



## **Noise Assessment**

8 Cross Road, Southwick  
Kennel Noise

March 2026

## Noise Assessment

### 8 Cross Road, Southwick – Kennel Noise

March 2026

Bethany Clark

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# 1. Introduction

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- 1.1 Phlorum Limited has been commissioned by Bethany Clark to undertake a noise assessment for the kennel that will form part of the proposed Vets Practice at 8 Cross Road, Southwick.
- 1.2 The noise assessment has been undertaken to discharge planning condition 3, which states that:
  03. The use hereby permitted shall not commence unless and until a sound insulation scheme for the proposed kennels has been submitted to and approved by the local planning authority. The scheme shall achieve 45dB LAeq(5mins) at the boundary of the premises. A test shall be undertaken prior to occupation to demonstrate that the attenuation measures proposed in the scheme are achieved
- 1.3 The noise impact of the proposal has been established by measuring and predicting the effects against national guidelines on noise. Where necessary, mitigation measures have been recommended so that a noise climate suitable for the nearest residential properties to the proposed development can be achieved.
- 1.4 Whilst reasonable efforts have been made to produce a report that is easy to understand, it is technical in nature. To assist the reader, an introduction to noise, and an explanation of the terminology used in this report are contained in Appendix A.

## 2. Site Description & Proposals

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### Site Location

- 2.1 The project comprises the redevelopment of the existing building at 8 Cross Road, Southwick into a vets practice.
- 2.2 The site is located in a residential area with both residential use and associated gardens surrounding the site. The proposed kennel will consist of a single room overlooking the rear garden. The only property that has a direct line of sight to the kennel is a bungalow at 10 Cross Road, which is presently vacant. However, this property is owned by the Vets Practice and any noise from barking dogs will not give rise to complaints from occupants of this property. The location of the kennel is shown on the Site Layout Plan in Figure 1.
- 2.3 On the far side of 10 Cross Road is a small park, which was observed to be a popular destination for local dog walkers. There is an internal corridor and rooms with solid brick walls between the kennel and residential properties to the south-east (2 to 8 Cross Road) and to the west (1 to 3 Southview Road). The flat roof of the proposed kennel has a line of sight to the 1<sup>st</sup> floors of the surrounding residential properties.
- 2.4 A Site Location Plan is shown in Figure 2 along with noise measurement and prediction locations.

### Proposals

- 2.5 The proposed layout of the vets practice, showing the location of the kennel is shown on Figure 1.
- 2.6 The proposed kennel room will be used as a short-term holding area for dogs who receive treatment at the veterinary practice. It is not intended for long term boarding or accommodation. The practice opening hours would be between 08:00-19:00 hours, in which the kennel room would be primarily utilised. Overnight stays would be rare and are expected to occur approximately once per month where clinical monitoring is necessary.
- 2.7 The kennel room will house a small number of dogs for short periods of time during the day whilst they await consultation, procedures or during post-operative recovery. Dogs will normally remain in the kennel for only the necessary time before being discharged to their owners. The maximum number of dogs expected at any one time is 6.

- 2.8 Dogs within the kennel area will be regularly monitored by veterinary staff and efforts will be made to minimise stress and noise. These include; housing dogs individually, ensuring prompt treatment and discharge and providing environmental enrichment.
- 2.9 The kennel room is located within the building and separated from neighbouring properties by internal rooms and solid walls, which help to contain the noise from any barking.
- 2.10 The kennel system proposed for the practice will be the WELLKennels manufactured by Casco Pet. These kennels are specifically designed for veterinary environments and incorporate sound-dampening construction based on sound engineering principles. The kennel panels and design help reduce the transmission of barking noise within the room and to surrounding areas.
- 2.11 The kennel room therefore functions as a clinical holding and recovery area within the veterinary practice, rather than a long term boarding facility.

### 3. Guidance

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#### Local Authority

3.1 The site is located in the Adur & Worthing Councils (A&WC) area. The Environmental Health department of A&WC has been consulted with the following queries to discuss how best to discharge Condition 3:

1. *Does the condition mean the boundary of the garden or the structure itself (it is not clear to me when it says 'boundary of premises').*
2. *Can we agree a source noise level to be used for the kennels for our noise predictions (I assume we need a worst case 5min kennel source noise level). I would like to be able to agree this at the outset. My thoughts are that we could base the source noise levels on a noise survey at a similar kennels, if one can be found that would allow us to measure the noise.*

3.2 In response, A&WC provided the following guidance, which has been paraphrased from the Environmental Health response:

-  Any barking should be contained within the kennel so it should be ventilated without the need to open windows;
-  The kennel space is a small room so it is unlikely that many dogs will be kept there, and it is unclear whether the dogs will be there overnight or resting there following surgery etc.;
-  For the purpose of discharging Condition 3, compliance with the condition needs to be determined along the garden boundary. A noise management plan is recommended, based on how the kennels are being proposed to be used. A description of how the kennels will be used should be included in the preamble for the assessment. For the source noise a sample from a similar kennel would be acceptable. Environmental Health are also interested to know the existing ambient noise levels, both in the day and night-time periods.

#### National Planning Policy Framework

3.3 The Department for Communities and Local Government published the National Planning Policy Framework (NPPF) on 27<sup>th</sup> March 2012 and upon its publication, the majority of planning policy statements and guidance notes were withdrawn, including Planning Policy Guidance (PPG) 24 Planning and Noise, which until the emergence of the NPPF, set out the Government's position on how noise should be dealt with in the planning system.

3.4 The NPPF was revised on 24<sup>th</sup> July 2018, with the earlier 2012 version immediately withdrawn. The latest update was published in February 2025.

