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Mundicao Boarding Kennels, Shepeau Stow

Noise Impact Assessment

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Project Ref:	AS14008	**Project Name:**	Mundicao Boarding Kennels, Shepeau Stow
Report Ref:	AS14008.250319.NIA	**Report Title:**	Noise Impact Assessment
Client Name:	Mundicao Boarding Kennels		
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This report has been prepared in response to the instructions of our client. It is not intended for and should not be relied upon by any other party or for any other purpose.

1.0 EXECUTIVE SUMMARY

1.1 Clarke Saunders Acoustics (CSA) has conducted an acoustic assessment of dog noise, to support an application for additional kennels at Mundicao Boarding Kennels, Dowsdale Bank, PE12 0TZ.

1.2 The assessment indicates that the current influence of kennels activity at nearby receptors is benign, where occasions of dog barking could be audible at the closest residential receptor.

1.3 As the total number of dogs on site at any one time is only to proposed to increase from 27 to 35 dogs, the increase in potential ambient noise level is calculated to be 1dB, when following the South Hollands District Council guidance. This is an insignificant increase and is not expected to change the acoustic character of the local area.

2.0 INTRODUCTION

2.1 Clarke Saunders Acoustics (CSA) has been instructed by Mundicao Boarding Kennels to provide an acoustic assessment of dog noise, to support an application for additional kennels at the existing site.

2.2 The assessment will be based on environmental noise survey data collected at site and assessment following discussions with the Environmental Health Officer (EHO) at South Holland District Council (SHDC).

2.3 A summary of the acoustic terminology used throughout this report is provided at Appendix A.

3.0 COMPETENCE

3.1 This project has been managed by Michael Symmonds, a Senior Consultant at Clarke Saunders Acoustics (CSA), who is also the author of this report.

3.2 Michael Symmonds holds a Master's degree in Acoustical Engineering, obtained from the Institute of Sound and Vibration Research at the University of Southampton. He has over seven years of experience in the consultancy field and is a Corporate Member of the Institute of Acoustics.

3.3 The environmental noise survey was undertaken by Joel Bird, an assistant consultant at CSA who also holds a Master's degree in Acoustical Engineering.

3.4 The report adheres to the principles required by the Institute of Acoustics in their Code of Conduct, and the work is within the author's own area of knowledge and expertise. Where opinions have been expressed these represent true and complete professional opinions on the matters to which they refer.

3.5 CSA is a full member of the Association of Noise Consultants (ANC). The author of this report is a Corporate Member of the Institute of Acoustics.

4.0 SITE DESCRIPTION

4.1 It is understood that Mundicao Boarding Kennels has been operating for seven years, and is situated in a rural area on Dowsdale Bank, PE12 0TZ.

4.2 The site comprises the Applicant's home (The Melrose), the kennels (both internal and external), and an exercise yard. The nearest residential receptors are Oak Lodge, De Keys Farmhouse and The Gatehouse (approximately 120m and 210m north of the kennels, and 120m south of the kennels, respectively).

4.3 The remainder of the surrounding area primarily consists of farmland and agricultural use with other more distant dwellings.

4.4 The kennels currently provide overnight boarding for a maximum of 21 dogs and daytime training of up to six dogs, for a total capacity of 27 dogs. The proposals involve construction of 14 new kennels and the cessation of training services. The maximum number of dogs on site at any one time will, therefore, increase from 27 to 35 dogs, as summarised in Table 4.1 below.

Scenario	Number of Dogs		
	Overnight Boarding	Training	Total
Current	21	6	27
Proposed	35	0	35

Table 4.1: Summary of proposed increase in capacity

4.5 All dogs are kept inside between approximately 12:00 and 13:30 hours, and 17:00 and 08:00 hours, such that no dogs are outside during the most sensitive evening and night-time periods. In the main daytime period, each dog has one 20-minute period in the exercise yard, whilst the rest are kept in the external kennels. Only a single dog is allowed into the exercise yard at any one time.

4.6 An approximately 2m high close-board timber fence surrounds the existing kennel area, and a similar fence provides a boundary between the exercise yard and the field belonging to Oak Lodge to the north of the site.

4.7 The attached site plan AS14008/SP1 shows the site and surroundings, with the existing kennels and closest residential neighbours identified. The new kennel buildings to the north of the existing main kennels are shown in proposed site plan AS14008/SP2.

5.0 METHODOLOGY

5.1 LOCAL AUTHORITY LIAISON

5.1.1 CSA has liaised with Diane Gordon, an EHO at SHDC, with whom the environmental noise survey methodology and monitoring positions, as well as the assessment approach, were agreed.

5.1.2 It was agreed that both ambient and dog noise levels determined at Oak Lodge (to the northeast) would be suitably representative; The Gatehouse being equidistant from the site (to the southwest) and similarly adjacent to the road serving them (Dowsdale Bank).

5.2 SUPPLEMENTARY PLANNING GUIDANCE FOR KENNELS

5.2.1 The SPG (written for SHDC in 1999) provides an assessment methodology for determining likely barking noise levels for dogs in open spaces at Section 2 of the

Technical Appendix. This states the number of dogs barking at any one time should be assumed as the total number of dogs in open spaces multiplied by 0.6.

5.2.2 When considering that all dogs may be in the external kennel area, the number of dogs to be assumed in the existing and future scenario are as follows:

- Existing scenario: 27 x 0.6 = 17 dogs barking;
- Future scenario: 35 x 0.6 = 21 dogs barking.

5.2.3 It should be noted that, from the experience of the site visit to the kennels as discussed later in this report, a scenario of these numbers of dogs barking simultaneously seems very unlikely to occur in reality.

