JPM ACOUSTICS

VETERINARY HOSPITAL, HONLEY

NOISE IMPACT ASSESSMENT

APRIL 2024

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APPENDICES

1.0. INTRODUCTION

1.1. OVERVIEW

1.1.1. JPM Acoustics Ltd has been appointed to undertake a noise impact assessment to support a planning application for the proposed veterinary hospital at Woodhead Road, Honley.

1.1.2. This report considers the potential impact of noise from the proposed veterinary hospital on noise sensitive properties in the vicinity of the site. The assessment has been undertaken with due regard to relevant planning policies, British Standards, and technical guidance documents relating to noise.

1.1.3. This report is necessarily technical in nature. Therefore, to assist the reader, a glossary of acoustic terminology is provided in **Appendix A**.

1.2. SITE LOCATION AND PROPOSED DEVELOPMENT

1.2.1. At present, the site, which is located in a mixed-use area of Honley, comprises hard standing. Immediately to the north are residential properties and premises associated with Collins Multi Utilities and Civils Ltd; to the east are a number of commercial units; to the south lies open land; and to the west is Woodhead Road.

1.2.2. The site location is presented in **Figure 1.1**.

Figure1.1: Site location plan

1.2.3. The development proposals include for a veterinary hospital, with animal boarding facilities, external dog areas, and car parking. **Figure 1.2** shows the proposed site layout plan and indicates the location of the external dog areas. Whilst the development may be subject to limited 'out of hours' use in cases of emergency, the development would routinely operate during the daytime hours, only. On this basis, the assessment considers the potential for noise impacts between the hours of 07:00 and 19:00.

Figure 1.2: Proposed site layout plan

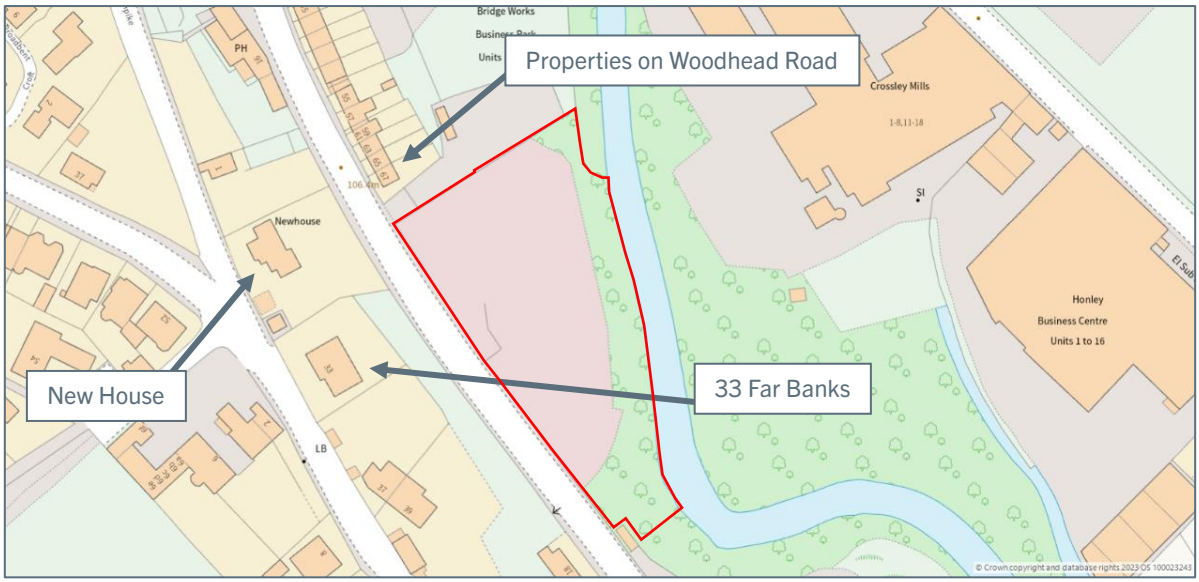
Source: Dawson Williamson Architects. Drawing reference: C1098 101 Rev 1

1.3. NOISE SENSTIVE RECEPTORS

1.3.1. The nearest noise sensitive receptors (NSRs) to the site are properties on Woodhead Road, to the northwest; New House on Old Turnpike, to the west; and 33 Far Banks, to the west. Note that other properties a greater distance away from the site than the identified NSRs are likely to be exposed to lower noise levels than those predicted in this assessment.

