



# Acoustic Survey and Assessment for Proposed Function Tipee at Hawkshaw Farm, Longsight Road, Clayton-le-Dale, BB2 7JA

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Prepared for:

Mr Eric Dowson  
Hawkshaw Farm  
Clayton-le-Dale  
BB2 7JA

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## **1. Introduction**

- 1.1. Martin Environmental Solutions has been commissioned to undertake a noise survey and an acoustic assessment to support planning applications for a function tpee (weddings) at Hawkshaw Farm, Longsight Road, Clayton-le-Dale, BB2 7JA.

### **Site Location and Context**

- 1.2. The site is located to the southeast of the busy A59, Longsight Road. The area is predominantly agricultural with the farm's buildings located to the south. The nearest residential property is Hawkside located to the southwest.
- 1.3. It is the close proximity to the nearby residential properties that raised concerns over sound levels and 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), which seeks to prevent new and existing development from contributing to or being put at unacceptable risk from noise pollution, has replaced previous Planning Policy Statements and Planning Policy Guidance Notes.
- 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 including those within Lancashire 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 by Lancashire authorities as appropriate levels to indicate the relevant effect levels represented by the NPSE. These levels are detailed with in the Lancashire Planning



Guidance document on noise which is in the process of being finalised and is currently used by a number of Lancashire authorities.

- 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 recently published '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. Simple 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
<b>0 – Negligible</b> $L_{Aeq,16hr} < 50dB$ $L_{Aeq,8hr} < 40dB$	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.
<b>1 – Low</b> $L_{Aeq,16hr} 50-63dB$ $L_{Aeq,8hr} 40-55dB$	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.
<b>2 – Medium</b> $L_{Aeq,16hr} 63-69dB$ $L_{Aeq,8hr} 55-60dB$ $L_{AFmax} > 80dB^{**}$	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.
<b>3 – High</b> $L_{Aeq,16hr} > 69dB$ $L_{Aeq,8hr} > 60dB$ $L_{AFmax} > 80dB^{**}$	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 is required considered 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 The proposed development will consist of a semi-permanent tipee to be used for functions e.g. weddings. The site will operate predominantly at weekends and shall finish at midnight.
- 3.2 On-site monitoring was undertaken on the 21<sup>st</sup> to 23<sup>rd</sup> July 2018 to obtain representative sound levels for the proposed operating times of the development.
- 3.3 All measurements were taken using a Cirrus, Optimus Green CR-171CC, Type 1 sound level meters. The meters were calibrated before and after use and no significant deviation was identified. The calibration certificates are available on request. The weather was dry and warm with little to no wind throughout the monitoring period.
- 3.4 The full results are provided in Appendix A, with a summary below.

Start Time	End Time	Duration	LAeq	LA90	LAMax
21/07/2018 16:51	21/07/2018 19:00	02:08:19	67.1	51.4	84.7
21/07/2018 19:00	21/07/2018 23:00	04:00:00	65.0	42.1	92.2
21/07/2018 23:00	22/07/2018 07:00	08:00:00	59.4	26.4	81.6
22/07/2018 07:00	22/07/2018 19:00	12:00:00	67.3	50.3	95.7
22/07/2018 19:00	22/07/2018 23:00	04:00:00	64.0	40.5	83.3
22/07/2018 23:00	23/07/2018 07:00	08:00:00	61.9	27.5	88.2
23/07/2018 07:00	23/07/2018 08:08	01:08:02	69.1	57.2	84.3

- 3.5 Sound levels between 23:00 and 00:00, i.e. the operational night-time periods were 62.7dB & 60.7dB  $L_{Aeq}$ , with a background sound level of 39.4dB & 28.4dB  $L_{A90}$  for the Saturday and Sunday respectively.
- 3.6 The proposed 'function room' of the Tipee is to be located 185m from the nearest property, a bungalow, which runs adjacent to the A59, Longridge Road, surrounded by a high stone wall. The garden amenity areas are further to the southwest and protected by the dwelling.
- 3.7 Standard distance attenuation calculations show that a distance reduction of 37.3dB will be achieved over this distance.



