when residents in the vicinity are trying to sleep.
- 3.3 Extraction details have been provided as part of the planning application and includes the use of a Flaktwood 450mm MaXfan Compac centrifugal fan. The extraction system will be located to the rear of the site and will terminate at a height 1m above the eaves via a jet cowl. Sound at this point will therefore be directed vertically.

The impact

- 3.4 The fan manufactures website has been consulted to obtain details of the sound emission values, these are shown in Appendix A. These have been utilised to determine the impact on the above residential units. There is no tonal component to the fan sound emissions.
- 3.5 It has been assumed that the windows to the residential units will be open, although they have been designed to be kept closed, with a reduction of 13dB. BS8233:2014 suggests a reduction of 15dB but it is known that some Manchester Authorities prefer the lower figure of 13dB to be used. Thus, an external sound level of 48dB(A)
- 3.6 The nearest window is 1.4m from the termination point of the extraction system. This would result in a significant adverse impact with internal sound levels above those identified within section two of the report at 67.5dB.



- 3.7 In order to achieve the required sound level, it is proposed that two BDER-61-050-120 silencers be fitted after the extraction fan. This will result in sound levels of 40dB(A) at the window, and therefore an internal sound level of 27dB(A), minus a directional attenuation of approx. 6dB.

Internal Insulation

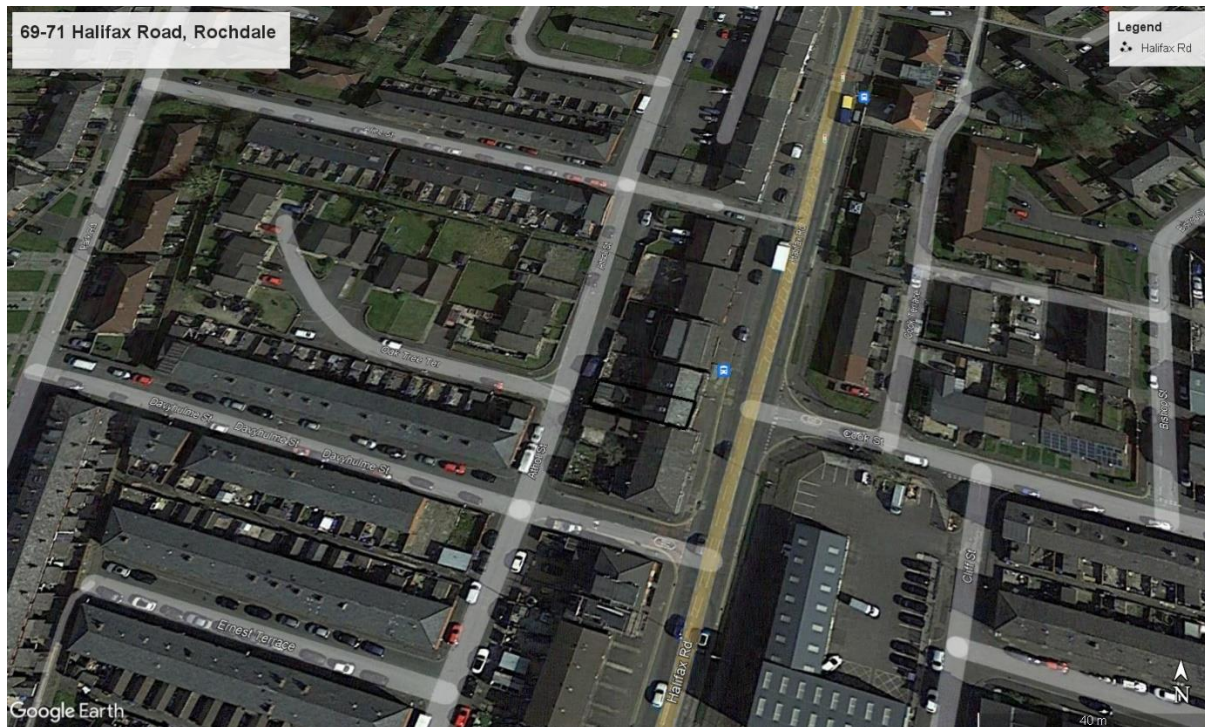
- 3.8 A previous report undertaken by Martin Environmental Solutions has confirmed the internal sound attenuation between the ground floor and first floor achieved the requirements of the Building Regulations. A copy of the test certificate is enclosed in Appendix B.
- 3.9 The test was undertaken before works to the building were undertaken and a suggested construction method including a new 12.5mm plaster board to the underside of the joists and suspended steel grid and two further layers of 15mm soundbloc plasterboard below this. See Appendix C. The inclusion of this specification has increased the sound attenuation to 55(-2;-6)dB(A) $R_w(C;C_{Tr})$.
- 3.10 At this level a sound within the ground floor could reach 90dB(A) while still achieving the required internal sound level within the first-floor apartment.



