MARTIN
ENVIRONMENTAL
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Acoustic Survey and Assessment for Proposed Residential development at DMD Design, 1 Lower Lane, Longridge, PR3 3SL.

Prepared for:

DMD Design,
1 Lower Lane,
Longridge,
PR3 3SL.

November 2023

Contents

1. Introduction

1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic assessment to support a planning application for the regularisation of a mixed use retail and occupational dwelling with the serving of alcohol at DMD Designs, 1 Lower Lane, Longridge, PR3 3SL.

Site Location and Context

1.2. The development site is situated to the north of Lower Lane and stands as a detached one storey building. Existing residential properties lie to the southeast, and southwest of the site, with a commercial business beyond and to the north, to the southwest is grave yard.

1.3. An aerial Photograph is enclosed in Figure 1.

1.4. Concerns have been raised over the potential impact from the activities at the site, particularly from occasion solo artists hence the request for 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 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 LAeq,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

3.1 A previous "audio Assessment" has been submitted as part of the application and this has been reviewed by Martin Environmental Solutions. Unfortunately, there are a number of issues wit this report that have been identified. The previous report has however provided some background sound levels for the area indicting the background sound levels at the nearest residential properties ranged between 65-68dB(A) as a result of passing traffic.

3.2 Given previous experience and measurements undertaken by Martin Environmental Solutions and the distance these properties are located from the roadside this is considered to be typical.

The Proposed Development

3.3 The proposed development consists of a single storey detached building constructed from a cavity block wall and slate roof. A mezzanine floor is located over half of the building to be used as an occupational living area. Double glazed windows and the entrance door are located on the southern façade, none of the windows open.

3.4 The ground floor consists of a retail area selling interior design goods and a small drinks counter area.

3.5 The commercial hours of use will be Monday-Saturday 08:00-20:00 and 08:00-17:00 on Sundays. Occasional solo artist performances are held in the evenings.

Assessment of Potential Impact

3.6 As identified in Section two the appropriate criteria in which to assess the impact on the nearby residential properties is BS8233:2014 (Not BS4142:2014 as previously stated within the early audio assessment). This identifies an internal sound level of 35dB(A) during the daytime period as an acceptable criterion to avoid adverse impacts.

3.7 The guidance identifies that an open window will provide a 15dB attenuation[1]. Given the identified background sound level of 65-68dB(A) the guideline internal value of 35dB(A) is already exceeded at these properties.

3.8 Internal sound levels from the venue are not considered to be very high, although these will increase during busy periods when solo artists are performing. Previous monitoring in a much larger micro-pub has identified sound levels of 68-81dB(A) during the busiest night of the year. A figure of 90dB(A) has been chosen as an internal level, much higher than that identified previously in a larger bar and above the Control of Noise at Work Regulation Upper action level of 85dB(A). This figure therefore represents a worse-case scenario and can be control through the use of a sound limiter for all visiting artists.

3.9 The cavity wall of the building will provide an attenuation of 57dB while the double glazing 35dB, see Appendix A. the combined value being somewhere in between. Assuming a worse-case scenario of 35dB.

3.10 The nearest properties to the south are 13.3m away, providing a 22.7dB distance attenuation. This allows the potential sound level at these properties to be calculated and these are shown in Appendix B. this results in a façade sound level at this property of 26.3dB(A), and an internal sound level of 11.3dB(A). Significantly below the recommended sound levels for both external (50dB(A) and internal 35dB(A)).

3.11 To the southwest the neighbouring residential property is located 2.7m away through a blank wall, while the neighbouring wall is also a blank wall apartment from the attic room two storeys higher. As identified the wall provides a higher level of attenuation at 57dB, with a similar level at the neighbouring property.

3.12 Façade sound levels at this property, assuming the lower 35dB attenuation stated above, will be 40.4dB(A), below the prevailing background previously identified and the recommended external amenity sound level within BS8233:2014. Internally the venue will not be heard through the neighbouring property wall.

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

4 Conclusion

4.1 A consideration of the proposed development and potential sound generation has been undertaken. Assuming worse-case building attenuation levels and sound level generation the impact on the nearby residential properties has been calculated.

4.2 This has confirmed that the sound levels from the site will be below the identified background sound level for the area and will result in a No Observe Effect on the neighbouring properties in line with the Noise Policy Statement for England.

4.3 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.