1.3.2. The locations of the NSRs are shown in **Figure 1.3**.

Figure 1.3: Locations of the nearest NSRs



2.0. STANDARDS AND GUIDANCE

2.1. BS 4142:2014+A1:2019: METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND (BS 4142)

2.1.1. This British Standard describes methods for rating and assessing the following:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

2.1.2. The method uses outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

2.1.3. In accordance with the assessment methodology, the specific sound level ($L_{Aeq,T}$) of the noise source being assessed is corrected by the application of penalties for characteristic features, such as tonal qualities and/or distinct impulses, to give a rating level ($L_{Ar,Tr}$). The British Standard effectively compares the difference between the rating level and the typical background sound level ($L_{A90,T}$) in the absence of the noise source being assessed.

2.1.4. It is advised that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) when the noise source in question is likely to operate or is proposed to operate in the future.

2.1.5. Comparing the rating level with the background sound level, BS 4142 states:

"Typically, the greater this difference, the greater the magnitude of impact.

A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

3.0. BASELINE NOISE SURVEY

3.1. OVERVIEW

3.1.1. A baseline noise survey has been undertaken to determine the prevailing noise climate in the vicinity of the NSRs. A summary of the baseline noise survey methodology and relevant results is included below.

3.2. MEASUREMENT LOCATION

3.2.1. Measurements were undertaken at one location during the survey. The adopted measurement location is indicated in **Figure 3.1**.

Figure 3.1: Baseline noise survey measurement location

Measurement Location 1 (ML1)

3.2.2. Unattended measurements were undertaken over a 24-hour period at ML1 commencing at 16:00 on 22nd April 2024.

3.2.3. The equipment at ML1 was installed in free-field conditions at a height of 2 m above local ground level and 10m from the nearest kerb of Woodhead Road. The noise climate at ML1 was dominated by road traffic on Woodhead Road.

3.3. EQUIPMENT

3.3.1. The baseline noise survey was undertaken using the Class 1 specification noise measurement equipment detailed in **Table 3.1**. The measurement equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed.

3.3.2. The sound level meter, pre-amplifier and microphone were calibrated to traceable standards within 24 months prior to the measurements. The portable calibrator was calibrated within 12 months prior to the measurements.

Table 3.1: Equipment details

Location	Equipment	Make and Model	Serial Number	Calibration due Date
ML1	Sound Level Meter	01 dB Fusion	11327	06/09/2025
	Microphone	Grass 40CE	259479	
	Preamplifier	01 dB PRE 22	1605201	
	Calibrator	01dB-Stell Cal 21	34675335	06/09/2024

3.4. WEATHER CONDITIONS

3.4.1. Weather conditions during the survey were conducive to the measurement of environmental noise, it being dry with low wind speeds (<5 ms^{-1}).

3.5. RESULTS

3.5.1. A summary of the equivalent continuous ($L_{Aeq,T}$) and background sound ($L_{A90,T}$) levels at ML1 is presented in **Table 3.2**, below, and presented graphically in **Appendix B**.

Table 3.2: Summary of measured sound pressure levels at ML1

Date and Start time	Period	Measured Sound Pressure Levels	
		dB $L_{Aeq,T}$	dB $L_{A90,T}$[1]
22/04/2024 16:00	Daytime	65	51
22/04/2024 23:00	Night-time	58	43

[1] - Logarithmic average of the $L_{Aeq,15min}$ values between 16:00 – 19:00 on 22/04/24, and between 07:00 – 16:00 on 23/04/24.