4 Conclusion

- 4.1 An assessment of the potential impact on the residential apartments from the extraction system has been undertaken. the extraction system will result in an adverse impact on the residential properties and as such mitigation measures have been identified in the form of a double silencer after the extraction fan.
- 4.2 The use of the fan silencers will result in sound levels significantly below the identified criteria and as such the extraction will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England.
- 4.3 Previous consideration and design specifications for the separating structure between the first floor residential and the ground floor commercial unit has ensured a sufficient level of attenuation in order to ensure suitable sound levels are achieved within the first-floor apartments.
- 4.4 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 and complies with the imposed planning condition.

Figure 1 – Aerial Photograph



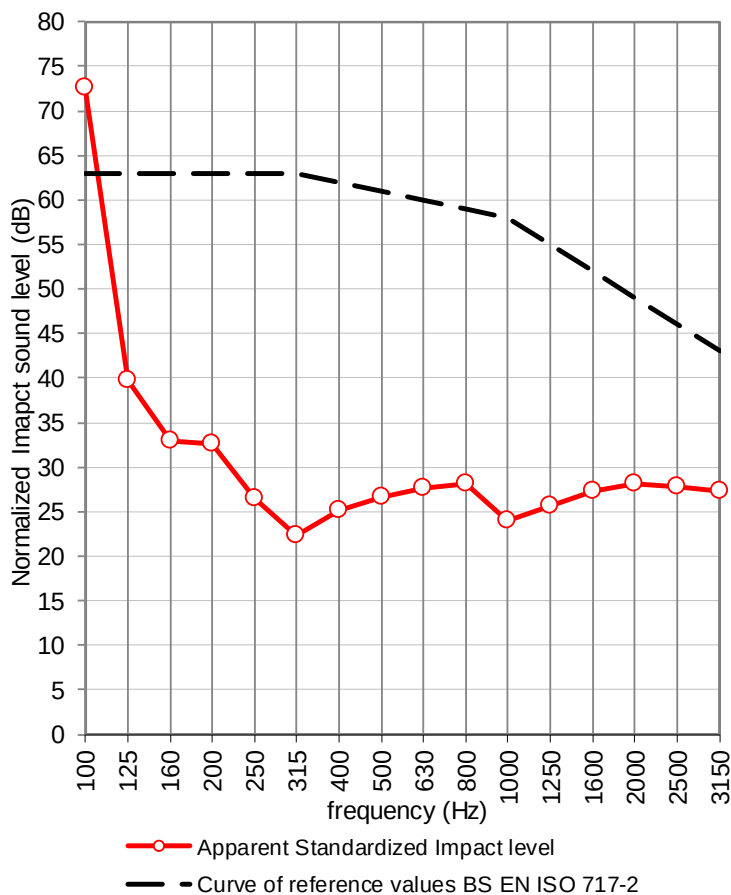


Appendix A – Extraction Sound Levels

	63	125	250	500	1000	2000	4000	8000	Lw	Lp@1.5m
45 MaXfan Compac	79	81	89	82	80	80	78	75	91	80.1
silencer - BDER-61050-1200mm	5	10	15	28	32	34	26	18		
silencer - BDER-61050-1200mm	5	10	15	28	32	34	26	18		
a-weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1		
resulting sound level	42.8	44.9	50.4	22.8	16	13.2	27	37.9	52.2	40.7