5.2.4 Section 2 then refers to the noise data to be used for assessments (Figure D.1 in the SPG), which indicates that a doubling of the number of dogs approximately equates to a 3 dB increase in dog noise level.

5.2.5 The relevant data is confirmed in Table 5.1.

Number of Dogs	Activity $L_{Aeq,T}$
17	78 dB at 10m
21	79 dB at 10m

Table 5.1: Reference noise data for dogs barking at 10m (derived from the SPG)

5.2.6 Distance propagation effects (assuming hard ground), screening effects and a +3 dB downwind propagation penalty correction, calculated as per the guidance, is then applied, allowing assessment and comparison of the two scenarios against the existing noise climate.

6.0 ENVIRONMENTAL NOISE SURVEY

6.1 EQUIPMENT AND PROCEDURES

6.1.1 A survey of the existing ambient and background noise levels was undertaken at the boundary fence of Oak Lodge, as shown in AS14008/SP1, with permission from the landowners.

6.1.2 A Class 1 sound level meter was set to record measurements of consecutive 5-minute L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} sound pressure levels between 08:00 hours on Friday 21st March and 12:00 hours on Wednesday 26th March 2025.

6.1.3 A reference monitor was installed in the existing external kennel area to inform the periods of dog-related activity noise. This monitor was synchronised with the sound level meter at Oak Lodge, allowing the influence of the dog noise to be described. The Applicant confirmed that the kennels were full to capacity during the surveyed period.

6.1.4 The following equipment was used during the course of the survey:

- 1no. Rion Class 1 sound level meter type NL52;
- 1no. Convergence Instruments Noise Sentry type rt-p (reference monitor);
- 1no. Rion sound level calibrator type NC74.

6.1.5 The calibration of the sound level meters was verified before and after use. No significant calibration drift was detected in any of the meters.

6.1.6 The weather during the survey was mostly calm with light winds. Some brief periods of rainfall were observed and have been discounted from the dataset (shown in red blocks in AS14008/TH1-TH6). Overall, these conditions are suitable for the purposes of the assessment.

6.1.7 Environmental noise survey measurements were made following procedures in BS7445:1991 (ISO1996-2:1987*) Description and measurement of environmental noise Part 2 – Acquisition of data pertinent to land use*.

6.2 SURVEY RESULTS

6.2.1 Figures AS14008/TH1-TH6 show the L_{Aeq}, L_{Amax}, L_{A10} and L_{A90} sound pressure levels as time histories at the monitoring position.

6.2.2 A trace of the average noise levels (L_{Aeq}) and maximum noise levels (L_{AFmax}) measured within the existing external kennels is superimposed on the figures (black lines) to provide a visual representation of the influence of dog noise. Where increases in the solid black line (kennels location) and blue line (receptor location) are at a very similar level, such as between 14:00 and 15:00 hours on Monday 24th March, this indicates that the noise source was not dogs barking, and more likely to be caused by road traffic and/or agricultural activity.

6.2.3 An example period of dog activity was between 15:00 and 16:00 hours on Friday 21st March, where the black line (kennels location) increases. The blue line (receptor location) does not clearly follow the same trend, indicating that the dog activity does not have a notable effect on acoustic conditions at the receptor.

6.2.4 It should be noted that the noise levels within the external kennels area very rarely approaches the source noise level of $L_{Aeq,5min}$ 78dB, suggested by the guidance in the SPG.

6.2.5 The noise climate at the monitoring position and receptor is typical of a rural setting, including contributions from wildlife, agricultural activity and car movements on the local roads, whilst the background was primarily determined by distant road traffic on the A16.

6.2.6 Table 6.1 shows the noise levels in terms of average ambient, average maximum, and typical lowest background (derived from the 10th percentile of the L_{A90} dataset). The typical hours of external dog activity is shown, alongside the overall daytime period.

Position	Monitoring Period	Average $L_{Aeq,T}$	Typical Lowest L_{A90}	Average Maximum L_{AFmax}
Oak Lodge	07:00 – 23:00 hours	51 dB	28 dB	61 dB
	08:00 – 17:00 hours	52 dB	35 dB	65 dB

Table 6.1: Noise survey results [dB ref. 20 µPa]

6.2.7 As can be seen in figures AS14008/TH1-TH6, the ambient noise levels at Oak Lodge typically lie in the range of $L_{Aeq,5min}$ 20dB to 35dB between 23:00 and 05:00 hours, before increasing to a similar range as that experienced during the daytime period. This increase is likely to be caused by a combination of the dawn chorus and farm machinery in the nearby fields, which is typical of rural locations.

7.0 ASSESSMENT AND DISCUSSION

7.1 EXTERNAL DOG NOISE

7.1.1 The predicted average ambient noise levels at the receptor for the existing and future scenario are shown in Table 7.1, using the data and assessment methodology outlined in Section 5.2.

7.1.2 The calculations have been made to the monitoring position in the centre of the residential garden at Oak Lodge. The centre of the noise source is assumed to be the centre of the existing external kennels at a distance of approximately 115m. The calculations, therefore, incorporate 115m of distance propagation losses and a nominal 10 dB screening loss, as line of sight between the dogs and residential garden is completely obscured by two sets of close-board timber fencing.

Number of Dogs	Activity $L_{Aeq,T}$ at 10m	Distance Propagation Loss	Screening Loss	Wind Correction	Level at Receptor $L_{Aeq,T}$
17	78 dB	-20xlog(115/10) = -21 dB	Line of sight obscured -10 dB	+3 dB	50 dB
21	79 dB				51 dB

Table 7.1: L_{Aeq} calculation summary

7.1.3 As noted in paragraph 6.2.2, the data measured in the external kennel area indicates that dog noise very rarely reaches the indicated activity noise level of $L_{Aeq,T}$ 78dB. This theoretical prediction therefore presents an extremely robust and possibly unrealistic representation of dog noise impact, also borne out by the survey time history charts that are unaffected by dog noise.