[2] - Taken to be the arithmetic average of the median, mean and modal values from the measured $L_{A90,15min}$ values.

4.0. ASSESSMENT

4.1. OVERVIEW

4.1.1. This section presents an assessment of noise from the proposed veterinary hospital during its operation.

4.1.2. The approach taken has been to compare the predicted noise level from dogs using the external areas at the north façade (i.e. the most significant source of noise) with the background sound level measured during the daytime period.

4.1.3. In accordance with BS 4142, where the predicted rating level from the development is equal to or below the background sound level, this is an indication of a 'low impact'. Under such circumstances, consideration of mitigation measures to reduce noise would not be deemed necessary.

4.1.4. As dogs would be kept within kennels during the night-time period, which are located within the hospital building envelope (i.e. a sealed façade), it is considered unlikely that noise from the kennels at night would be significant and this aspect has therefore not been considered further in this assessment.

4.1.5. Given that the nearest NSRs are presently exposed to consistent road traffic noise from vehicles on Woodhead Road during the daytime and are either partially screened or a reasonable distance from the proposed car park, it is considered that significant impacts as a result of vehicles using the car park are unlikely. As such, noise from vehicles using the car park has not been considered further in this assessment.

4.1.6. With respect to fixed plant noise emissions, the specification of plant associated with the hospital is yet to be determined, as is common at this stage of the development lifecycle. Therefore, plant noise emission limits are proposed in this assessment, to which all future noise sources should be designed to meet.

4.2. OPERATIONAL NOISE

4.2.1. In order to predict the noise levels from the dogs using the external areas during the daytime, a 3D acoustic model of the site and surrounding area has been generated using the acoustic modelling software CadnaA®. The model was generated applying the following methodology:

- The model was set to apply the prediction methodology from ISO 9613-2[1].
- The model included the proposed site layout, which is shown in **Figure 1.2**.

[1] International Organization for Standardization (1996). ISO 9613-2:1996 Acoustics. Attenuation of sound during propagation outdoors. Part 2: General method of calculation.

- Topographical data for the ground levels across the site and surrounding area, obtained from LIDAR data of 1 m resolution, publicly available from the Department for Environment Food and Rural Affairs (DEFRA) were used within the model.
- The model was set to include second order reflected noise from solid structures. All buildings were set to be acoustically reflective.
- The heights of existing buildings surrounding the site have been determined using online mapping sources.
- Ground cover has been assumed to have an absorption coefficient of 0.5 to account for the varied absorptive and reflective conditions across the site and surrounding area.
- For the prediction of noise levels at NSRs, receiver points within the model have been set at 1.5 m above local ground level.
- Existing perimeter garden fencing at the NSRs has been included in the model.

4.2.2. Noise from dogs barking has been modelled based on JPM Acoustics library data. These data, measured as sound pressure levels at a distance of 1m for a variety of dogs, are presented in **Table 4.1**, below.

Table 4.1: Sound pressure level of dog barks at 1m

Breed	Measured Sound Pressure Levels, dB(A)
Labrador	88
Alsatian	87
Cairns Terrier	85
Labradoodle Puppy	86

