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Acoustic Survey and Assessment for Proposed Residential development at Dog and Partridge, Hesketh Lane, Chipping, PR3 2TH.

Prepared for:

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Contents

1. Introduction

1.1. Martin Environmental Solutions has been commissioned to undertake an acoustic survey and assessment to support a planning application for a conversion of the former Dog & Partridge public house and erection of four holiday lodges Dog and Partridge, Hesketh Lane, Chipping PR3 2TH.

Site Location and Context

1.2. The site is located to the north of Hesketh Lane, to the east bordering the site is a dog kennelling facility. To the north and south are agricultural fields with additional properties along the road. The site is currently occupied by the former Dog and Partridge public house and outbuildings.

1.3. An aerial Photograph is enclosed in Figure 1.

1.4. Concerns have been raised over the potential impact on the future residents of the development 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 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 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 Surrounding potential sources of noise have been identified as the traffic along Hesketh Road to the south of the site and the dog kennelling facility to the east.

3.2 A previous application for the conversion of the former public house to residential accommodation has been granted on site, for which Martin Environmental Solutions has undertaken a previous acoustic assessment. The assessment conclusions were accepted by Ribble Valley and conditions requiring the identified mitigation measures to be installed were applied.

3.3 A review of the area has confirmed no significant changes have occurred since the original assessment and the traffic flows for the area are similar if not reduced from those observed originally.

3.4 The assessment of the potential traffic impact has therefore been based upon the previously accepted monitoring results from the front of the site. These indicated a sound level of 53.7dB $L_{Aeq,16hr}$ and 46.4dB $L_{Aeq,8hr}$ would be experienced at the southern façade of the former public house. Maximum sound levels during the night-time period were identified at 70.0 dB(A).

3.5 As such, given a 15dB reduction for an open window the sound levels within the former public house would be in excess of the recommended internal sound levels further mitigation measures are required.

3.6 A “more rigorous calculation” as determined by Annex G of BS8233:2014 has been undertaken for this southern façade, and this calculation has confirmed that a standard 6/12/6 double glazing unit will be adequate to protect the internal environment of the apartments, with an internal sound level of 8.8dB(A).

3.7 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 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.

3.8 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.

3.9 The rear façade of the former public house and the proposed holiday lodges will be protected from road noise by the existing structure. However the kennelling facility to the east will potentially impact on these properties.

3.10 New monitoring has been undertaken along the east boundary over the 4th-5th June 2023 to monitor the noise from the kennel. The full results are detailed within Appendix A, with a summary in the table below.

Start Time	End Time	Duration	L_{Aeq}	L_{A90}	L_{AMax}
04/06/2023 11:00	04/06/2023 23:00	11:59:59	49.0	32.5	73.8
04/06/2023 23:00	05/06/2023 07:00	08:00:00	52.8	19.3	87.6
05/06/2023 07:00	05/06/2023 20:00	13:00:01	54.2	39.6	74.6

3.11 The background sound level was dominated by birdsong, and between 08:00-16:00 equipment within one of the existing units, currently used by a brewery was observed on the Monday. This will not be present following development and as such the higher daytime average of 54.2 is a worse case situation. For robustness this figure has been used throughout the assessment.

3.12 Night-time maximum sound levels were as a result of birds singing adjacent to the microphone and recorded at 7302dB(A). However periods of dog barking were observed, including during the early hours of the night.

3.13 The above results indicate that given a 15dB reduction[1] for an open window the resulting sound levels will be above those recommended within BS8233:2014 and by the World Health Organisation. As such the same standard 6/12/6 double glazing units are recommended. These will reduce the internal sound level to below 24dB(A) during the day and 22dB(A) at night, 28.2dB(A) maximum.

3.14 Periods of dog barking have been identified and the highest sound level identified was 56.7dB(A).

3.15 A 1,8m high close boarded fence is recommended for the garden amenity areas for each holiday lodge. This will provide at least 11.8dB attenuation from the kennels.

3.16 The sound level meter was located 9m from the kennel block and the resulting sound level within the garden of plot 11 will be 45.6dB(A) close to the fence and 41.6 at the far side of the garden, likewise the sound level to be experienced in plot 10 would be 40.0dB(A) and 40.3dB(A) at the far side of the garden.