7.1.4 Notwithstanding the above, the predicted level for the existing scenario is commensurate with the ambient noise level experienced at the receptor during periods without notable barking. This indicates that whilst barking may occasionally be audible, it is unlikely to be prominent or particularly noticeable to the residents.

7.1.5 The predicted 1dB increase in average noise from the outdoor kennels is not significant and would not affect the current ambient noise levels or the noticeability as described above. This noise level change is very unlikely to be perceptible to the local residents.

7.1.6 The dog noise level from the exercise yard will not change, as only a single dog uses the exercise yard at any one time.

7.1.7 Receptors further afield are exposed to lower dog noise levels and correspondingly the audibility of the activity is reduced.

7.2 DISCUSSION OF KENNELS MANAGEMENT

7.2.1 The on-site engineer noted that the staff at Mundicao Boarding Kennels managed the facility very professionally and handled the dogs in such a way that kept barking noise to a minimum. Their actions include the following:

- Dogs are not played with or given treats whilst in the external kennels, thus ensuring the dogs remain calm whilst in the kennels;
- Kennel areas are staff only, reducing the risk of the dogs becoming "excitable" in the presence of unfamiliar people;
- Staff were quick to admonish any noisy activity, encouraging the dogs to keep quiet as much as possible;
- The dogs are fed at the same times every day, keeping them in a routine and preventing them from barking due to hunger.

7.2.2 It is understood that the staff at the kennels play the radio throughout the day, which helps to keep the dogs calm, but at a level that the on-site engineer noted was not audible at nearby receptors.

7.2.3 The on-site engineer noted that the residents at Oak Lodge have two dogs of their own, and as such dog noise in the local area is not restricted to that from the kennels.

8.0 CONCLUSIONS

8.1 Clarke Saunders Acoustics (CSA) has been instructed by Mundicao Boarding Kennels to provide an acoustic assessment of dog noise, to support an application for additional kennels at the existing site.

8.2 Environmental noise survey data collected at a nearby residence has been used in conjunction with information and assessment methodology within *Location of Premises for the Boarding and Breeding of Dogs and other Animals – Supplementary Planning Guidance* (1999) to demonstrate the likely effect of the increased number of dogs.

8.3 The assessments indicate that the current effect of kennels activity at the receptors is generally benign, and while occasional of dog barking could be audible at the closest residential receptor, it would not be at an intrusive level in relation to the soundscape.

8.4 As the total number of dogs on site at any one time is only to proposed to increase from 27 to 35 dogs, the increase in potential ambient noise level is calculated to be 1dB, when following the South Hollands District Council guidance. This is an insignificant increase and should not change the acoustic character of the local area.

M Symmonds

Michael Symmonds MIOA
CLARKE SAUNDERS ACOUSTICS

De Keys Farmhouse
Oak Lodge Position
Oak Lodge
Exercise Yard
Kennel Position
Existing Kennels
Mundicao Boarding Kennels
The Gatehouse

Indicative Site Plan

Figure AS14008/SP2

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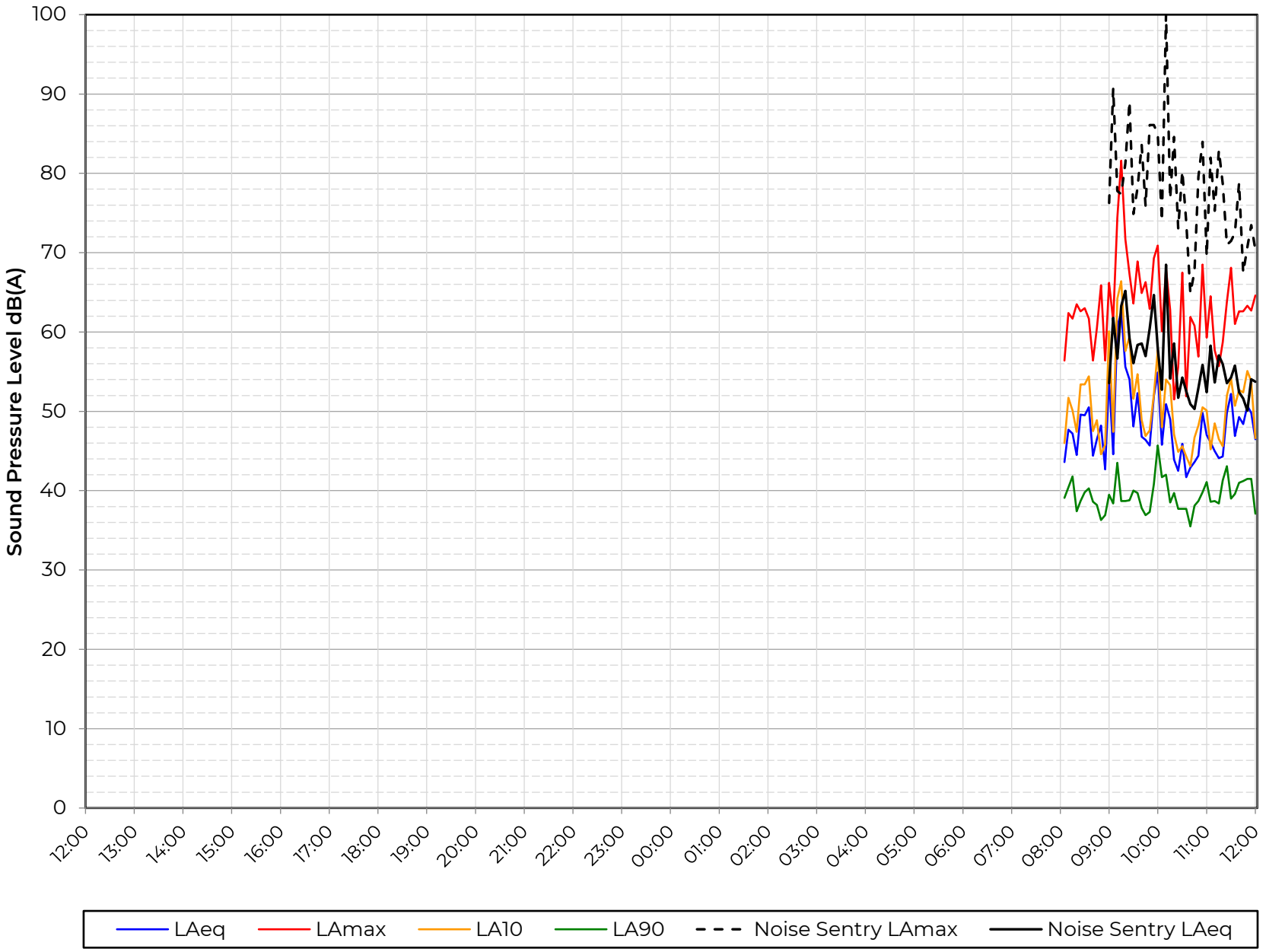
Mundicao Boarding Kennels, Shepeau Stow

