



Acoustic Assessment for Proposed change of condition to replace current straw bales with 2.5m high close boarded fencing at Hawkshaw Farm Clayton-le-Dale BB2 7JA.

Prepared for:

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1. Introduction

- 1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic assessment to support a planning application to change a previously agreed condition attached to the Scare Kingdom events at Hawkshaw Farm, Clayton-le-Dale, BB2 7JA.

Site Location and Context

- 1.2. As part of a previous planning application in 2015 to allow the Scare Kingdom events at the site, a condition was agreed to provide a 2.5m high straw bale “fence” along the footpath between two event buildings.
- 1.3. The aim being to reduce sound emissions from participants while they travel between the two event attractions.
- 1.4. An aerial Photograph is enclosed in Figure 1, together with a previous agreed straw bale location and proposed fencing line drawing in Figure 2.
- 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 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**; this is the level of noise exposure below which no effect at all on health or quality of life can be detected.
- LOAEL – Lowest Observed Adverse Effect Level**. this is the level of noise exposure above which adverse effects on health and quality of life can be detected.
- SOAEL – Significant Observed Adverse Effect Level**. This is the level of noise exposure above which significant adverse effects on health and quality of life occur.



- 2.5. The Planning Practice Guidance on Noise supports the above and highlights that plan-making and decision making need to take account of the acoustic environment and consider;
- Whether or not a significant adverse effect is occurring or likely to occur
 - Whether or not an adverse effect is occurring or likely to occur; and
 - Whether a good standard of amenity can be achieved.
- In line with the NPSE this includes whether the overall effect of the noise exposure would be above or below the SOAEL.
- 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 – 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.
- 2.10. 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.



2.11. 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.

2.12. 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.

2.13. 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

- 2.14. A good acoustic design is implicit in meeting the requirements of the NPPF and can help to resolve many potential acoustic issues.
- 2.15. 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.
- 2.16. In terms of the proposed teaching block the Department for Education have provided guidance in the form of the “*Acoustic design of schools: performance standards; Building bulletin 93*” (BB93), February 2015. While the guidance does not apply directly to establishments of further education the detail contained within it does provide some guidance to ensure suitable learning environments are provided.
- 2.17. The guidance specifies suitable internal sound levels for different teaching spaces and between teaching spaces, the latter falling outside of the scope of this report. The guidance identifies an internal sound level of 35dB $L_{Aeq,30mins}$ for general teaching rooms and lecture rooms rising to 35dB $L_{Aeq,30mins}$ for multipurpose halls and drama studios and 40dB $L_{Aeq,30mins}$ for open plan teaching areas/study rooms and libraries.
- 2.18. The above being measured prior to the any equipment being turned on, e.g. the engine or bridge simulation equipment for this development.



3. The Assessment

The development

- 3.1 The proposed development consists of a variation of a previously agreed condition to provide a straw bale “fence” along the footpath between two attractions as part of the Scare Kingdom event held at the wider site from October through to the early November each year.
- 3.2 The proposal will see the replacement of the annually erected straw bales, with a solid, close boarded permanent wooden fence.
- 3.3 Figure 2 below provides a plan of the proposed development.

Existing Situation.

- 3.4 The current condition requires a straw bale “fence” to be erected during the Scare Kingdom event period between event attractions, see Figure 2 for the location.
- 3.5 The ground levels at this point slop down and away from the path towards the farm track running around the back of the farm complex. Beyond the track the fields start to rise again towards the nearby properties located over 200m to the east of the site and at a much higher level~15m higher than the footpath.
- 3.6 The line of the straw bales is located ~3.5m from the edge of the path with the ground being at least 1m lower at the “fence” line than the path.
- 3.7 Thus, the existing straw bale fence is only at an equivalent height of 1.5m and located 3.5m away from the path, with receptor sights located much higher.
- 3.8 In effect the straw bales provide no attenuation from sound from the guests along the footpath.



Proposed Development

3.9 The proposed development will see the erection of a 2.5m high close board fence, $\geq 12\text{Kg/m}^2$, along the edge of the foot path. Thus, providing an additional path difference of +0.82m on the source side of the fence, based on a standard 1.5m tall person.

3.10 This will provide at least 10dB attenuation to guests walking along the path.

$$10 \log\left(3 + \frac{40\delta}{\lambda}\right)$$

where; δ = path difference

λ = wavelength,

$$\lambda = \frac{\text{speed of sound (330 m/s)}}{\text{frequency (Hz)}}$$

$$\left(\lambda @ 125 \text{ Hz} = \frac{360}{125} = 2.88\right)$$

$$att = 10 \log\left(3 - \frac{40\delta}{\lambda}\right)$$

$$att = 10 \log\left(3 - \frac{40 * .82}{2.88}\right)$$

$$att = 11.6\text{dB}$$

Potential Sound levels at receptor locations.

3.11 The Scare Kingdom events only run for a short duration over October and early November each year. It has not therefore been possible to monitor the current sound emissions from the event.

3.12 However previous monitoring undertaken did identify typical sound levels of outside the event building of up to 52dB $L_{Aeq,15\text{mins}}$, resulting in sound levels of less than 23dB(A) at the nearby receptors to the east. Maximum sound levels were identified at 45dB(A) at the receptor location. The average sound levels being lower than the prevailing background sound level and below the Who recommended levels for preventing any adverse impact.

3.13 Assuming similar maximum sound levels are produced by guests walking between attraction, an equivalent of ~92dB(A), the proposed fence will provide an additional 10dB attenuation reducing levels from the current 45dB(A) max to 35dB(A). Through



an open window¹ this would result in sound level of 25dB L_{Amax} internally, significantly below the recommended 45dB(A) and even the eight hour average night-time figure of 30dB(A).

- 3.14 The proposed change of condition allowing the erection of a permanent solid barrier, along the edge of the foot path will result in an improvement over the current situation.
- 3.15 It will also result in sound levels at nearby receptor properties below the recommended sound levels for an eight hour average night-time period and night-time L_{Amax} levels, identified by the World Health Organisation as the on-set of adverse impact.
- 3.16 The proposed variation of condition will result in sound levels of No Observed Effect at the nearby receptor properties.

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



4 Conclusion

- 4.1 A consideration of the current and proposed situation has been undertaken, this has confirmed that the proposed solid fence will result in an improvement over the current situation.
- 4.2 In addition, based on the previously obtained sound levels the current impact is below those sound levels recommended by the World Health Organisation as an on-set to an adverse impact. The proposed development providing an improvement to current situation, reducing the potential impact further.
- 4.3 The replacement of the current temporary barrier with a wooden fence running along the edge of the foot path will ensure that the internal and external sound levels at nearby receptor properties are acceptable and ensure that a No Observe Effect is experienced 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 – Original straw bale location



Figure 3 - Proposed Fencing along Path





Appendix A - 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.