- 3.8 An open window provides 15dB attenuation<sup>1</sup> and therefore based on the monitoring undertaken the recommended internal sound levels detailed in section 2 are already being exceeded at the nearest property during both the day and night-time periods. As such the use of these recommended sound levels as a design criterion will ensure that sound emanating from the development will be below the resulting sound level currently experienced and below the prevailing background sound level during the daytime period, and for the majority of the time the night-time period as well.
- 3.9 Based on the criteria of 35dB (A) during the day and 30dB(A) at night sound emissions from the proposed development must be limited to 87.3dB(A) during the day and 82.3dB(A) at night.
- 3.10 While this is likely to be satisfactory for the venue and can be controlled through the use of a sound limiter device it is recommended that further protection be provided in the form of a 2m high planted earth bund/fence located in the proposed woodland area to the rear of the development in between the development and the nearby property.
- 3.11 Based on a nominal spacing of 25m from the tpee (a closer bund would increase the attenuation provided), a barrier attenuation of 13.5dB can be achieved, see Appendix B. This would allow a sound level of 95.8dB(A) at night within the development while still achieving the night-time recommended internal value of 30dB(A) at the nearby property. While a level of 11.8 dB(A) could be created during the day.
- 3.12 The above levels are excessive and typical levels would be in the range of 80-85dB(A) when bands/DJ's are playing. The inclusion of the bund and a limiter set at 85dB(A) will therefor ensure that no adverse impact is experienced at the nearby property.
- 3.13 It should also be noted that the above does not consider the large stone wall which surrounds the nearest property and completely shields it from view, just ensuring even low sound levels are experienced at this location.

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<sup>1</sup> BS8233: 2014; Guidance on sound insulation and noise reduction for buildings



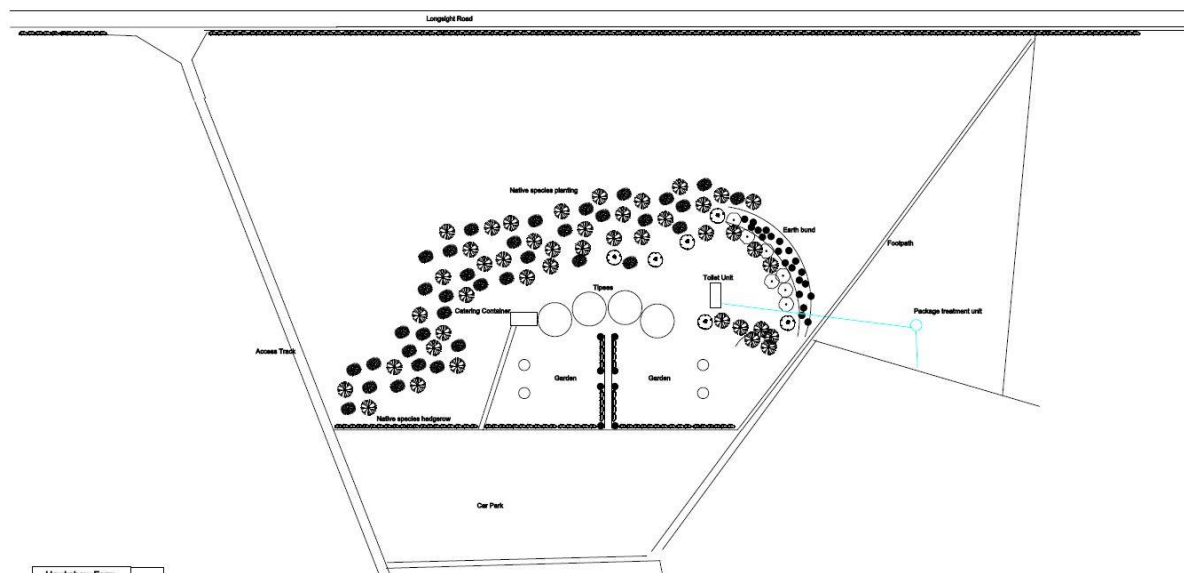
## **4 Conclusion**

- 4.1 Monitoring on site has identified the prevailing background sound level in the area and that it is dominated by the busy A59 which separates the site from the closest residential property.
- 4.2 Based on the measurements undertaken an identified design criterion in line with the recommended sound levels within BS8233:2014, provided by WHO and identified by the Lancashire Authorities has been used to ascertain an acceptable sound level from the property.
- 4.3 To provide a degree of reassurance it is recommended that an acoustic bund/fence is provided within the area to be planted, in effect a continuation of the bund shown within on the indicative layout plan in Figure 2.
- 4.4 The acoustic bund provides further attenuation so that a development sound level of 85dB(A) can be emitted ensuring to adverse impact on the nearby properties will occur and the recommended sound level s achieved.
- 4.5 The inclusion of this bund therefore ensures the development will comply with the requirements of the National Planning Policy Framework and will not results in an adverse impact on the nearby properties.