3.5 The general guiding principle in the NPPF is contained in Section 15 under the heading Conserving and enhancing the natural environment. Paragraph 187 states:

*"Planning policies and decisions should contribute to and enhance the natural and local environment by:*

*(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;"*

3.6 The noise planning policy is contained in paragraph 198, which also appears in Section 15 of the NPPF:

*"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

*a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*

*b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;"*

3.7 A footnote to paragraph 198 refers to the Explanatory Note of the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010), which defines both *"significant adverse impacts on health and quality of life"* and *"adverse impacts on health and quality of life"*.

## Noise Policy Statement for England

3.8 The Department for Environment, Food and Rural Affairs published the Noise Policy Statement for England (NPSE) in March 2010. The explanatory note of the NPSE defines the terms used in the NPPF:

*"2.20 There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:*

*NOEL – No Observed Effect Level*

*This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.*

*LOAEL – Lowest Observed Adverse Effect Level*

*This is the level above which adverse effects on health and quality of life can be detected.*

*2.21 Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*

*SOAEL – Significant Observed Adverse Effect Level*

*This is the level above which significant adverse effects on health and quality of life occur.”*

3.9 The NPSE does not define the SOAEL numerically, stating at paragraph 2.22:

*“2.22 It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.”*

3.10 There is no local or national guidance on how the three terms should be defined numerically.

3.11 There are three aims in the NPSE, two of which expand upon the first bullet point in paragraph 180 of the NPPF:

*“The first aim of the Noise Policy Statement for England*

*Avoid significant adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.*

*2.23 The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).*

*The second aim of the Noise Policy Statement for England*

*Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.*

*2.24 The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the*

*guiding principles of sustainable development (paragraph 1.8). This does not mean that such adverse effects cannot occur.*

*The third aim of the Noise Policy Statement for England*

*Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.*

*2.25 This aim seeks, where possible, positively to improve health and quality of life through the pro-active management of noise while also taking into account the guiding principles of sustainable development (paragraph 1.8), recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and quiet times as well as the enhancement of the acoustic environment will assist with delivering this aim."*

## Planning Practice Guidance

3.12 In March 2014, the Government released Planning Practice Guidance (PPG) on noise, entitled 'Noise'. This document sets out a number of principles in the form of questions and answers, and reinforces the guidance set out in the NPPF and the NPSE. The noise PPG was last updated in December 2014.

3.13 The noise PPG notes that:

*"Noise needs to be considered when new development may create additional noise and when new developments would be sensitive to the prevailing acoustic environment."*

3.14 It goes on to note that:

*"Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so 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 or not a good standard of amenity can be achieved."*

3.15 The noise PPG broadly repeats the NPSE definitions of the NOEL, LOAEL and SOAEL and it provides a summary table to explain how the terms relate to each other and to typical human reactions to sound. The table is replicated below in Table 3.1.

**Table 3.1: Planning Practice Guidance summary of noise exposure hierarchy**

| Perception                     | Examples of Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Increasing Effect Level                   | Action                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------|
| Not noticeable                 | No effect                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No observed effect                        | No specific measures required    |
| Noticeable and not intrusive   | Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.                                                                                                                                                                                                                                                                      | No observed adverse effect                | No specific measures required    |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Lowest observed adverse effect level      |                                  |
| Noticeable and intrusive       | Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.                                                                   | Observed adverse effect                   | Mitigate and reduce to a minimum |
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Significant observed adverse effect level |                                  |
| Noticeable and disruptive      | The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep the windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting back to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area. | Significant observed adverse effect       | Avoid                            |
| Noticeable and very disruptive | Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory                                                                                                                                                                                        | Unacceptable adverse effect               | Prevent                          |

- 3.16 It is noted that the text in paragraph 005 of the PPG for noise reiterates the point illustrated in Table 3.1, that there are degrees of adverse effect above the SOAEL. Table 3.1 defines two degrees of significant adverse effect: a significant observed adverse effect, which is deemed noticeable and disruptive, and an unacceptable adverse effect, which is deemed noticeable and very disruptive.
- 3.17 The distinction between these two degrees of significant adverse effect is expanded upon in the text in paragraph 005 of the PPG for noise:

*"005 Increasing noise exposure will at some point cause the significant observed adverse effect level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. If the exposure is above this level the planning process should be used to avoid this effect occurring, by use of appropriate mitigation such as by altering the design and layout. Such decisions must be made taking account of the economic and social benefit of the activity causing the noise, but it is undesirable for such exposure to be caused.*

*At the highest extreme, noise exposure would cause extensive and sustained changes in behaviour without an ability to mitigate the effect of noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be prevented from occurring."*

- 3.18 The PPG, which is the most recent manifestation of Government advice on how noise should be treated within the planning system, as opposed to a policy position as stated in the more recent NPPF, is clear that a significant adverse effect, which lies above the SOAEL but below an unacceptable adverse effect, can be addressed (or 'avoided' in the terms of the PPG) through the provision of mitigation, including noise insulation; it is not until an unacceptable adverse effect is reached that the cause of the effect should be prevented.
- 3.19 The noise PPG provides advice on how to mitigate the effects of noise, noting that there are options to reduce noise at source, to optimise site layouts, to use planning conditions, and provide insulation within affected properties.
- 3.20 The noise PPG also notes that:

*The noise impact may be partially offset if the residents of those dwellings have access to:*  
*a relatively quiet façade (containing windows to habitable rooms) as part of their dwelling, and/or*

 *a relatively quiet external amenity space for their sole use, (e.g. a garden or balcony). Although the existence of a garden or balcony is generally desirable, the intended benefits will be reduced with increasing noise exposure and could be such that significant adverse effects occur, and/or*

 *a relatively quiet, protected, nearby external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings, and/or*

-  *a relatively quiet, protected, external publically accessible amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance)."*

## BS8233:2014

- 3.21 The scope of British Standard (BS) 8233: 2014 Guidance on sound insulation and noise reduction for buildings is the provision of recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new or refurbished buildings undergoing a change of use rather than to assess the effect of changes in the external noise climate.
- 3.22 Table 4 of BS8233: 2014 suggests suitable internal noise levels within different types of building, including residential dwellings, as shown in Table 3.2.

