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Acoustic Assessment for a proposed residential development at Land behind The Dog Inn, Market Place, Longridge, Preston, PR3 3RR.

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 development on land to the rear of the Dog Inn, Market Place, Longridge, PR3 3RR.

1.2. This report has been updated following a change to the proposed layout plan and comments received from the Council's Environmental Health Team.

Site Location and Context

1.3. The site is located to the rear and southeast of the Dog Inn public house. To the west, south and east of the site are existing residential properties. The access point will be to the north adjacent to the Dog Inn, with Longridge centre to the north.

1.4. An aerial Photograph is enclosed in Figure 1.

1.5. It is the potential impact on the future occupants of the site that has prompted 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 February 2019, 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 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 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 Lancashire guidance, WHO and BS 8233: 2014.

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 In order to identify the prevailing background sound level in the area on site monitoring was undertaken on the 19th-20th December 2020. The meter was placed on the dividing wall between the site and the public house. This is an elevated position compared to the general site topography with approx. 3m drop to the ground level of the site.

3.2 The meter was field calibrated before and after the monitoring with no significant deviation. Calibration certificates are available on request. The weather during the monitoring period was variable with some showers and to light winds. This would result in a slightly higher sound level being recorded due to the wet roads; however, this is not considered detrimental to the outcome of the monitoring and would only result in a higher level of mitigation being required.

3.3 The full results are provided within Appendix A, with a summary below.

Start Time	End Time	Duration	L_{Aeq}	L_{A90}	L_{AMax}
19/12/2020 15:07	19/12/2020 23:00	07:52:10	47.5	43.1	79.9
19/12/2020 23:00	20/12/2020 07:00	08:00:00	43.7	41.5	69.9
20/12/2020 07:00	20/12/2020 16:40	09:40:11	47.2	43.6	83.8

3.4 The public House was not operating at the time of the survey due to the ongoing Covid-19 Pandemic. However, the establishment is primarily and food/drink-based operating, as such the extraction system was left running during the 'normal' operational hours to mimic the prevailing background sound level from the venue.

3.5 In addition, the car park is currently being used by a number of local residents and vehicle movements were witnessed on set up and collection of the sound level meter and identified throughout the monitoring.

3.6 As can be seen from the above, given a 15dB attenuation[1] for an open window the sound levels to be experienced by the future occupants, including the regularly exceeded night-time maximum sound level of 59.2dB(A), will be below the recommended sound levels identified in the above guidance documents.

3.7 As such no further mitigation measures are required to ensure suitable internal sound levels at the nearest block of proposed properties.

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

3.8 However, to the rear of the public house is a small outside terrace. This currently has a license for live & recorded music between the hours of 08:00-20:00. The upper floors to the public house have also been recently converted to flats.

3.9 It has been confirmed that the applicant and owner of the public house is willing to amend the licensing permissions for the venue to remove external entertainment from the license.

3.10 This leaves the potential for internal sound from entertainment to impact on the development.

3.11 The gardens adjacent to the public house car park are a 5-6m lower than the terrace and ground floor of the public house, with the car park itself being 2-3m lower than the terrace. This difference results in a physical barrier to the between the terrace and the garden/ground floor of the property resulting in the line of site at a height of 1.5m, i.e. someone standing in the garden, being blocked by the land. This will provide a minimum of 10dB attenuation, more nearer the end of the garden where the barrier difference is greater.

3.12 Assuming that doors and windows are kept closed during any entertainment, providing a reduction at least 30dB, and an internal sound level of 90dB(A) from any entertainment, which is above the peak sound level stated in the Control of Noise at Work Regulations 2005. The sound level to be experienced in the garden and at the façade of the house would be 16.5dB(A) in the garden and 13.3dB(A) at the façade.

3.13 Given a 15dB reduction for an open window this would results in entertainment at the venue not being heard internally.