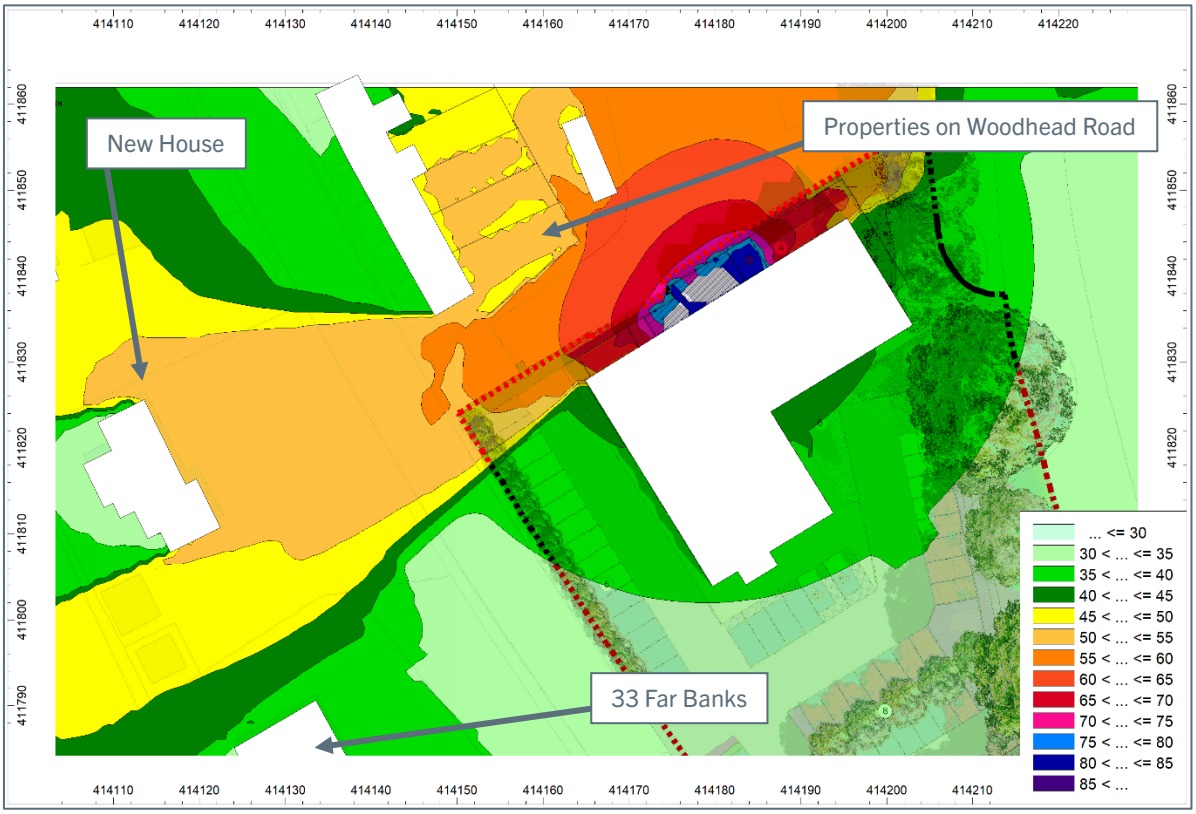
4.2.3. The noise level assumed in the model from a dog barking has been taken as the arithmetic average of the values in **Table 4.1**, which is 86.4 dB

4.2.4. There are three kennel rooms at the hospital, each housing 10 kennels. The model assumes that 5 dogs would use the dog run area at a time. This is equivalent to a single kennel room at 50% capacity being allowed into the dog run area. In addition, it is assumed that a single dog is using the adjacent isolation area at the same time.

4.2.5. It is assumed that a there is one dog barking on average for 50 % of the time (i.e. one in every two seconds during the 1-hour daytime assessment period).

4.2.6. Based on the above assumptions, **Figure 4.1** shows the predicted specific sound levels during the daytime period.

Figure 4.1: Predicted specific sound levels from the external dog areas during the daytime



4.2.7. The predicted specific sound levels at the closest points in the gardens of each NSR are shown in **Table 4.2.**

Table 4.2: Predicted specific sound levels at each NSR during the daytime

NSR	Measured Sound Pressure Levels, dB(A)
Properties on Woodhead Road	53
New House, Old Turnpike	53
33 Far Banks	46

4.2.8. A + 3dB penalty has been applied to the predicted specific sound levels at the Woodhead Road and New House NSRs in **Table 4.2,** to account for the impulsive acoustic character of dog barking, which is likely to be perceptible at these NSRs. Given the lower predicted specific sound level at 33 Far Banks, it is less likely that barking from dogs would be perceptible and, as such, no acoustic feature correction has been applied at this NSR.

