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Acoustic Survey and Assessment for Proposed residential dwellings on land off Vicarage Lane, Wilpshire, Blackburn, BB1 9HX.

Prepared for:

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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 a residential dwelling on land off Vicarage Lane, Wilpshire, Blackburn, BB1 9HX.

Site Location and Context

1.2. The development site is situated to the north of Vicarage Lane. To the south are existing residential properties, to the west and north agricultural fields and to the east a railway line with more fields beyond.

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 2024, 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

The development

3.1 The proposed development consists of a single residential dwelling located to the northern section of the site, with garden amenity areas to the rear.

3.2 The railway line runs to the eastern boundary of the site at a lower height than the development site. The banking providing some shielding to the eastern side of the site.

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

Existing Situation.

3.4 In order to obtain representative background sound levels for the area on site monitoring was undertaken over the 25th-27th August 2025.

3.5 A Cirrus Optimus Green sound level meter was utilised for the monitoring. The meter was placed at a height of ~1.3m to the eastern boundary of the site close to the adjacent railway line.

3.6 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.

3.7 The weather during the monitoring was warm, dry with little wind <5m/s.

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

Start Time	End Time	Duration	LAeq	LA90	LAMax
25/08/2025 21:00	25/08/2025 23:00	01:59:58	52.5	25.9	80.6
25/08/2025 23:00	26/08/2025 07:00	08:00:00	46.8	24.4	80.3
26/08/2025 07:00	26/08/2025 23:00	16:00:00	53.8	31.8	92
26/08/2025 23:00	27/08/2025 07:00	08:00:00	45.5	26.4	78.5
27/08/2025 07:00	27/08/2025 11:00	04:00:01	55.1	37.3	87.9

3.9 Background sound levels were dominated by bird song and occasional passing trains with night-time maximum sound levels not regularly exceeded at identified at 58.1dB(A).

3.10 Given a 15dB attenuation[1] 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.

3.11 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 both the accommodation block and the teaching block from the prevailing environmental sound levels.

3.12 The above does not full assess the noise, particularly at night. Five train passes were identified on each night, the first just after 23:00 while the remaining four were spaced evenly between 06:00-07:00.

3.13 Maximum sound levels were identified at 76.5-80.3dB(A), when taking the higher level of 80.3dB(A) and considering the full façade of the dwelling as a standard insulated brick cavity wall, the internal sound levels will be around 38.2dB(A), see Appendix B, well below the recommended 45dB(A) for the 10th highest sound level.

3.14 If the overall sound from the passing trains is considered and converted into an SEL level, the 15-munite average sound level over the night-time period 50.5-56.7dB(A). given the above glazing specification, a simplified calculation results in an internal sound level of 25.7dB(A), below the guideline 8-hour average 30dB(A).

3.15 During the daytime, there are typically three trains passing the site in any hour, resulting in a hourly average figure of 53.7dB(A), internally 22.7dB(A), again well below the recommended 35dB(A) criterion.

3.16 Therefore, to ensure that suitable internal sound levels are maintained it is recommended that all habitable rooms are fitted with the 6/12/6 standard double-glazing units.

3.17 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 of better performance to

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

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.

3.18 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.

3.19 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.

3.20 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.

3.21 For the external garden amenity areas to the rear of the site, the banking to the railway line will provide some additional attenuation, however the monitoring results indicate an average sound level within the garden amenity area would be <53dB(A) over the course of the day. A review of the monitoring results and audio has confirmed that this is due to birdsong and the passing trains, and is generally much lower.

3.22 BS8233:2014 also states that it is

> ..'recognized that these guideline values are not achievable in all circumstances …. In higher noise areas, such … areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, … might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited'...

This is often taken to allow for 5dB relaxation on the recommended levels, suggesting a level of up to 60dB(A) in the garden amenity are would be acceptable.

3.23 Any additional substantial fencing along the eastern boundary would also help act as a barrier reducing sound levels within the garden area further.

4 Conclusion

4.1 On-site monitoring has identified existing background sound levels will result in a slight 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.