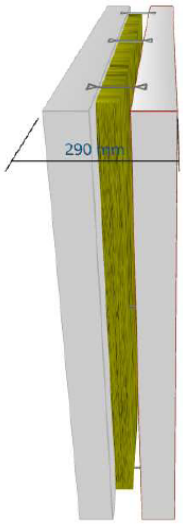
Figure 1 – Aerial Photograph

Appendix A – Building Attenuation

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Martin Environmental Solutions Ltd - Key No. 2594
Job Name:
Job No.: Initials:info
Date:05/11/2023
File Name:insul

Notes:



Rw 57 dB
C -1 dB
Ctr -3 dB

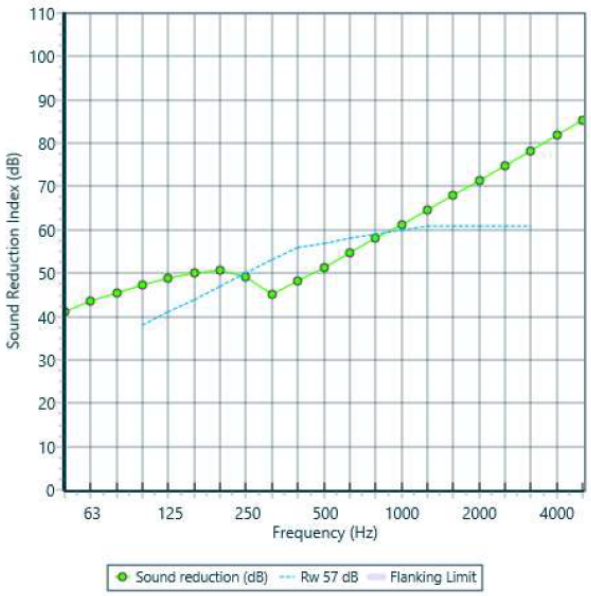
Mass-air-mass resonant frequency = =18 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 377 kg/m²

System description

Panel 1 : 1 x 100 mm Concrete Block

Frame: Butterfly Tie (90 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 90 mm , 1 x Fibreglass (10kg/m3) Thickness 60 mm
Panel 2 : 1 x 100 mm Concrete Block

freq.(Hz)	R(dB)	R(dB)
50	41	
63	43	43
80	45	
100	47	
125	49	49
160	50	
200	51	
250	49	48
315	45	
400	48	
500	51	51
630	55	
800	58	
1000	61	61
1250	65	
1600	68	
2000	71	71
2500	75	
3150	78	
4000	82	81
5000	85	



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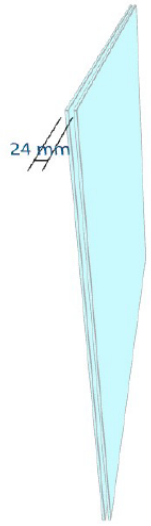


Rw 35 dB
C -1 dB
Ctr -5 dB

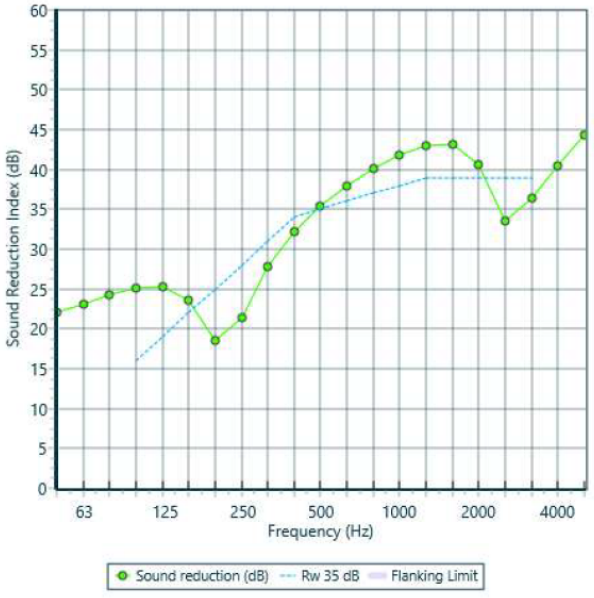
Mass-air-mass resonant frequency = =200 Hz
Panel Size = 2.0 m x 1.5 m
Partition surface mass = 29.8 kg/m²

System description

Pane 1 : 1 x 6 mm Glass

air: 12 mm
Pane 2 : 1 x 6 mm Glass

freq.(Hz)	R(dB)	R(dB)
50	22	
63	23	23
80	24	
100	25	
125	25	25
160	24	
200	18	
250	21	21
315	28	
400	32	
500	35	35
630	38	
800	40	
1000	42	41
1250	43	
1600	43	
2000	41	37
2500	33	
3150	36	
4000	40	39
5000	44	



Appendix B – Impact Calculations

$$SPL_{ext,1m} = SPR_{int} - attenuation\ (R_w) - 6$$

$$SPL_{ext,1m} = 90 - 35 - 6$$

$$SPL_{ext,1m} = 49dB(A)$$

$$Dist\ att = 20log\left(\frac{r}{R}\right)$$

$$Dist\ att = 20log\left(\frac{1}{13.}\right)$$

$$Dist\ att = -22.7dB$$

$$SPL_{res} = SPR_{int} - 35 - 6 - 22.7$$

$$SPL_{res} = 26.3(A)$$

$$SPL_{res,int} = SPL_{res} - open\ window$$

$$SPL_{res,int} = 26.3 - 15$$

$$SPL_{res,int} = 11.3dB(A)$$