Position : Oak Lodge



Thu 20 Mar to Fri 21 Mar

Figure AS14008/TH1

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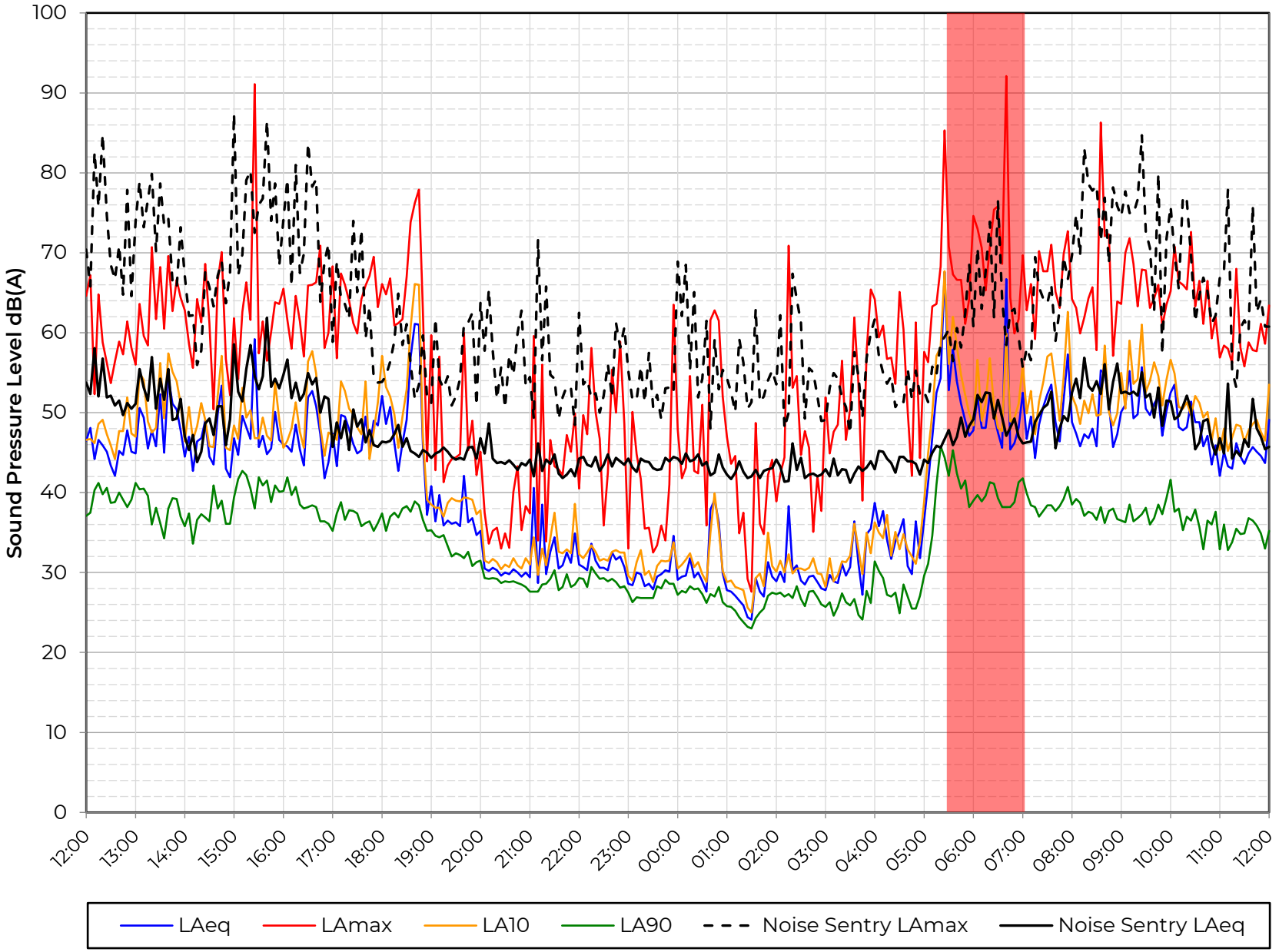
Mundicao Boarding Kennels, Shepeau Stow