**Table 3.2: BS8233 recommended internal noise levels, dB**

| Activity                   | Location         | 07:00 to 23:00   | 23:00 to 07:00  |
|----------------------------|------------------|------------------|-----------------|
| Resting                    | Living room      | 35dB LAeq,16hour | -               |
| Dining                     | Dining room/area | 40dB LAeq,16hour | -               |
| Sleeping (daytime resting) | Bedroom          | 35dB LAeq,16hour | 30dB LAeq,8hour |

- 3.23 BS8233 contains the following relevant guidance in footnotes to the above information:

*"Note 4: Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or LAmax,F, depending on the character and number of events per night. Sporadic noise events could require separate values.*

*Note 5: If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.*

*Note 7: Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."*

- 3.24 Although Note 4 above refers to setting a guideline value for maximum noise levels, BS8233: 2014 does not provide any guidance on a suitable criterion.
- 3.25 Placing the BS8233: 2014 guidance into the context required by the NPPF and the NPSE, it is considered that where the internal noise levels meet the guideline values set out in Table 3.2, there is considered to be no observed effect.

3.26 Since BS8233: 2014 allows for a 5dB relaxation in the guideline values in Table 3.2 (Note 7 above), it is considered that internal noise levels up to 5dB above the guideline values in Table 3.2 may still be acceptable.

3.27 Section 7.7.3.2 of BS8233, titled Design criteria for external noise states:

*“For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50dB LAeq,T, with an upper guideline value of 55dB LAeq,T which would be acceptable in noisier environments.”*

3.28 BS8233: 2014 goes on to note that the upper guideline value may be exceeded in certain circumstances:

*“However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.”*

3.29 Achieving the lowest practicable noise levels in gardens is deemed acceptable in BS8233: 2014 in circumstances where development is needed in areas where the upper 55dB limit cannot be achieved.

3.30 As BS8233: 2014 states that it is desirable that garden noise levels do not exceed 50dB LAeq,T, this implies some adverse effect above this level. Therefore, an external daytime noise level of 50dB LAeq,16hrs can be defined as the LOAEL.

3.31 However, it would not be appropriate to equate the 55dB criterion with the SOAEL, since it is clear from BS8233: 2014 that 55dB is not a threshold that should never be exceeded. Equating the 55dB criterion to the SOAEL would mean that, in national policy terms, exceeding this threshold should be avoided, which is not what the standard requires.

## World Health Organisation

3.32 The World Health Organisation (WHO) Guidelines for Community Noise (1999) also sets out guidance on suitable internal and external noise levels in and around residential properties. The guidance on internal and external noise levels is the same as set out in BS8233: 2014 in terms of LAeq values, but the WHO guidelines also provide guidance on night-time maximum noise levels, stating:

*“For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LAFmax more than 10-15 times per night.”*

- 3.33 The WHO guidelines suggest the possibility of sleep disturbance if continuous noise in bedrooms exceeds 30dB LAeq,8hrs during the night-time, and therefore internal noise levels above this value can be considered to be above the LOAEL. This internal value can be translated to an external value by the addition of 10dB, to account for the typical reduction through an open window. Therefore, external night-time noise levels of 40dB LAeq,8hrs can be defined as the LOAEL.
- 3.34 The WHO published their Night Noise Guidelines for Europe in 2009. This document sets an external 'night noise guideline' (NNG) of 40dB. This is consistent with the LOAEL value determined above. The NNG also sets an interim target of 55dB in situations where the 40dB value cannot be met. Above 55dB the NNG notes that the situation is considered increasingly dangerous for public health. On the basis of the above, a free-field external value of 55dB LAeq,8hrs is considered to be the night-time SOAEL.

## 4. Noise Survey

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### Baseline Noise

- 4.1 A noise survey was undertaken to establish typical sound levels at the site as requested by A&WC. The measurements were taken over a 24 hour period starting at 12:30 hours on Thursday 19<sup>th</sup> February 2026 to provide day and night-time noise levels at the site.
- 4.2 The survey methods and results are set out below.

### Sound Survey Method

- 4.3 The equipment used during the survey is summarised in Appendix B. The sound level meters were field-calibrated immediately before and after the measurements using the listed acoustic calibrator. No significant calibration drifts were found to have occurred.
- 4.4 The sound level meters have been laboratory-calibrated to a traceable standard within the two years preceding the survey. The acoustic calibrator had been laboratory-calibrated to a traceable standard within the year preceding the survey.
- 4.5 Noise measurements were carried out at two long term measurement locations. The measurement locations are shown in Figure 2 and are described as follows:
  -  Position 1: The microphone was located in a façade position, 1m from the side wall of 10 Cross Road. The mic was 1.5m above the ground.
  -  Position 2: The microphone was located in a free-field position level with the rear elevation of 2 Cross Road. The mic was at 1.5m above the ground.