3.17 The above calculations are based on the loudest bark identified from the recordings averages over the day will be significantly lower.

3.18 The above are below the recommended external sound levels with BS8233:2014 and the from the World Health Organisation. As the distance increases between the proposed accommodation and the kennel facility the resulting sound exposure decreases.

3.19 Some authorities apply the BS4142:2014 criteria to the assessment of barking dogs. While BS4142 specifically excludes animals from the assessment methodology, should such an approach be taken then a correction for intermittency would be applied of 3dB. This increase would still result in sound levels from individual barks below the guideline figures of 50-55dB(A) in the garden amenity areas, even lower when averaged over a full hour as considered within the British Standard.

3.20 The inclusion of the close boarding fencing will ensure barking from the neighbouring kennel unit will not have an adverse impact on the holiday lodges or the permanent residential units located further away.

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

3.21 Internally, the prevailing sound levels have already identified the need for standard 6/12/6 double glazing units with alternative ventilation. When considering internal sound levels from barking dogs at the nearest holiday lodge, plot 11, internal sound levels will be 15.6dB(A), significantly below the night-time recommended sound level of 45dB L_{Amax} or the night-time average of 30dB $L_{A,8hr}$.

3.22 The standard double glazed window units will adequately protect the internal environment from any potential barking activities from the neighbouring kennel.

4 Conclusion

4.1 On-site monitoring has identified existing background sound levels on site, and these will result in an adverse impact on the proposed properties. 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, and 1.8m high close-boarded fencing to the garden amenity areas of the holiday ledges to the rear of the site.

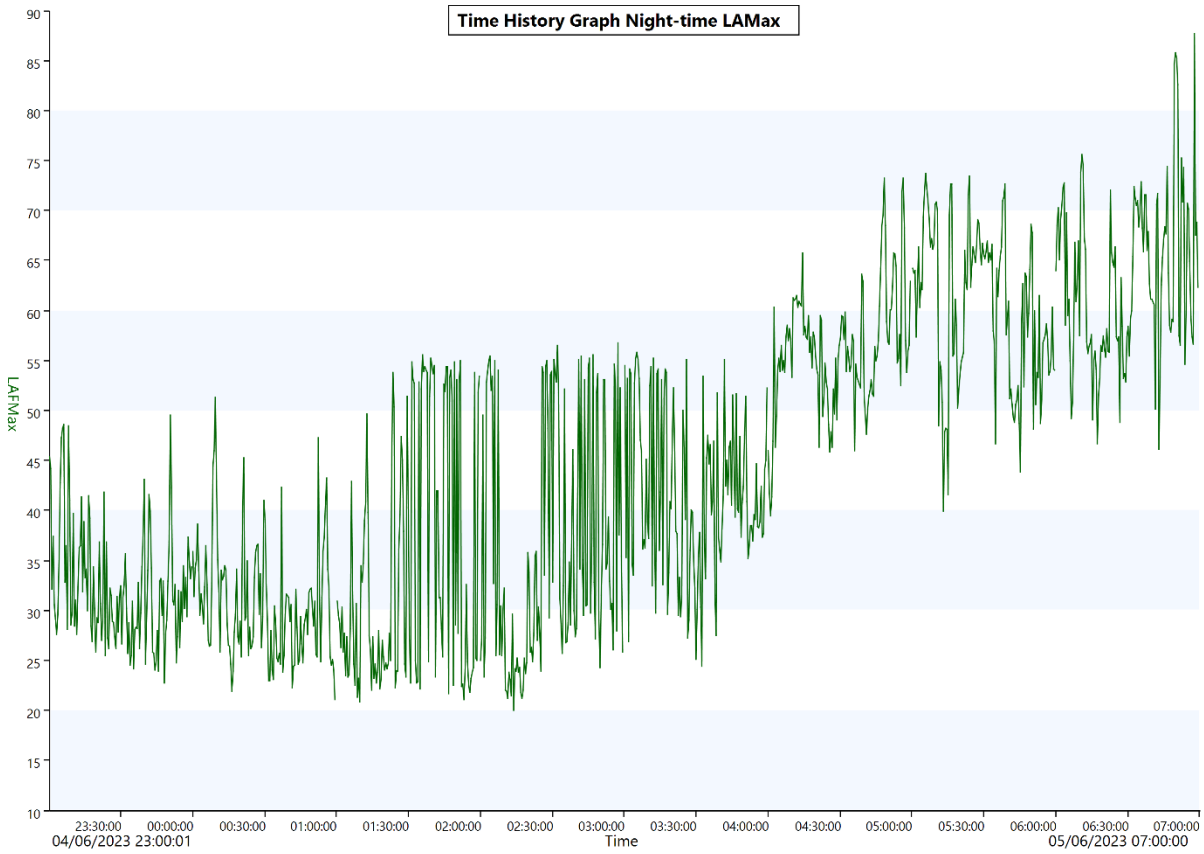
4.3 The inclusion of the above mitigation measures to all habitable rooms will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England.