Position : Oak Lodge



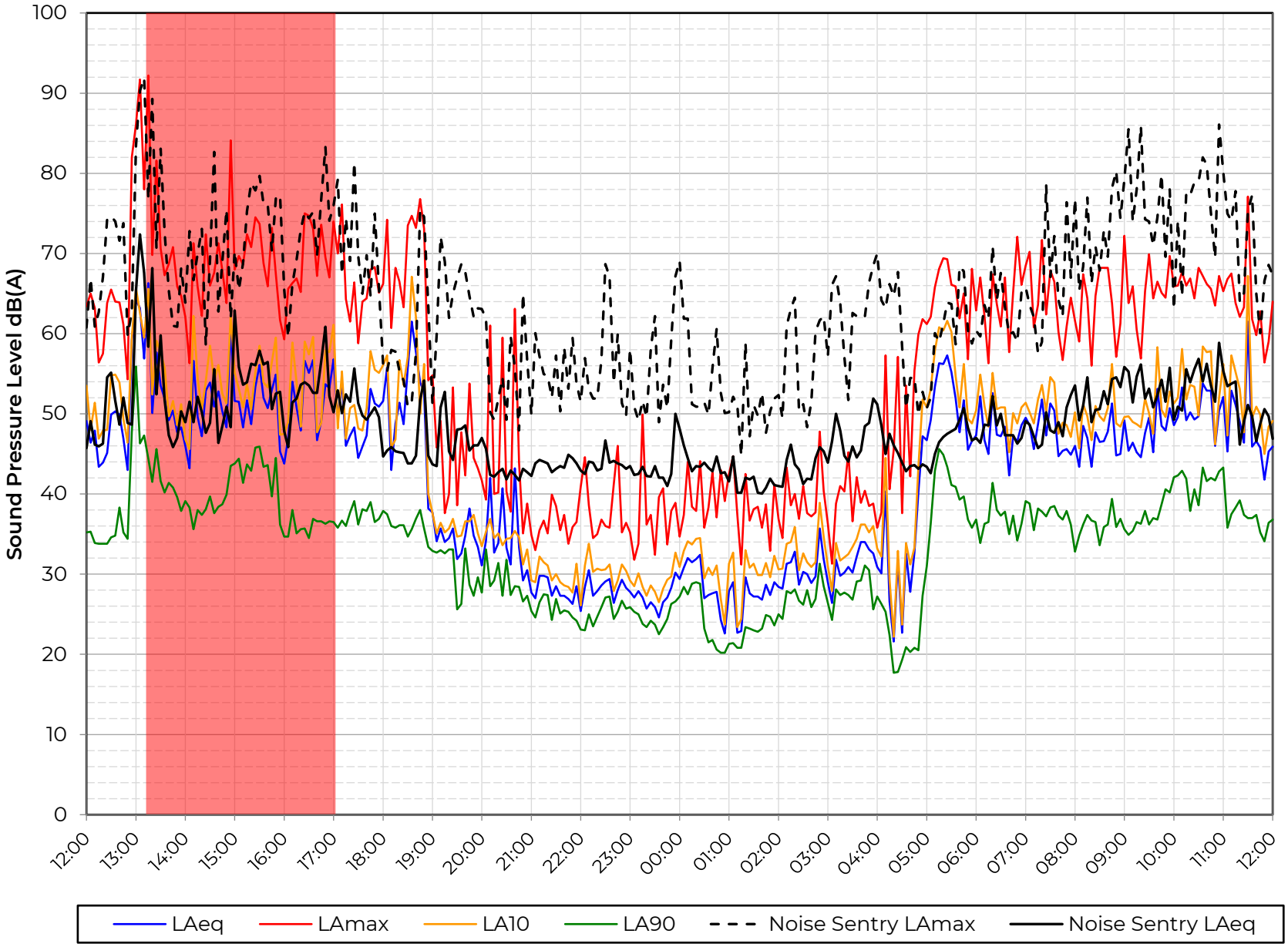
Fri 21 Mar to Sat 22 Mar

Figure AS14008/TH2

clarke saunders acoustics

Mundicao Boarding Kennels, Shepeau Stow

Position : Oak Lodge



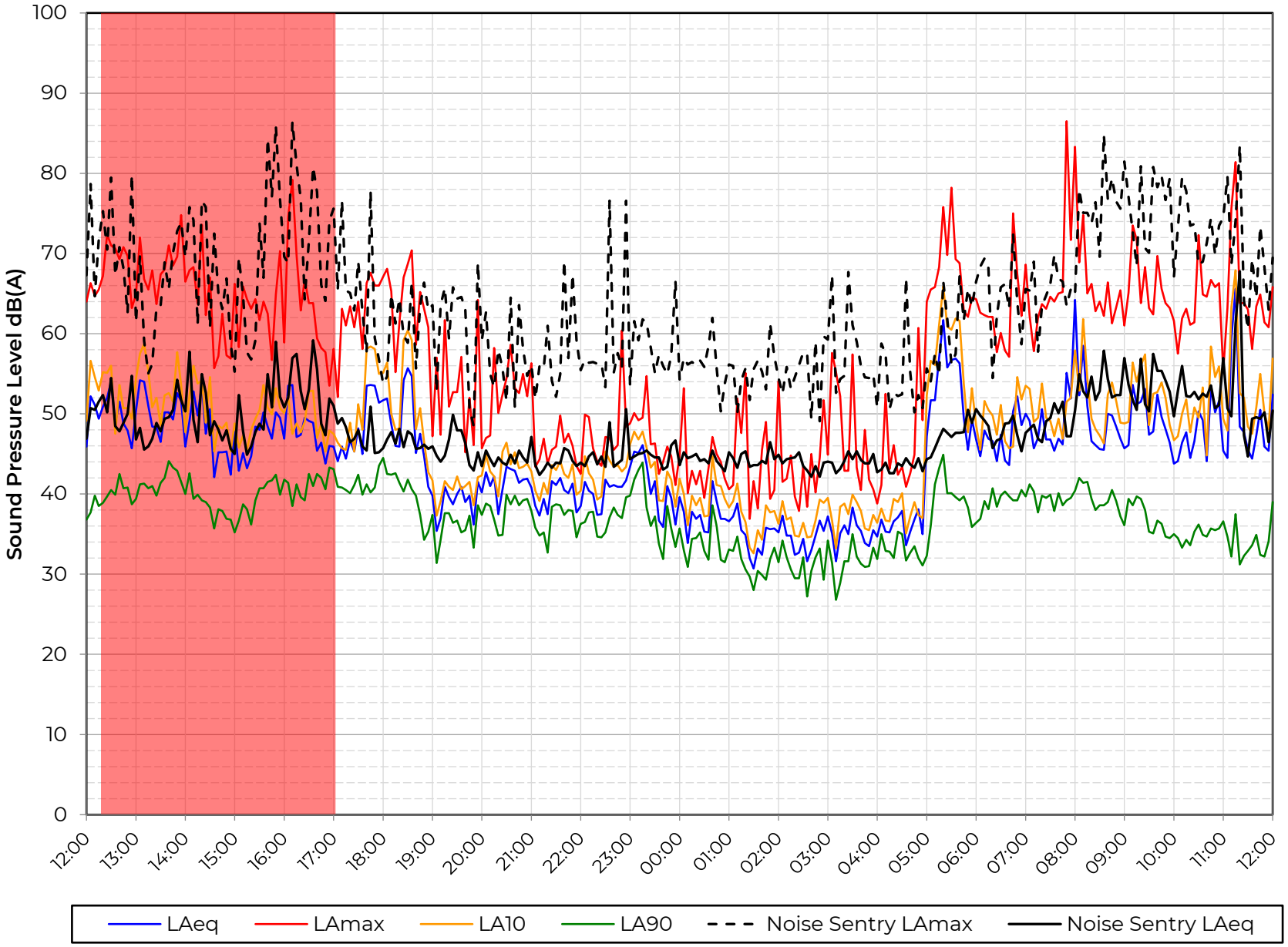
Sat 22 Mar to Sun 23 Mar

Figure AS14008/TH3

clarke saunders acoustics

Mundicao Boarding Kennels, Shepeau Stow

Position : Oak Lodge



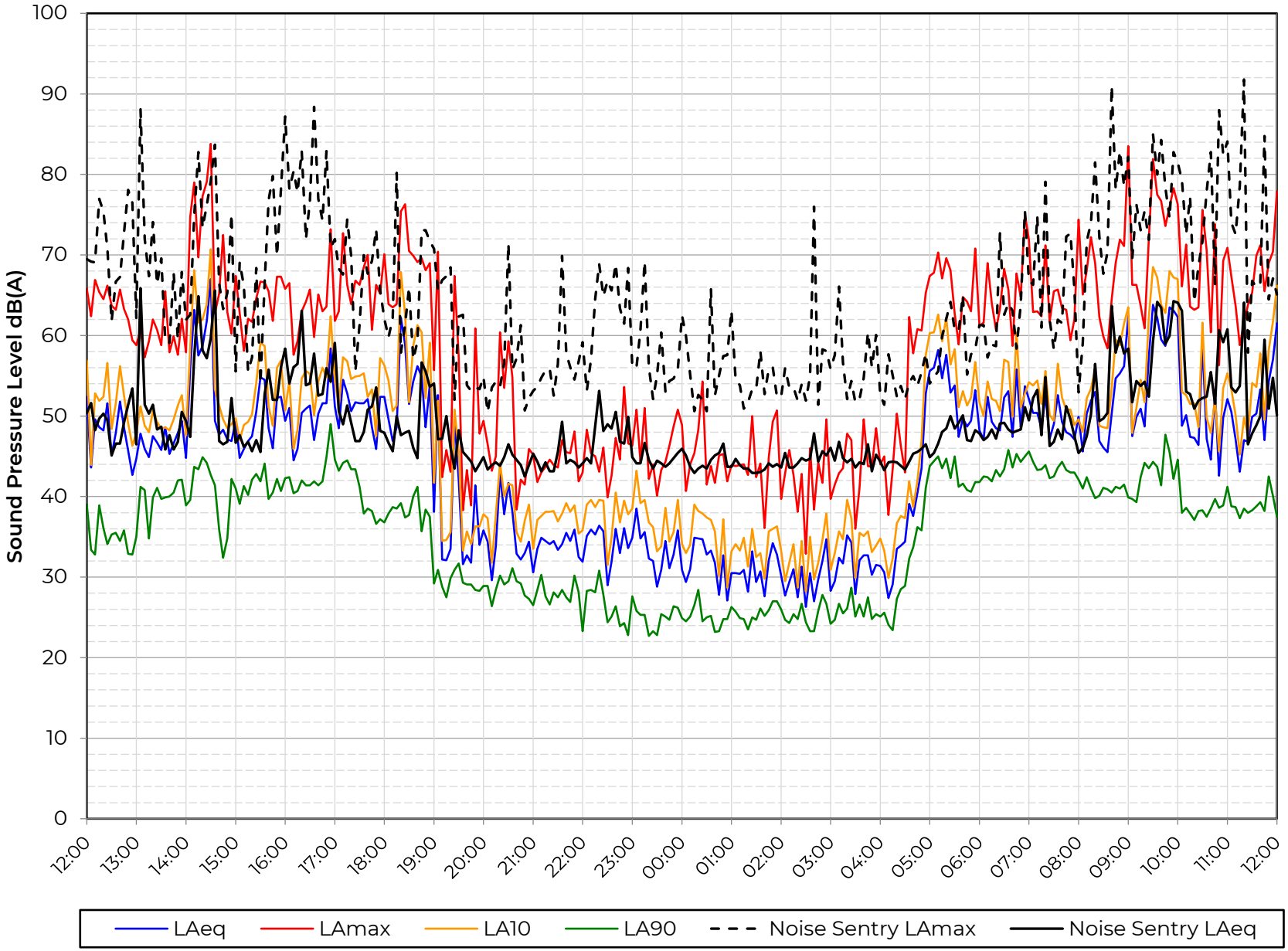
Sun 23 Mar to Mon 24 Mar

Figure AS14008/TH4

clarke saunders acoustics

Mundicao Boarding Kennels, Shepeau Stow

Position : Oak Lodge



Mon 24 Mar to Tue 25 Mar

Figure AS14008/TH5

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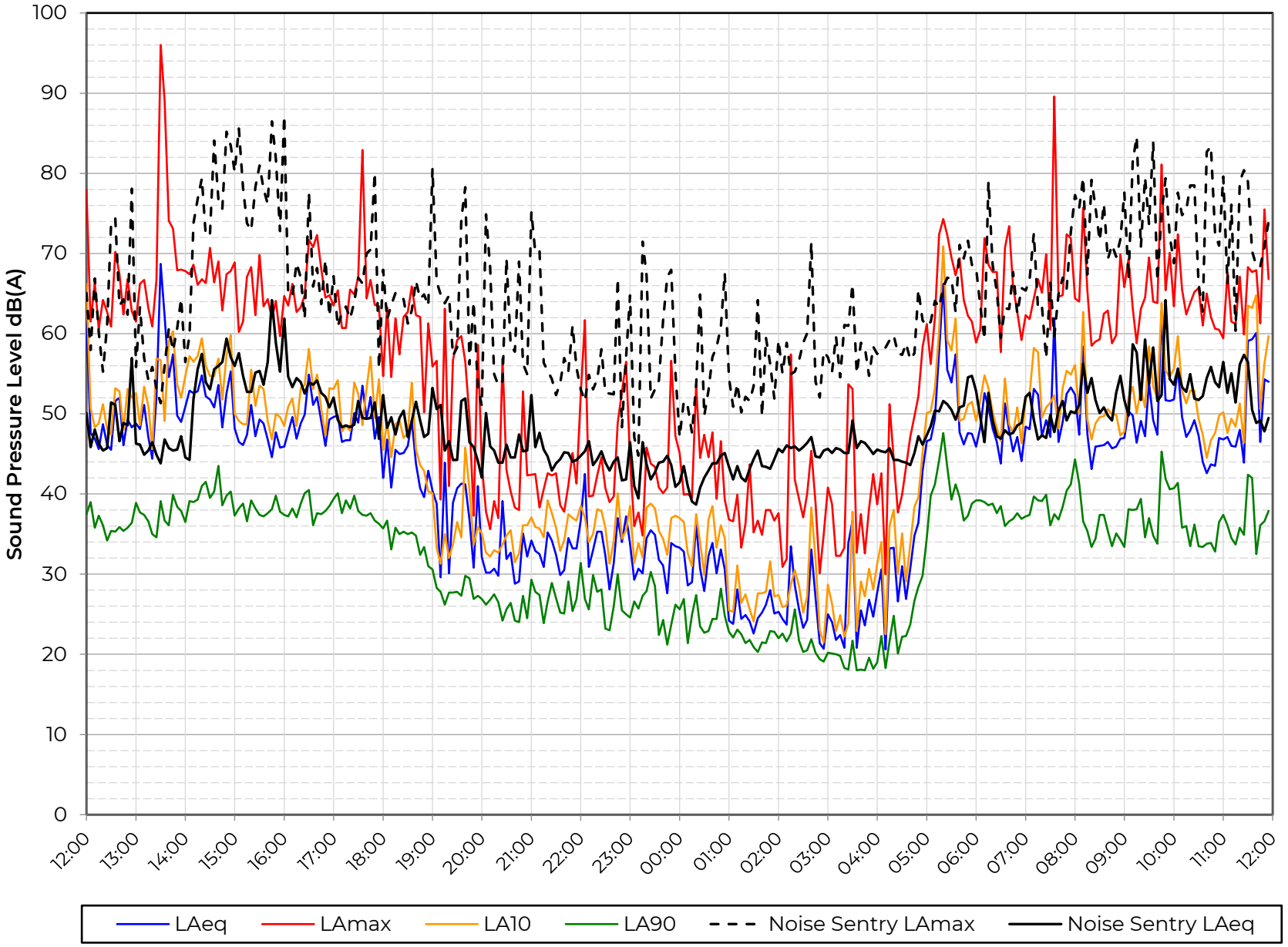
Mundicao Boarding Kennels, Shepeau Stow

Position : Oak Lodge



Tue 25 Mar to Wed 26 Mar

Figure AS14008/TH6

APPENDIX A

Acoustic Terminology

The human impact of sounds is dependent upon many complex interrelated factors such as 'loudness', its frequency (or pitch) and variation in level. In order to have some objective measure of the annoyance, scales have been derived to allow for these subjective factors.

Sound Vibrations propagating through a medium (air, water, etc.) that are detectable by the auditory system.

Noise Sound that is unwanted by or disturbing to the perceiver.

Frequency The rate per second of vibration constituting a wave, measured in Hertz (Hz), where 1Hz = 1 vibration cycle per second. The human hearing can generally detect sound having frequencies in the range 20Hz to 20kHz. Frequency corresponds to the perception of 'pitch', with low frequencies producing low 'notes' and higher frequencies producing high 'notes'.

dB(A): Human hearing is more susceptible to mid-frequency sounds than those at high and low frequencies. To take account of this in measurements and predictions, the 'A' weighting scale is used so that the level of sound corresponds roughly to the level as it is typically discerned by humans. The measured or calculated 'A' weighted sound level is designated as dB(A) or L_A.