4.2.9. **Table 4.3** presents a comparison of the Rating levels at each NSR, against the adopted background sound level during the daytime, as shown in **Table 3.2**.

Table 4.3: BS 4142 assessment at each NSR during the daytime

Description	Woodhead Road	New House	33 Far Banks
Specific Sound Level ($L_{Aeq,T}$), dB	53	53	46
Acoustic Feature Correction, dB	+3		-
Rating Level ($L_{Ar,T}$)	56	56	46
Background Sound Level ($L_{A90,T}$), dB	51		
Difference from Background Sound Level, dB	+5	+5	-5
BS 4142 Impact	Possible Adverse	Possible Adverse	Low

4.2.10. The results in **Table 4.3** indicates there is the potential for an adverse impact at the Woodhead Road and New House NSRs, and a low impact at 33 Far Banks. Therefore, consideration is given to forms of mitigation to reduce noise levels at Woodhead Road and New House, in Section 5.

4.3. FIXED PLANT NOISE

4.3.1. At this stage, selections and locations of fixed plant items associated with the hospital are not known. Consequently, noise emission limits, to which all future plant should adhere, have been determined.

4.3.2. In accordance with BS 4142, fixed plant should be designed such that the noise emissions are no greater than the typical existing background sound level.

4.3.3. In setting the noise emission limits, it is assumed that plant could operate at different times during a 24-hour period, hence, limits are provided for both the daytime and night-time periods, which are based on the measured noise levels obtained via the baseline noise survey.

4.3.4. **Table 4.4** presents the proposed daytime and night-time noise emission limits for all fixed plant items. These limits apply not just to the identified NSRs, but to all NSRs local to the development.

Table 4.4: Daytime and night-time rating level limits for fixed plant at all NSRs

Proposed Noise Emission Limit, dB $L_{Ar,Tr}$	
Daytime (07:00 – 23:00)	**Night-time (23:00 – 07:00)**
51	43

4.3.5. Achieving a rating level equal to or less than the prevailing background sound level indicates a 'low' impact in accordance with BS 4142. Therefore, where the limits are achieved a low impact would be anticipated.

4.3.6. It should be noted that the derived rating level limits would be applicable to the total noise from the simultaneous operation of all fixed plant. As such, noise emissions from individual fixed plant items will need to be lower than the given limit, although the exact limit for each individual source will be dependent upon its type, noise characteristics and location. This issue is best addressed during the detailed design stage.