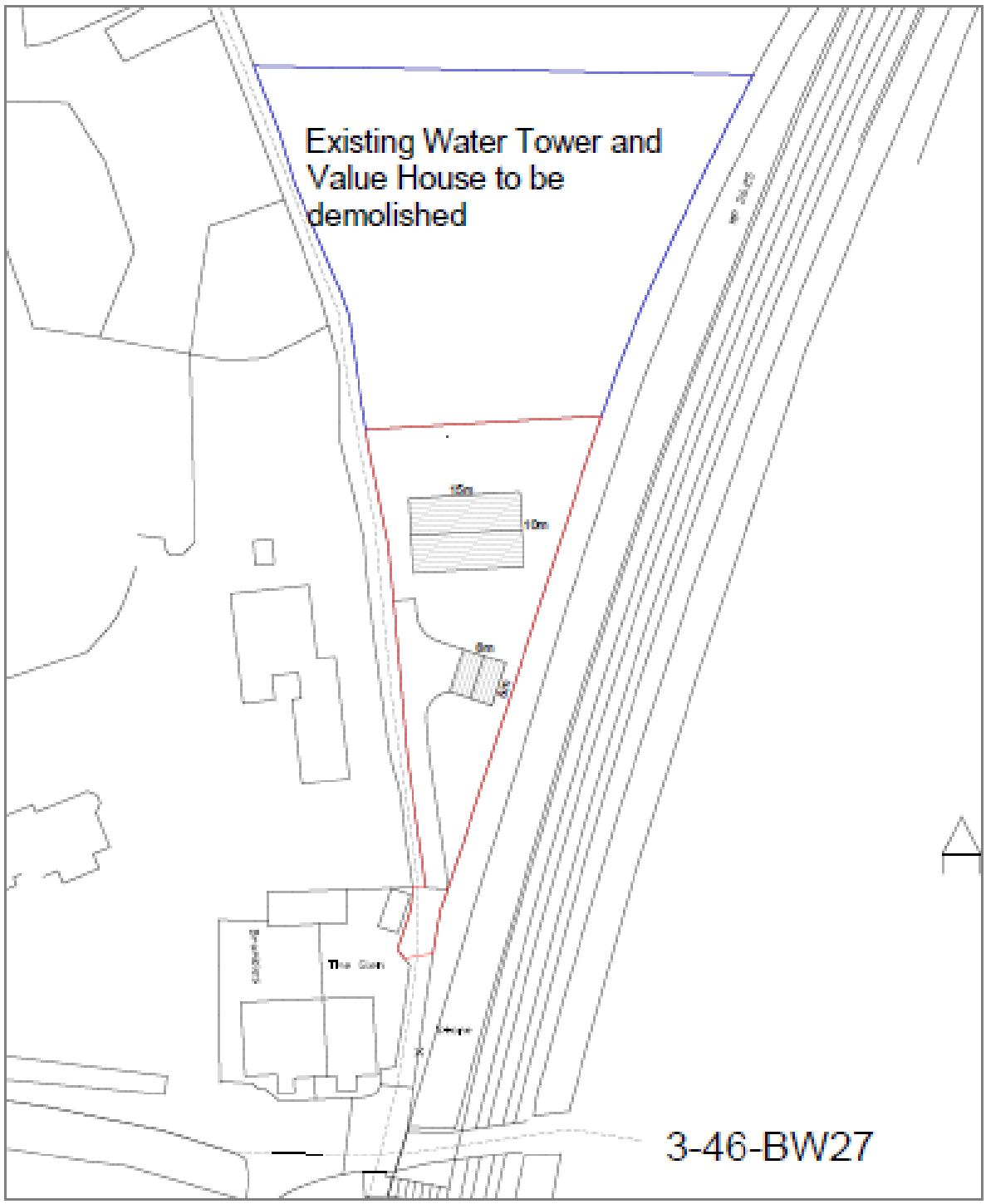
4.3 The inclusion of the above mitigation measures to all habitable rooms will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England,

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.