Appendix B – Sound insulation Test Certificates

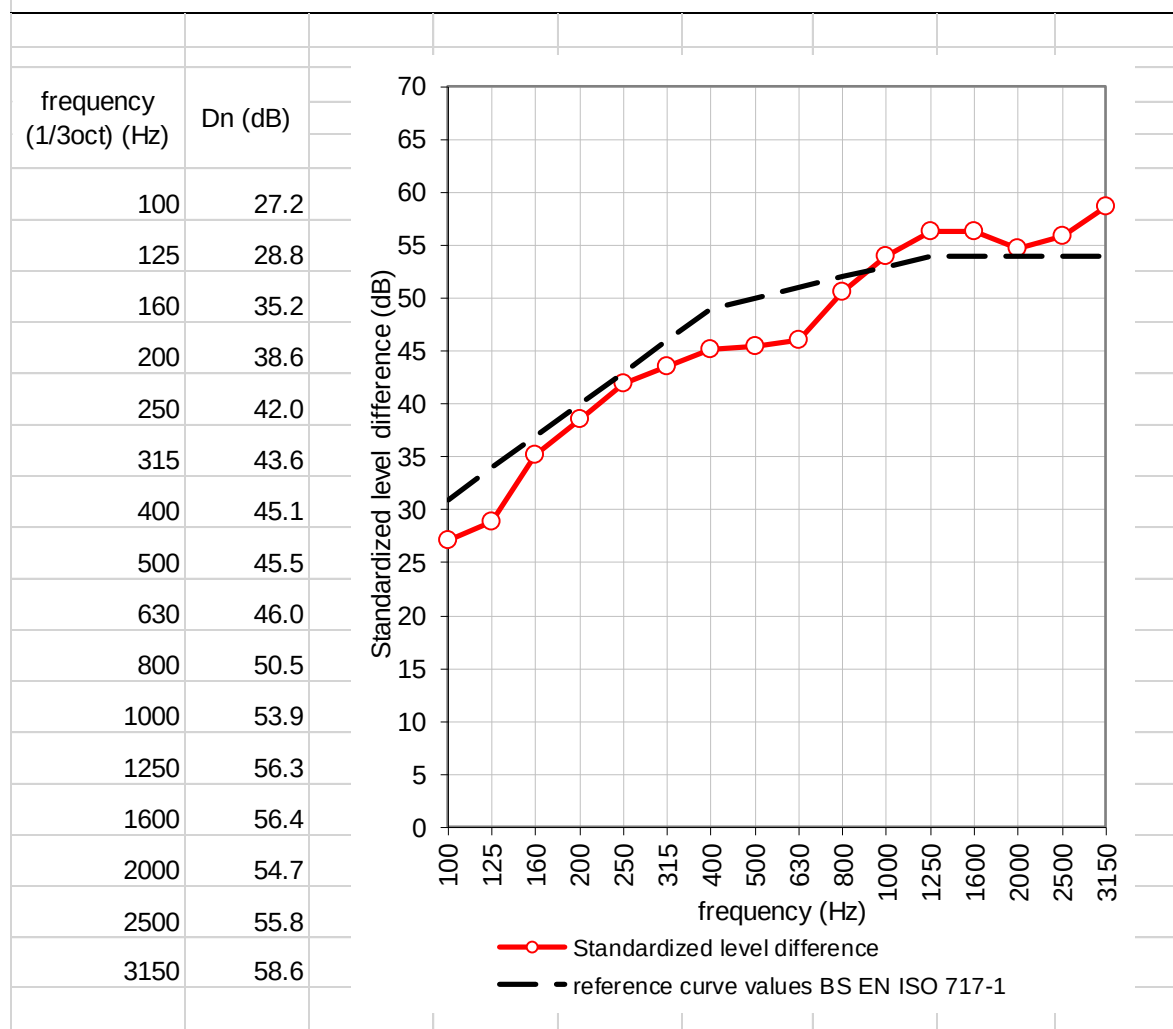
Impact

Apparent sound reduction index according to ISO 140-4 Field measurements of airborne sound insulation between rooms			
Client	69-71 Halifax Road, Rochdale		Date of test: 30th March 2021
Description and indentification of the building construction and test arrangement, direction of measurement: Converted three Storey building. Second floor to first floor front bedroom			
frequency (1/3oct) (Hz)	Ln (dB)	 Normalized Impact sound level (dB) frequency (Hz) —○— Apparent Standardized Impact level — - — Curve of reference values BS EN ISO 717-2	
100	72.6		
125	39.8		
160	32.9		
200	32.7		
250	26.5		
315	22.3		
400	25.1		
500	26.6		
630	27.7		
800	28.2		
1000	23.9		
1250	25.6		
1600	27.4		
2000	28.1		
2500	27.7		
3150	27.4		
Rating according to BS EN ISO 717-1:LnTw = 61 dB			
Company name: Martin Environmental Solutions		Person Responsible: Neil Martin MIOA	

Airborne

Apparent sound reduction index according to ISO 140-4 Field measurements of airborne sound insulation between rooms

Client	69-71 Halifax Road, Rochdale	Date of test:	30 March 2021
Description and identification of the building construction and test arrangement, direction of measurement: Second floor to first floor front bedroom			



Rating according to BS EN ISO 717-1: DnTw = 50 -9 dB(CTr)

Company name:
Martin Environmental Solutions

Person Responsible:
Neil Martin MIOA

Appendix C – New specification for separating structure

Sound Insulation Prediction (v9.0.23)

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

- Key No. 2594

Job Name:

Job No.:

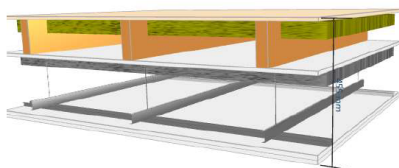
Date: 12/04/2021

File Name:

Initials: info



Notes:



R_w 55 dB

C -2 dB

Ctr -6 dB

Mass-air-mass resonant frequency = 40 Hz, 99 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 39.5 kg/m²

System description

Panel 1 : 1 x 12.5 mm SoftBoard

Frame: Solid Joist (1.5E2 mm x 45 mm), Stud spacing 600 mm; Cavity Width 150 mm, 1 x Fibreglass (10kg/m3) Thickness 60 mm
Panel 2 : 1 x 12.5 mm Gyproc Wallboard 12.5mm

Frame: Suspended Light Steel Grid (2.5E2 mm x 45 mm), Stud spacing 600 mm; Cavity Width 250 mm, 1 x Rockwool (33kg/m3) Thickness 50 mm
Panel 3 : 2 x 15 mm Gyproc SoundBloc 15mm

freq.(Hz)	R(dB)	R(dB)
50	16	
63	23	20
80	28	
100	33	
125	39	37
160	43	
200	45	
250	47	47
315	49	
400	50	
500	52	52
630	54	
800	55	
1000	56	56
1250	57	
1600	57	
2000	55	55
2500	54	
3150	62	
4000	61	63
5000	69	