5.0. MITIGATION

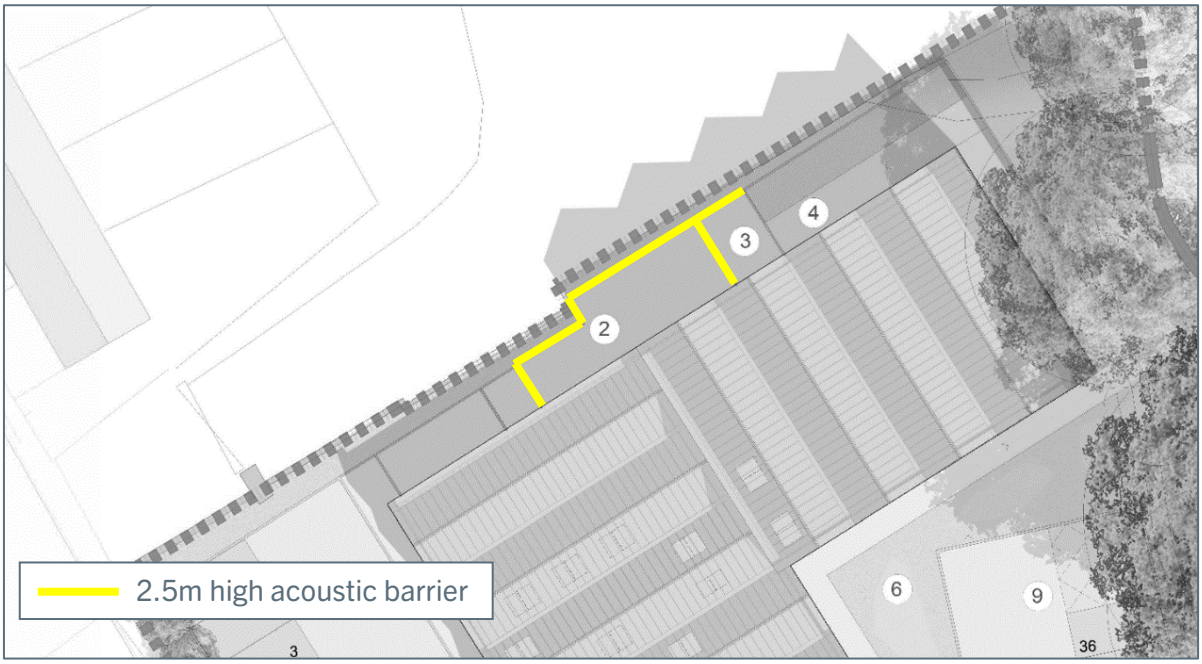
5.1. OVERVIEW

5.1.1. The assessment of noise from veterinary hospital during the daytime, indicates that there is the potential for an adverse impact at the Woodhead Road and New House NSRs. Therefore, mitigation measures to reduce noise levels at the nearest NSRs are considered below.

5.2. MITIGATION ASSESSMENT

5.2.1. In order to reduce noise levels at the nearest NSRs from the dogs using the external areas associated with the veterinary hospital, acoustic barriers are proposed. The locations and heights of these barriers are shown in **Figure 5.1**.

Figure 5.1: Proposed acoustic barriers



5.2.2. **Figure 5.2** shows the predicted specific sound levels during the daytime period with the acoustic barriers in place and **Table 5.1** presents a comparison of the rating levels at each NSR, against the adopted background sound level during the daytime.

Figure 5.2: Predicted specific sound levels during the daytime including mitigation