Figure 1 – Aerial Photograph



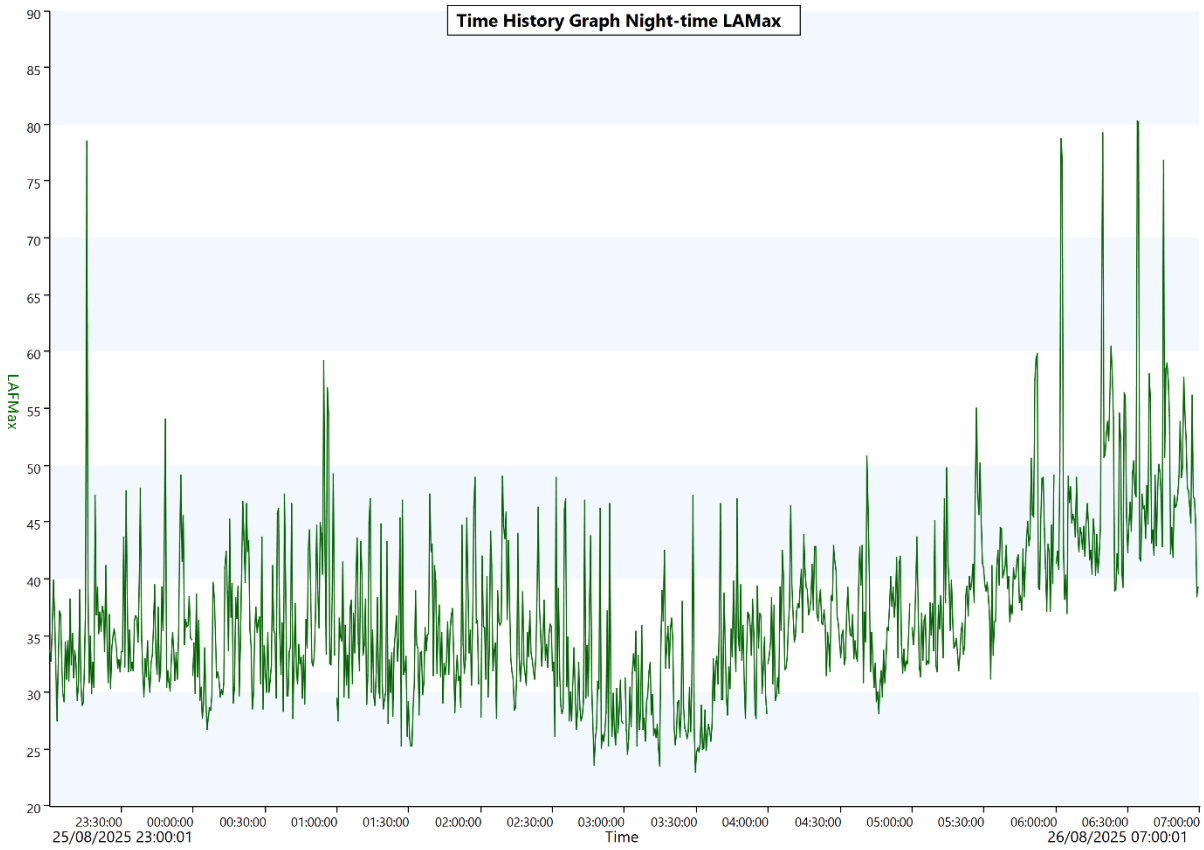
Figure 2 – Proposed Layout Plan

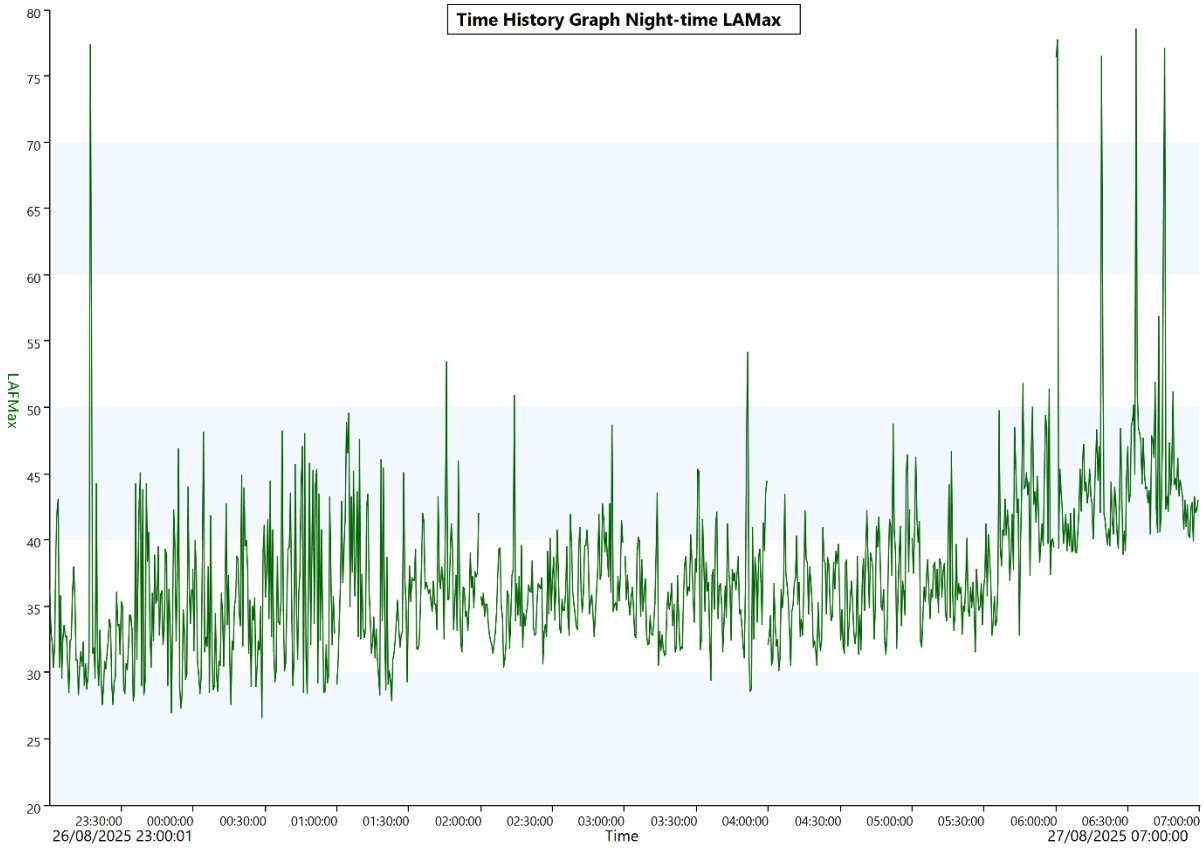


PROPOSED Site Plan

Appendix A – Full Monitoring Results

Time	L_ (dB)	L_{AMax} (dB)	L_{A90} (dB)
25/08/2025 21:00	52.6	80.4	27.3
25/08/2025 22:00	52.4	80.6	25.0
25/08/2025 23:00	46.5	78.5	25.9
26/08/2025 00:00	32.6	59.2	24.4
26/08/2025 01:00	30.1	48.9	24.6
26/08/2025 02:00	29.3	49.0	22.8
26/08/2025 03:00	27.5	47.4	22.4
26/08/2025 04:00	33.1	50.8	28.1
26/08/2025 05:00	36.5	59.9	28.9
26/08/2025 06:00	55.1	80.3	35.6
26/08/2025 07:00	53.7	80.1	34.1
26/08/2025 08:00	51.9	80.2	31.8
26/08/2025 09:00	54.3	92.0	30.2
26/08/2025 10:00	51.2	78.5	32.0
26/08/2025 11:00	51.8	79.4	31.7