3.14 Patrons of the public house using the terrace, will also generate some noise. With an average sound level of 65dB(A), a capacity of 40 people and assuming half are talking at any one time the sound level at the boundary of the garden will be 48.9dB(A), and through an open window 33.9dB(A) below the recommended criteria identified in section 2 of the report, see Appendix B.

3.15 It is however recommended that standard double glazed window units are fitted to the properties, this will provide a 33dB reduction when closed. To ensure suitable ventilation of the properties acoustic trickle ventilators need to be incorporated with the windows. 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.

3.16 The above will allow a level of up to 97.1dB(A) from the Patio area at the public house to be generated while still achieving the recommended internal sound levels. Significantly more than the identified 78dB generated by the patrons.

3.17 As such no further mitigation measures are considered necessary.

4 Conclusion

4.1 On-site monitoring has identified existing background sound levels will not result in any adverse impact on the proposed properties. As such no additional mitigation measures are required.

4.2 However, there is potential for an adverse impact from the use of the public house. The applicant has confirmed that the use of the external patio area for regulated entertainment is to be removed from the premises license and the area will not be used for any live or recorded music.

4.3 Given the above and the capacity of the external area the use of the patio area will not result in any adverse impact on the proposed properties. It has also been demonstrated that music inside the property will not result in any adverse impact.

4.4 It is however recommended that the properties are fitted to the habitable rooms facing the public house with a standard 6/12/6 double glazing units and additional trickle ventilators, enabling the windows to remain closed.

4.5 This will ensure that the internal sound levels within the properties are fully protected.

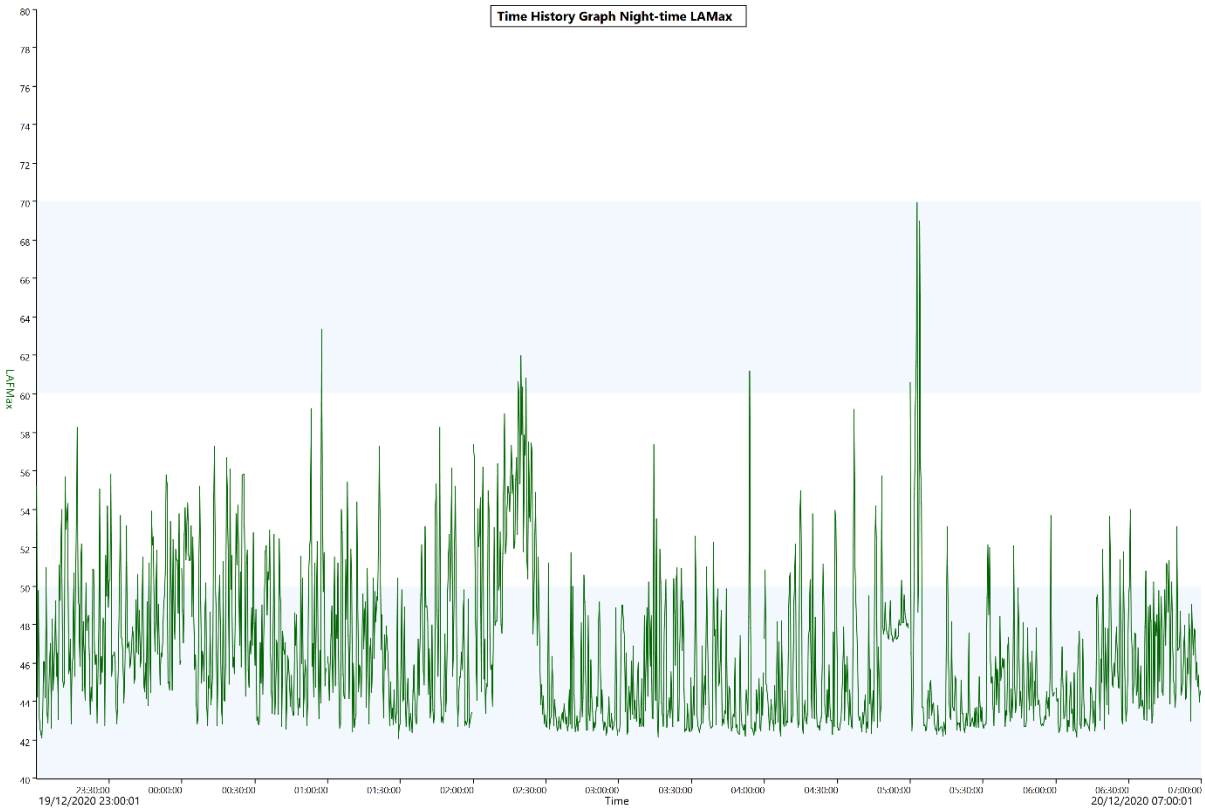
4.6 The inclusion of the above mitigation measures to all habitable rooms will ensure that the internal and external sound levels are acceptable and will result in a No Observe Effect on the future residents in line with the Noise Policy Statement for England.