### Sound Survey Results

- 4.6 The weather during the survey was suitable for noise measurement, it being predominantly dry with wind speeds of less than 5m/s.
- 4.7 The dominant sound sources were from road traffic on the surrounding road network.
- 4.8 The sound survey results are summarised in Table 4.1, aggregated across the daytime and night-time periods. Full survey results are set out graphically in Appendix C.

**Table 4.1 Summary of measured free-field noise levels, dB**

| Measurement Location                                                                                                                                                                                                          | Date         | Period | Duration, T | L <sub>Aeq,T</sub> | L <sub>AFmax</sub> | L <sub>A10,T</sub> | L <sub>A90,T</sub> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------|-------------|--------------------|--------------------|--------------------|--------------------|
| 1                                                                                                                                                                                                                             | 19/20 Feb 26 | Day    | 16 hours    | 45.9               | 63.3               | 47.4               | 39.1               |
|                                                                                                                                                                                                                               |              | Night  | 8 hours     | 38.2               | 51.1               | 36.5               | 29.3               |
| 2                                                                                                                                                                                                                             | 19/20 Feb 26 | Day    | 16 hours    | 50.8               | 66.7               | 53.0               | 41.5               |
|                                                                                                                                                                                                                               |              | Night  | 8 hours     | 42.2               | 54.2               | 41.2               | 34.6               |
| Note: <sup>(1)</sup> – The L <sub>A90,T</sub> , L <sub>AFmax</sub> and L <sub>A10,T</sub> values are the arithmetic means of the L <sub>A90,T</sub> , L <sub>AFmax</sub> and L <sub>A10,T</sub> measurements for each period. |              |        |             |                    |                    |                    |                    |

- 4.9 The daytime noise measurements indicate that the existing daytime (0700-2300 hours) baseline ambient noise levels are already 1 dB above the 5 minute boundary noise limit of L<sub>Aeq, 5 min</sub> 45 dB provided by condition 3 at measurement location 1 and 6 dB above at measurement location 2. Any future noise measurements relating to the kennel will need to take these existing ambient noise levels into account.

## Source Noise Levels

- 4.10 To determine a source noise level for dogs barking in the kennel, barking from 3 different breeds of dog has been measured in enclosed spaces. The measurements were taken over a short period of time when the dogs were barking, which varied from 4 to 8 seconds. Longer period measurements were possible but would have included periods when there were not dog barks and so the short term noise samples are considered to provide the required source noise data.
- 4.11 The short term measured noise levels when the dogs were barking were as follows:
-  Collie, L<sub>Aeq, 8 secs</sub> 94.0 dB at a distance of 2.5m
  -  French Bulldog, L<sub>Aeq, 4 secs</sub> 87.3 dB at a distance of 3m
  -  Lurcher Collie Cross, L<sub>Aeq, 6 secs</sub> 89.7 dB at a distance of 3m
- 4.12 The frequency response for each barking dog is shown in Appendix C, Figure C3. The 1/3<sup>rd</sup> octave band measurements indicate that the spectral shape for each breed of dog barking is similar and the dominant noise is in the frequency range 400Hz to 2.5 KHz with the highest noise level in the 800Hz third octave band. The measurements indicate that there is no significant low frequency content to the dog barks.

## 5. Noise Assessment

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### Assumptions for Noise Predictions

#### Noise Prediction Locations

- 5.1 Condition 3 requires the noise to be predicted at the boundary of the garden at 8 Cross Road. On this basis, four noise prediction locations have been selected and these are shown in Figure 2.

#### Source Noise Level

- 5.2 The measured noise level for each of the 3 barking dogs has been used to determine a 5 minute source noise level ( $L_{Aeq,5 \text{ min}}$ ) to enable a comparison with the 5 minute boundary noise limit provided in Condition 3.
- 5.3 It is understood that for most of the time there will be no noise from barking dogs in the kennel. However, with up to 6 dogs in the kennels there is potential for significant noise from dog barks.
- 5.4 To provide a source noise level for the noise predictions it has been assumed that each of the 3 dogs used for the noise survey will be barking in a 5 minute period and that the measured noise sample for each dog will be repeated 15 times in the 5 minute period. This provides a source noise level of  $L_{Aeq,5 \text{ min}}$  80 dB at a distance of 10m from the source.
- 5.5 This is considered to be a robust source noise level, and for the majority of the time the noise from the kennel will be significantly lower.

#### Kennel Structure

- 5.6 The noise predictions have assumed that the kennel will be constructed with the following acoustic specification:
-  The existing window will be replaced with glazing with a specification of 10mm/(6 to 16mm)/6mm or a similar construction, which provides  $R_w$  35 dB sound insulation.
  -  An isolated ceiling will be constructed below the existing flat roof ceiling. The secondary ceiling should consist of 2 layers of 15mm plasterboard on resilient bars with 50mm mineral wool in a 100mm void.
  -  An acoustically treated mechanical ventilation unit will be installed, which will provide the required air conditioning for the kennel.

## IMMI Noise Model & Predicted Noise Levels

- 5.7 To predict the noise levels at the site boundary a noise model has been produced using IMM sound modelling software, which takes the site topography and any intervening noise barriers into account. The model utilises the methodology outlined in ISO 9613 and takes into account the effects of geometric divergence, ground and atmospheric absorption and acoustic screening.
- 5.8 The predicted noise levels based on the above assumptions for dogs barking in the kennels are shown in Appendix D, Figure D1 and reproduced below:
-  Location 1, boundary with 10 Cross Road –  $L_{Aeq,5\text{ min}}$  45 dB;
  -  Location 2, nearest boundary with garden of 2 Cross Road –  $L_{Aeq,5\text{ min}}$  39 dB;
  -  Location 3, boundary with 2 Cross Road –  $L_{Aeq,5\text{ min}}$  28 dB; and
  -  Location 4, boundary with garden of 1 Southview Road –  $L_{Aeq,5\text{ min}}$  24 dB.
- 5.9 The noise predictions from dogs barking in the kennel, based on the assumptions shown above indicate that with the proposed noise mitigation measures the noise levels on the boundary of the site are either at or below the noise limit provided in Condition 3 and no further noise mitigation measures are required.