**Figure 1 – Aerial Photograph**



**Figure 2 – Indicative Site Layout Plan**



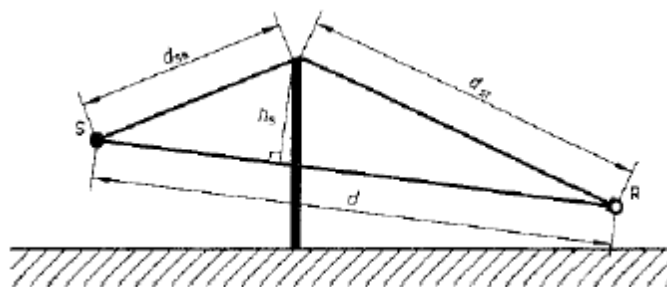


## Appendix A – Full Monitoring Results

Time	Duration	L <sub>Aeq</sub> (dB)	L <sub>AMax</sub> (dB)	L <sub>A90</sub> (dB)
21/07/2018 17:00	01:00:00	67.6	82.3	54.3
21/07/2018 18:00	01:00:00	66.4	84.7	49.2
21/07/2018 19:00	01:00:00	66.2	79.9	48.4
21/07/2018 20:00	01:00:00	65.4	91.3	40.8
21/07/2018 21:00	01:00:00	64.6	92.2	41.9
21/07/2018 22:00	01:00:00	63.5	92.0	39.8
21/07/2018 23:00	01:00:00	62.7	80.5	39.4
22/07/2018 00:00	01:00:00	60.7	80.0	28.5
22/07/2018 01:00	01:00:00	57.6	81.6	27.4
22/07/2018 02:00	01:00:00	55.0	79.6	25.5
22/07/2018 03:00	01:00:00	54.6	80.5	24.2
22/07/2018 04:00	01:00:00	56.5	79.1	26.4
22/07/2018 05:00	01:00:00	58.8	80.3	28.4
22/07/2018 06:00	01:00:00	61.7	81.3	33.0
22/07/2018 07:00	01:00:00	64.0	81.3	39.1
22/07/2018 08:00	01:00:00	65.3	82.7	43.5
22/07/2018 09:00	01:00:00	67.6	93.2	49.7
22/07/2018 10:00	01:00:00	68.4	95.7	53.6
22/07/2018 11:00	01:00:00	68.1	81.3	57.9
22/07/2018 12:00	01:00:00	68.1	86.7	56.7
22/07/2018 13:00	01:00:00	67.9	88.3	54.6
22/07/2018 14:00	01:00:00	68.1	94.9	55.0
22/07/2018 15:00	01:00:00	67.5	82.8	56.6
22/07/2018 16:00	01:00:00	67.6	88.4	56.1
22/07/2018 17:00	01:00:00	66.7	83.2	52.7
22/07/2018 18:00	01:00:00	66.9	85.2	51.0
22/07/2018 19:00	01:00:00	66.0	83.3	45.6
22/07/2018 20:00	01:00:00	64.5	82.7	44.2
22/07/2018 21:00	01:00:00	62.3	79.8	37.2
22/07/2018 22:00	01:00:00	62.0	80.1	36.6
22/07/2018 23:00	01:00:00	60.2	80.0	28.4
23/07/2018 00:00	01:00:00	57.6	80.4	24.8
23/07/2018 01:00	01:00:00	57.4	88.2	27.4
23/07/2018 02:00	01:00:00	56.2	81.4	27.5
23/07/2018 03:00	01:00:00	55.7	78.7	25.6
23/07/2018 04:00	01:00:00	61.5	82.4	30.1
23/07/2018 05:00	01:00:00	63.8	83.8	41.0
23/07/2018 06:00	01:00:00	67.4	84.4	49.2
23/07/2018 07:00	01:00:00	69.1	84.3	57.0

## Appendix B – Barrier Calculation

Distance = 185m  
 Height of source = 1.5m above ground level  
 Height of receiver = 1.5m above the ground level  
 Height of Barrier = 2m above ground level  
 Distance from source to barrier = 25m  
 Distance from Barrier to receiver = 160m



indicative drawing

### Barrier Attenuation Calculations

Barrier Attenuation has been calculated using the following formula:

$$10 \log \left( 3 + \frac{40\delta^2}{\lambda} \right)$$

where;  $\delta$  = path difference

$\lambda$  = wavelength,

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

Path Difference **0.08065361**

**Attenuation** **13.5dB**