4.7 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	Duration	L_{Aeq} (dB)	L_{AMax} (dB)	L_{A90} (dB)
19/12/2020 15:07	00:52:11	50.6	79.9	46.4
19/12/2020 16:00	01:00:00	49.3	75.8	46.3
19/12/2020 17:00	01:00:00	48.7	65.7	45.4
19/12/2020 18:00	01:00:00	47.1	68.7	44.5
19/12/2020 19:00	01:00:00	46.0	71.6	43.5
19/12/2020 20:00	01:00:00	45.7	70.4	42.9
19/12/2020 21:00	01:00:00	45.0	61.7	42.9
19/12/2020 22:00	01:00:00	44.3	58.4	41.9
19/12/2020 23:00	01:00:00	43.8	58.2	41.7
20/12/2020 00:00	01:00:00	44.4	63.4	41.7
20/12/2020 01:00	01:00:00	43.3	58.3	41.4
20/12/2020 02:00	01:00:00	44.6	62.0	41.5
20/12/2020 03:00	01:00:00	42.4	61.2	41.2
20/12/2020 04:00	01:00:00	43.8	59.2	41.3
20/12/2020 05:00	01:00:00	43.5	69.9	41.4
20/12/2020 06:00	01:00:00	43.0	54.0	41.5
20/12/2020 07:00	01:00:00	44.3	60.2	42.2
20/12/2020 08:00	01:00:00	45.2	64.4	42.5
20/12/2020 09:00	01:00:00	46.5	67.3	43.7
20/12/2020 10:00	01:00:00	46.9	65.6	44.5
20/12/2020 11:00	01:00:00	47.3	67.8	44.5
20/12/2020 12:00	01:00:00	48.4	73.1	44.9
20/12/2020 13:00	01:00:00	47.3	68.2	45.0
20/12/2020 14:00	01:00:00	47.3	65.2	45.2
20/12/2020 15:00	01:00:00	46.7	68.8	44.4
20/12/2020 16:00	00:40:09	50.5	83.8	44.2


Time History Graph Night-time LAMax
LAFMax
Time
19/12/2020 23:00:01
20/12/2020 07:00:01

Appendix B – Breakout and patron noise calculations

Distance attenuation public house to garden

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

$$Dist\ att = 20log\left(\frac{1}{23.8}\right)$$

$$Dist\ att = -27.5dB$$

*flat distance= 22m, actual line of site over the height difference is 23.8m

Break Out

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

$$SPL_{ext} = SPR_{int} - attenuation\ (R_w) - 6 - dist.att - barrier\ att$$

$$SPL_{ext} = 90 - 30 - 6 - 27.5 - 10$$

$$SPL_{ext} = 16.5dB(A)$$

Patron Noise

Capacity 40, 50% talking at any one time = 20

65dB(A) at 1m

20*65dB = 78.0dB(A) at 1m

Average distance from patio to facade = 29.0m

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

$$Dist\ att = 20log\left(\frac{1}{29}\right)$$

$$Dist\ att = 29.2dB$$

$$Facade\ sound\ level = 78 - 29.2$$

$$Facade\ sound\ level = 48.8dB(A)$$