## 6. Noise Mitigation

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- 6.1 The noise predictions indicate that, with the proposed noise mitigation measures in place, the noise levels at the boundary of the site are either at or below the noise limit provided in Condition 3. The proposed noise mitigation measures to minimise noise breakout from the kennels are shown in Paragraph 5.6 of this report. The predicted noise levels are based on these noise mitigation measures being implemented.
- 6.2 It should be noted that the highest predicted dog barking noise level is on the boundary with 10 Cross Road, which is owned by the vets practice and at all other boundaries/receptors the predicted noise level is significantly below the target noise level.

### Noise Management Plan

- 6.3 A Noise Management Plan is recommended by the Environmental Health department of A&WC, based on the proposed usage of the kennel. To minimise the noise from the kennel the following Noise Management Plan should be adopted by the Vets Practice:
- 🐾 The kennel is only to be used between 0800-1900 hours, seven days a week except for exceptional circumstances when a dog may be kept in the kennel overnight;
  - 🐾 The maximum number of dogs kept in the kennel at any one time is 6;
  - 🐾 Appropriate acoustically treated ventilated will be provided so that the kennel window can remain closed when there are dogs in the kennel;
  - 🐾 Doors to the kennel area will be kept closed to contain noise except for staff access;
  - 🐾 Dogs within the kennel area will be regularly checked by veterinary staff and any distressed animals will be attended to promptly to minimise vocalisation;
  - 🐾 When dogs are kept in the kennel overnight, appropriate supervision is required if the dogs are likely to be in a condition where they can make significant and continuous noise. Clearly, supervision would not be required in scenarios where the dogs will not be in a condition to make significant noise. Overnight stays will be rare, and only used when clinically necessary;
  - 🐾 Dogs will be housed individually and will not be able to directly see each other to minimise barking triggered by other animals;

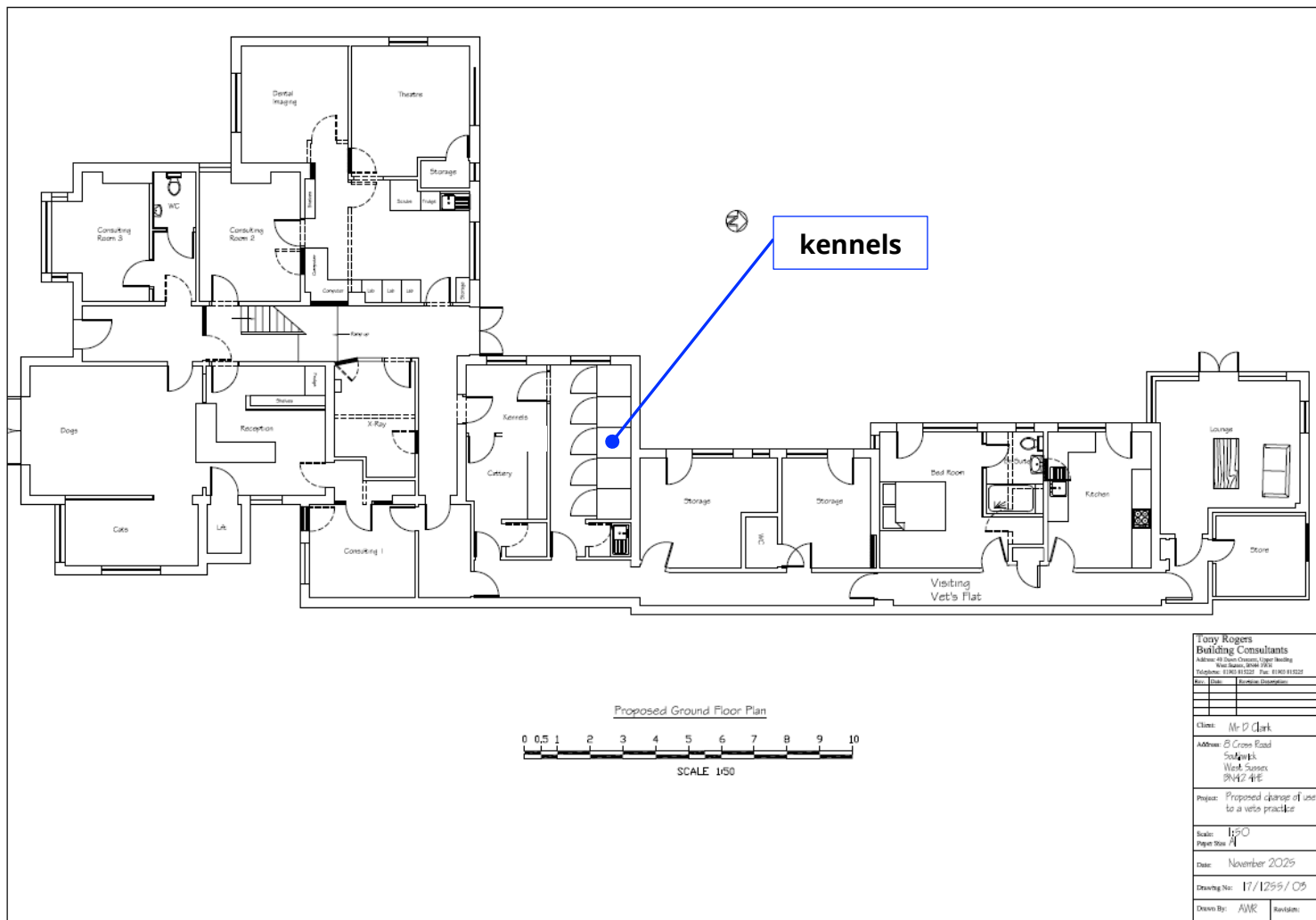
- Soft bedding and appropriate enrichment may be provided to reduce stress, if required;
- Use of solid-panel veterinary kennels, which help to contain and dampen sound will be used; and
- Staff are trained to handle animals in a low-stress manner to minimise noise and agitation;