L_{eq}: A notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (e.g. 8 hour, 1 hour, etc).

The concept of L_{eq} (equivalent continuous sound level) has primarily been used in assessing noise from industry, although its use is becoming more widespread in defining many other types of sounds, such as from amplified music and environmental sources such as aircraft and construction.

Because L_{eq} is effectively a summation of a number of events, it does not in itself limit the magnitude of any individual event, and this is frequently used in conjunction with an absolute sound limit.

L_{10} & L_{90}: Statistical L_n indices are used to describe the level and the degree of fluctuation of non-steady sound. The term refers to the level exceeded for n% of the time. Hence, L_{10} is the level exceeded for 10% of the time and as such can be regarded as a typical maximum level. Similarly, L_{90} is the typical minimum level and is often used to describe background noise.

It is common practice to use the L_{10} index to describe noise from traffic as, being a high average, it takes into account the increased annoyance that results from the non-steady nature of traffic flow.

L_{max}: The maximum sound pressure level recorded over a given period. L_{max} is sometimes used in assessing environmental noise, where occasional loud events occur which might not be adequately represented by a time-averaged L_{eq} value.

NR *Noise Rating*. A single figure noise level rating that takes into account the frequency content of an acoustic environment.

R *Sound Reduction Index*. Effectively the Level Difference of a building element when measured in an accredited laboratory test suite in accordance with the procedures laid down in BS EN ISO 10140-2:2010 and corrected for its size and the reverberant characteristics of the receive room.

D The sound insulation performance of a construction is described in terms of the difference in sound level on either side of the construction in the presence of a sound source on one side and the reverberant characteristics of the adjoining 'receive' space. D is the arithmetic Level Difference in decibels between the

source and receive sound levels when filtered into frequency bands.

D_{nT}	*Weighted Standardised Level Difference*. As defined in BS EN ISO 717-1, representing the Weighted Level Difference, when standardised for reference receiving room reverberant characteristics.
$D_{n,e}$	Normalised sound insulation of small building elements of fixed dimensions, such as vents, measured in an accredited laboratory test suite in accordance with the procedures laid down in BS EN ISO 10140-2:2010.
$D_{n,f}$	Flanking sound insulation of lightweight elements, such as curtain wall mullions, measured in an accredited laboratory test suite in accordance with the procedures laid down in ISO 10848-2:2006
R_w D_w $D_{nT,w}$ $D_{n,e,w}$ $D_{n,f,w}$	Value of parameter, determined as above, but weighted in accordance with the procedures laid down in BS EN ISO 717-1 to provide a single-figure value.
C, C_{tr}	Spectral adaptation terms to be added to a single number quantity such as $D_{nT,w}$, to take account of the sound insulation within frequency ranges of particular interest.
$L'_{nT,w}$	*Weighted Standardised Impact Sound Pressure Level* as defined in BS EN ISO 717-2, representing the level of sound pressure when measured within a space where the floor above is under excitation from a calibrated tapping machine, standardised for the receiving room reverberant characteristics.
ΔL_w	Change in impact sound pressure level when a floor is fitted with a 'soft' or resilient covering, as measured in an accredited laboratory test suite in accordance with the procedures laid down in BS EN ISO 10140-3:2010.

Octave Band Frequencies

In order to determine the way in which the energy of sound is distributed across the frequency range, the International Standards Organisation has agreed on "preferred" bands of frequency for sound measurement and analysis. The widest and most commonly used band for frequency measurement and analysis is the Octave Band.

In these bands, the upper frequency limit is twice the lower frequency limit, with the band being described by its "centre frequency" which is the average (geometric mean) of the upper and lower limits, e.g. 250 Hz octave band extends from 176 Hz to 353 Hz. The most commonly used octave bands are:

Octave Band Centre Frequency Hz	63	125	250	500	1000	2000	4000	8000

Human Perception of Broadband Noise

Because of the logarithmic nature of the decibel scale, it should be borne in mind that sound levels in dB(A) do not have a simple linear relationship. For example, 100dB(A) sound level is not twice as loud as 50dB(A). It has been found experimentally that changes in the average level of fluctuating sound, such as from traffic, need to be of the order of 3dB before becoming definitely perceptible to the human ear. Data from other experiments have indicated that a change in sound level of 10dB is perceived by the average listener as a doubling or halving of loudness. Using this information, a

guide to the subjective interpretation of changes in environmental sound level can be given.

INTERPRETATION

Change in Sound Level dB	Subjective Impression	Human Response
0 to 2	Imperceptible change in loudness	Marginal
3 to 5	Perceptible change in loudness	Noticeable
6 to 10	Up to a doubling or halving of loudness	Significant
11 to 15	More than a doubling or halving of loudness	Substantial
16 to 20	Up to a quadrupling or quartering of loudness	Substantial
21 or more	More than a quadrupling or quartering of loudness	Very Substantial

Earth Bunds and Barriers - Effective Screen Height

When considering the reduction in sound level of a source provided by a barrier, it is necessary to establish the "effective screen height". For example if a tall barrier exists between a sound source and a listener, with the barrier close to the listener, the listener will perceive the sound as being louder if he climbs up a ladder (and is closer to the top of the barrier) than if he were standing at ground level. Equally if he sat on the ground the sound would seem quieter than if he were standing. This is explained by the fact that the "effective screen height" is changing with the three cases above. In general, the greater the effective screen height, the greater the perceived reduction in sound level.

Similarly, the attenuation provided by a barrier will be greater where it is aligned close to either the source or the listener than where the barrier is midway between the two.