26/08/2025 12:00	50.7	79.9	35.5
26/08/2025 13:00	51.8	77.2	35.4
26/08/2025 14:00	57.3	83.2	34.3
26/08/2025 15:00	56.7	84.4	35.4
26/08/2025 16:00	59.1	87.2	35.8
26/08/2025 17:00	50.4	78.4	35.8
26/08/2025 18:00	52.0	79.1	34.9
26/08/2025 19:00	51.9	79.8	32.4
26/08/2025 20:00	51.2	80.7	31.8
26/08/2025 21:00	50.0	77.3	30.3
26/08/2025 22:00	50.7	79.5	28.4
26/08/2025 23:00	45.7	77.3	24.3
27/08/2025 00:00	29.2	48.2	24.8
27/08/2025 01:00	31.9	53.4	26.6
27/08/2025 02:00	33.1	50.9	29.4
27/08/2025 03:00	32.9	54.1	29.0
27/08/2025 04:00	33.0	48.8	29.1
27/08/2025 05:00	34.4	51.8	30.5
27/08/2025 06:00	53.7	78.5	34.8
27/08/2025 07:00	53.5	79.3	36.8
27/08/2025 08:00	51.7	78.9	38.2
27/08/2025 09:00	58.9	88.0	36.4
27/08/2025 10:00	51.1	77.5	37.7