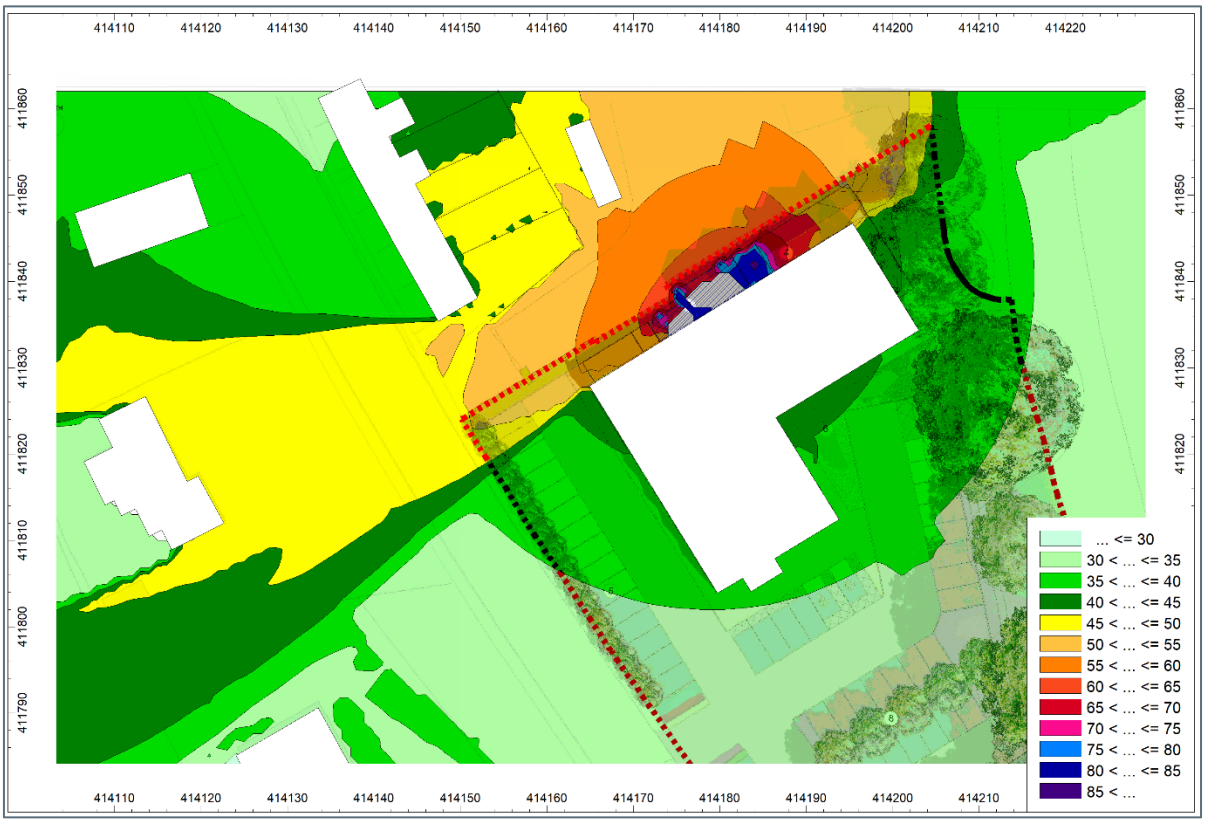


Table 5.1: BS 4142 assessment at each NSR during the daytime

Description	Woodhead Road	New House
Specific Sound Level ($L_{Aeq,T}$), dB	49	48
Acoustic Feature Correction, dB	+3	
Rating Level ($L_{Ar,T}$)	52	51
Background Sound Level ($L_{A90,T}$), dB	51	
Difference from Background Sound Level, dB	+1	0
BS 4142 Impact	Low	Low

5.2.3. With the inclusion of the proposed acoustic barriers, the results in **Table 5.1** indicate the rating level at New House is predicted to meet the adopted background sound level. This equates to a low impact in accordance with BS 4142.

5.2.4. The rating level at Woodhead Road is predicted to be 1 dB in excess of the adopted background sound level. A 1 dB exceedance is generally accepted as negligible and, on this basis, it is considered that this would equate to a low impact in accordance with BS 4142.

5.2.5. Note that in order to achieve the required acoustic performance, the barriers should have a minimum surface density of 15 kgm^{-2} and should be continuous, imperforate and sealed at the base.

6.0. CONCLUSION

6.1.1. JPM Acoustics Ltd has been appointed to undertake a noise impact assessment to support a planning application for the proposed veterinary hospital at Woodhead Road, Honley

6.1.2. An assessment has been undertaken in accordance with relevant British Standards and has been informed by a baseline noise survey.