## 7. Conclusion

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- 7.1 Phlorum Limited has been commissioned by Bethany Clark to undertake a noise assessment for the dog kennel that will form part of the proposed Vets Practice at 8 Cross Road, Southwick.
- 7.2 A Noise Management Plan has been provided to minimise the noise from barking dogs in the kennel and to provide guidance on remedial action that is required if a situation arises where there is significant noise from within the kennel.
- 7.3 The noise predictions for barking dogs in the kennel indicate that with the implementation of the proposed noise mitigation measures to the structure of the kennel, the noise limit provided by Condition 3 at the boundary of the garden will be achieved. On this basis it is considered that condition 3 can be discharged.

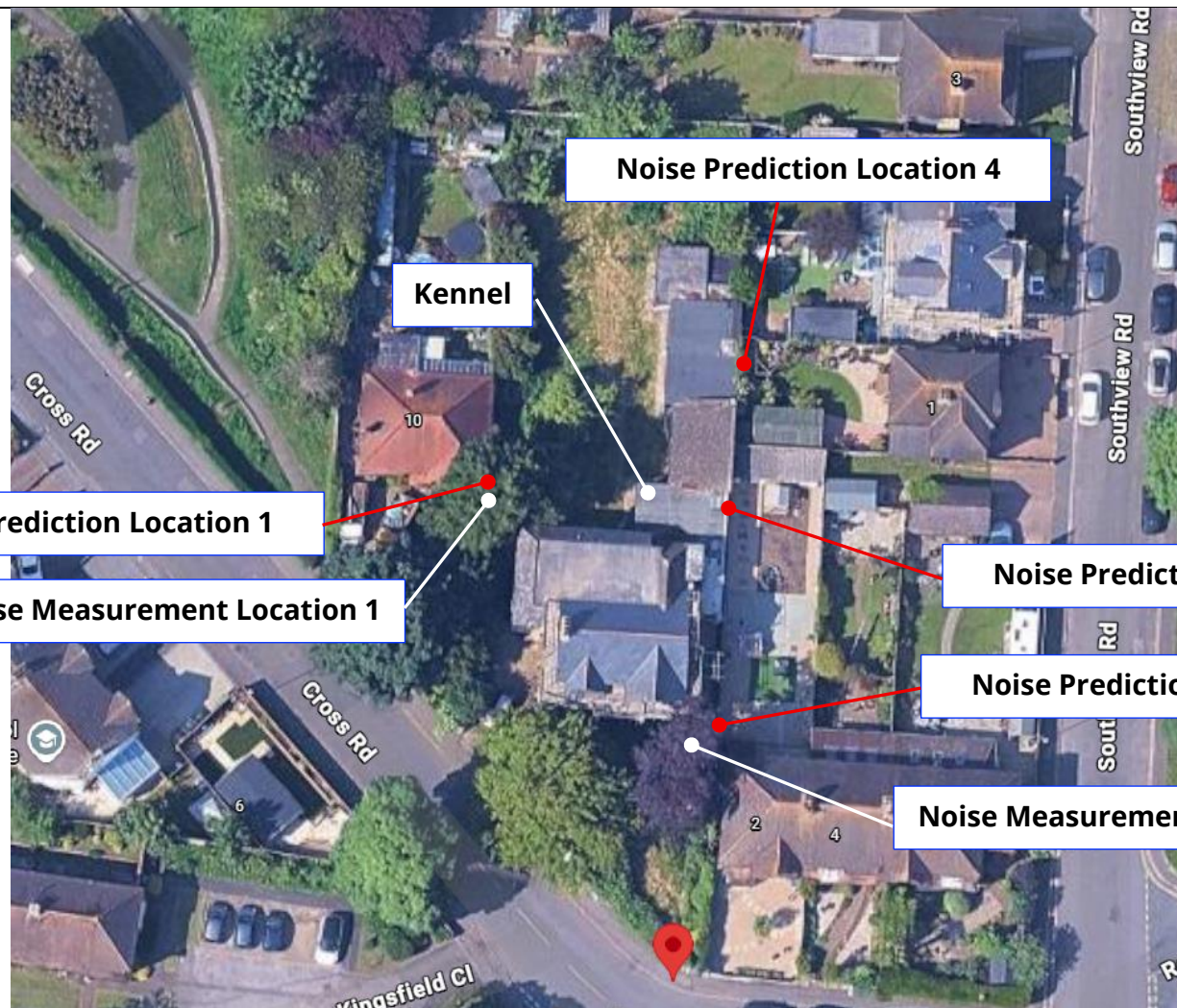
## Figures & Appendices



Layout Plan showing Location of Kennel

Job No. 14443A

Figure No. 1



Location Plan showing Noise Measurement and Prediction Locations

Job No. 14443A

Figure No. 2

## Appendix A: Introduction to Noise and Glossary of Terminology

## Appendix A: Introduction to Noise and Glossary of Terminology

Noise is defined as unwanted sound. The human ear is able to respond to sound in the frequency range 18Hz (deep bass) to 18,000Hz (high treble) and over the audible range of 0dB (the threshold of perception) to 140dB (the onset of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting (filtering) mechanism is used. This reduces the importance of lower and higher frequencies, approximating the response of the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. Noise can be perceived to be louder or more noticeable if the source of the noise is observed; e.g. roads, trains, factories, building sites etc. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source. Various noise indices have been derived to describe the fluctuation of noise levels that vary over time. Usually, these noise indices relate to specific types of noise, and as such different noise indices are used to describe road traffic noise, background noise, construction noise, etc.

The weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement and the levels are denoted as dB(A) or  $L_{Aeq}$ ,  $L_{A10}$ , etc, according to the parameter being measured.

Noise is measured on the decibel scale, which is logarithmic rather than linear. As a result of this, a 3dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3dB(A) is generally regarded as the minimum difference needed to perceive a change. Table A.1 sets out examples of noise levels typically experienced during everyday activities. Table A.2 sets out an explanation of the terminology used in this report.

**Table A.1: Typical sound levels found in the environment**

| Sound Level   | Location                   |
|---------------|----------------------------|
| 0 to 10dB(A)  | Threshold of hearing       |
| 10 to 20dB(A) | Broadcasting studio        |
| 20 to 30dB(A) | Quiet bedroom at night     |
| 30 to 40dB(A) | Living room during the day |
| 40 to 50dB(A) | Typical office             |
| 50 to 60dB(A) | Inside a car               |

| Sound Level     | Location                      |
|-----------------|-------------------------------|
| 60 to 70dB(A)   | Typical high street           |
| 70 to 90dB(A)   | Inside a factory or noisy pub |
| 100 to 110dB(A) | Burglar Alarm at 1m           |
| 110 to 130dB(A) | Pneumatic drill at 1m away    |
| 140dB(A)        | Threshold of Pain             |

**Table A.2: Terminology relating to noise**

| Term                                 | Description                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sound Pressure                       | Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.                                                                                                                                                                                                                                                                                                 |
| Sound Pressure Level (Sound Level)   | The sound level is the sound pressure relative to a standard reference pressure of $20\mu\text{Pa}$ ( $20 \times 10^{-6}$ Pascals) on a decibel scale.                                                                                                                                                                                                                                       |
| Decibel (dB)                         | A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds $s_1$ and $s_2$ is given by $20 \log_{10} (s_1/s_2)$ . 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 $20\mu\text{Pa}$ . |
| A-weighting, dB(A)                   | The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.                                                                                                                                                                                                                                         |
| 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.                                                                                                              |
| $L_{Aeq,T}$                          | 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.                                  |
| $L_{90,T}$ or Background Noise Level | A noise level index. The noise level exceeded for 90% of the time over the period T. $L_{90}$ can be considered to be the "average minimum" noise level and is often used to describe the background noise.                                                                                                                                                                                  |
| $L_{10,T}$                           | A noise level index. The noise level exceeded for 10% of the time over the period T. $L_{10}$ can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.                                                                                                                                                                                      |
| Free-field                           | Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5 metres                                                                                                                                                                                                                                                                             |

| Term                | Description                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------|
| Façade              | At a distance of 1 metre in front of a large sound reflecting object such as a building façade. |
| Fast Time Weighting | An averaging time used in sound level meters. Defined in BS EN 61672.                           |