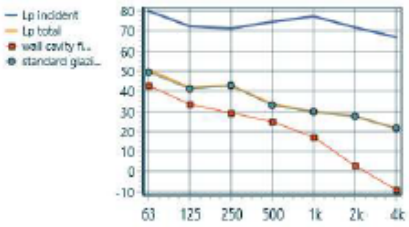

Time History Graph Night-time LAMax
LAFMax
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
23:30:00
25/08/2025 23:00:01
00:00:00
00:30:00
01:00:00
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00
06:30:00
07:00:00
26/08/2025 07:00:01
Time


Time History Graph Night-time LAMax
LAFMax
80
75
70
65
60
55
50
45
40
35
30
25
20
23:30:00
26/08/2025 23:00:01
00:00:00
00:30:00
01:00:00
01:30:00
02:00:00
02:30:00
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00
06:30:00
07:00:00
27/08/2025 07:00:00
Time

Appendix B – Maximum Train Break-in Calculation

Outdoor To Indoor Sound Transmission (v10.0.6)

Program copyright Marshall Day Acoustics
Margin of error is generally within ±3 dB
- Key No. 2594
Job Name:
Job No.: Initials:info
Date:01/09/2025
File Name:



Source	Octave Band Centre Frequency (Hz) 63	125	250	500	1k	2k	4k	Overall dBA
Incident sound level (freefield)	80.1	72.7	71.5	74.8	77.1	72.1	67.0	79.8
Path								
Element 1 , STL	-38	-40	-43	-51	-61	-70	-77	
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	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Element sound level contribution	43	34	29	25	17	3	-9	26.2
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 m²	2.6	2.6	2.6	2.6	2.6	2.6	2.6	
Element sound level contribution	50	41	43	33	30	28	21	37.9
Receiver								
Room volume (-10LogV), 50.00 m³	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	-6.0	
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	50	42	43	34	30	28	21	38.2
Level difference								LpAinc - LpARev,TD
D2m,nT	32.8	34.0	31.5	44.1	50.4	47.7	48.7	41.7

** Element descriptions:

#1: wall cavity filled
Wall (Double):
- Panel 1: 1 x 100 mm Brick
- Frame: Type A Wall Tie (UK) (75 mm) - 60 mm Fibreglass (10kg/m3) 60mm
- Panel 2: 1 x 122 mm Plastered Brick
- Details: Panel Size: 2.7 m x 4.0 m, Partition surface mass = 356 kg/m², Mass-air-mass resonant frequency = 22 Hz

#2: standard glazign 6/12/6
Glazing (Double):
- Pane 1: 1 x 6 mm Glass
- Cavity: 12 mm
- Pane 2: 1 x 6 mm Glass
- Details: Energy based model, Panel Size: 1.3 m x 1.5 m, Partition surface mass = 29.2 kg/m², Mass-air-mass resonant frequency = 200 Hz

Appendix C – SEL Calculations

$$SEL = L_{Aeq} + 10\,log(t)$$

Night 1	LAeq	t	SEL	15-min
1	64.6	34	79.9	50.4
2	67.6	43	83.9	54.4
3	64.7	34	80.0	50.5
4	71.6	20	84.6	55.1
5	67.7	31	82.6	53.1
Night 2				
1	65.6	43	81.9	52.4
2	68.6	35	84.0	54.5
3	68.8	31	83.7	54.2
4	73.2	20	86.2	56.7
5	68	29	82.6	53.1

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 Bachler'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 20year's 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.