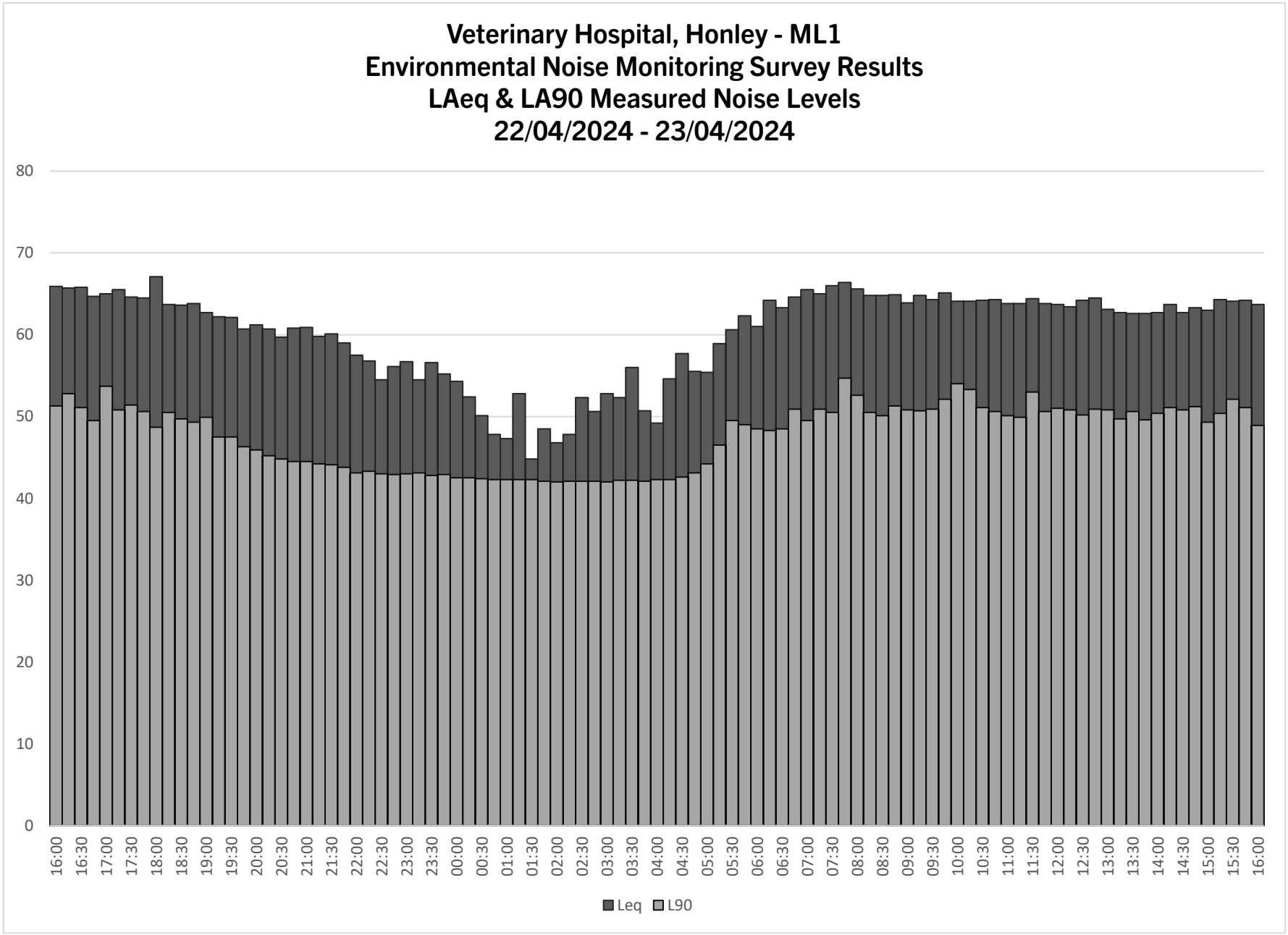
6.1.3. The assessment demonstrates that a low impact can be achieved at the nearest NSRs through the inclusion of acoustic barriers around the perimeter of the external dog areas at the veterinary hospital. Consequently, noise need not be a significant factor in the determination of this application.

APPENDIX A: GLOSSARY

Table A.1: Acoustic terminology

Terminology	Description
A-weighting, dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Decibel, (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 $\log_{10}$ (s1/s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20 Pa.
Façade	At a distance of 1 m in front of a large sound reflecting object such as a building façade.
Fast Time Weighting (F)	Averaging time constant used in sound level meters and commonly used in the measurement of environmental noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5 m away.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period, T. L_{90} may be thought of as the "average minimum" noise level. Generally used to describe background noise.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period, T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period, T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure. Measured in pascals (Pa).
Sound Pressure Level (Sound Level), L_p	The sound level is the sound pressure on a decibel scale, relative to a reference value of $20x10^{-6}$ Pascals.

APPENDIX B: SURVEY RESULTS


Veterinary Hospital, Honley - ML1
Environmental Noise Monitoring Survey Results
LAeq & LA90 Measured Noise Levels
22/04/2024 - 23/04/2024
80
70
60
50
40
30
20
10
0
16:00
16:30
17:00
17:30
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L90