## Appendix B: Noise Monitoring Equipment

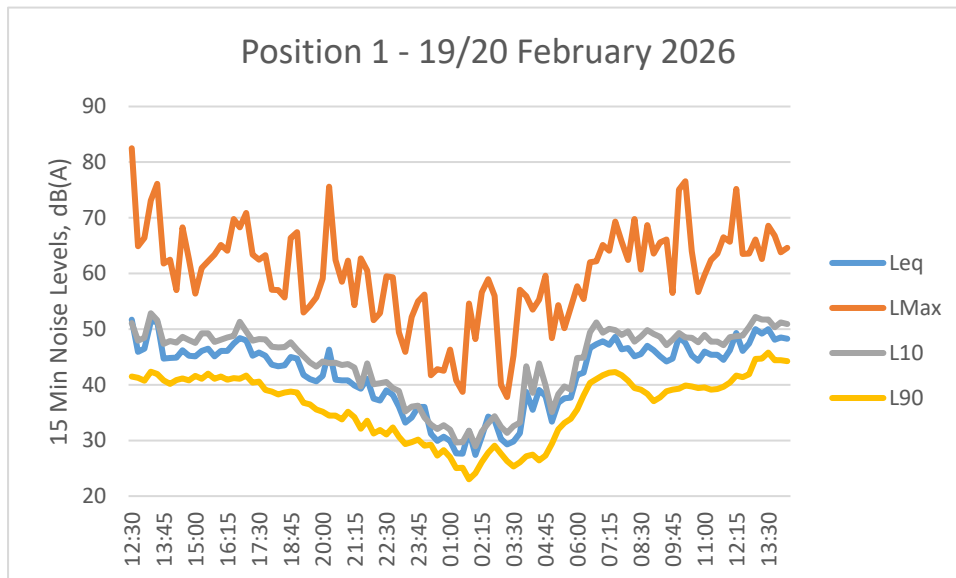


**Table B1: Noise monitoring equipment**

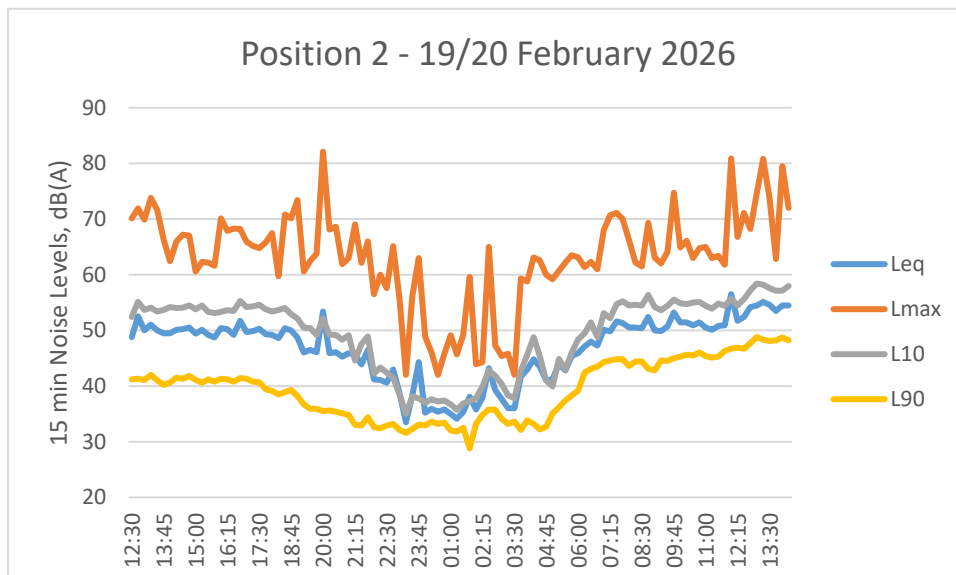
| Position      | Equipment            | Serial Number | Calibration Date |
|---------------|----------------------|---------------|------------------|
| 1             | LD824 Sound Meter    | A1420         | 22/10/2024       |
|               | Mic                  | 37023         |                  |
|               | Preamp               | 1812          |                  |
| 2             | LD820 Sound Meter    | A1144         |                  |
|               | Mic                  | 31825         |                  |
|               | Preamp               | 2054          |                  |
| All positions | LD CAL200 Calibrator | 3055          | 22/10/2025       |

## Appendix C: Noise Measurements

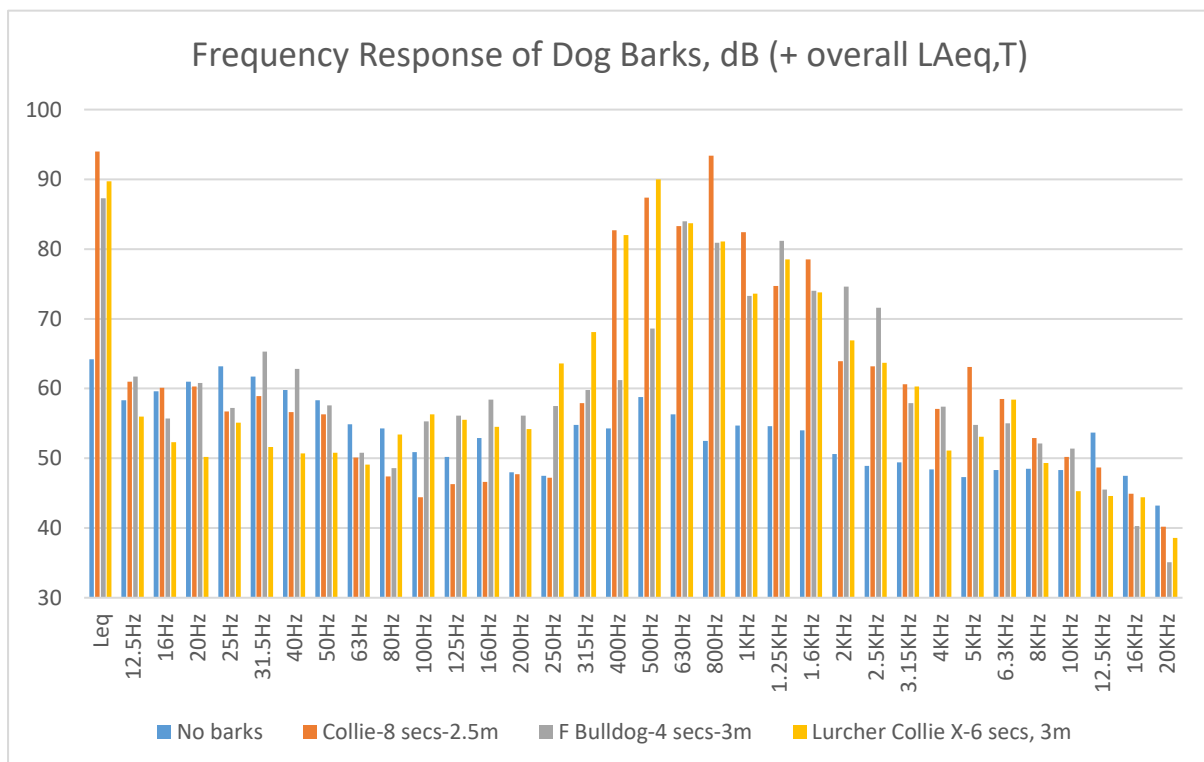
**Figure C1: Facade Noise Levels at Position 1**



**Figure C2: Free-Field Noise Levels at Position 2**



**Figure C3: Frequency Response of Barking Dogs**



## Appendix D: Noise Predictions

**Figure D.1: Predicted Boundary Noise Levels,  $L_{Aeq,5 \text{ min}}$  dB due to Barking Dogs in Kennel**





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