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

Appendix A – Full Monitoring Results

Time	LAeq (dB)	LAMax (dB)	LA90 (dB)
04/06/2023 11:00	44.2	71.6	35.1
04/06/2023 12:00	50.5	72.6	36.5
04/06/2023 13:00	43.7	66.7	36.0
04/06/2023 14:00	43.2	63.4	35.9
04/06/2023 15:00	48.5	72.0	36.3
04/06/2023 16:00	50.4	72.0	35.9
04/06/2023 17:00	51.3	71.7	38.4
04/06/2023 18:00	52.5	69.8	33.4
04/06/2023 19:00	51.0	72.8	33.5
04/06/2023 20:00	51.6	73.8	31.9
04/06/2023 21:00	38.4	64.1	27.9
04/06/2023 22:00	33.8	54.3	22.4
04/06/2023 23:00	28.6	49.5	20.1
05/06/2023 00:00	27.4	51.3	20.1
05/06/2023 01:00	34.1	55.6	20.0
05/06/2023 02:00	34.9	56.7	20.0
05/06/2023 03:00	35.7	55.8	20.0
05/06/2023 04:00	49.3	73.3	31.3
05/06/2023 05:00	54.4	73.7	32.5
05/06/2023 06:00	60.7	87.6	36.7
05/06/2023 07:00	54.6	72.8	38.8
05/06/2023 08:00	56.5	74.6	51.3
05/06/2023 09:00	56.6	73.7	50.8
05/06/2023 10:00	54.0	71.9	50.7
05/06/2023 11:00	54.9	73.3	50.9
05/06/2023 12:00	55.1	73.0	51.0
05/06/2023 13:00	56.5	73.7	50.9
05/06/2023 14:00	53.1	70.2	50.7
05/06/2023 15:00	53.5	70.3	50.7
05/06/2023 16:00	51.6	68.9	36.9
05/06/2023 17:00	51.9	70.0	35.8
05/06/2023 18:00	49.3	70.3	35.1
05/06/2023 19:00	49.6	72.0	35.4


Time History Graph Night-time LAMax
LAFMax
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
23:30:00
00:00:00
00:30:00
01:00:00
01:30:00
02:00:00
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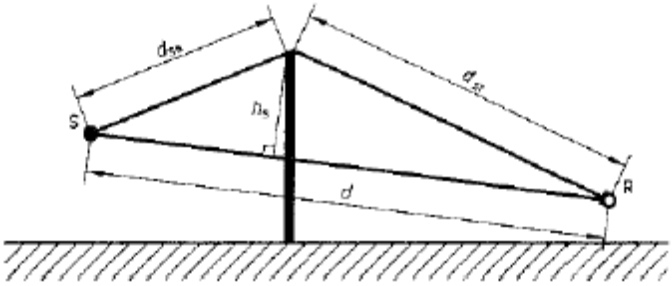
03:00:00
03:30:00
04:00:00
04:30:00
05:00:00
05:30:00
06:00:00
06:30:00
07:00:00
04/06/2023 23:00:01
Time
05/06/2023 07:00:00

Barrier Attenuation



indicative diagram

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

where; $\delta = path\ difference$

$\lambda = wavelength,$

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

Plot 11

	m	m
Distance Receiver to barrier	15	1
Height of barrier	1.8	1.8
Distance source to barrier	3.6	3.6
Height of receiver	1.5	1.5
Height of source	1.2	1.2
receiver to barrier	0.003	0.044031
source to barrier	0.049658	0.049658
Path difference	0.052657	0.093688
Barrier attenuation (dB)	11.9634	14.08652