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Noise Impact Assessment for Proposed Dog Kennels

Plot 2, Highlands Farm, Yalding Hill, Yalding, Kent, ME18 6AL

Report Reference 20480.NIA-RPT.01

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Report Title	Noise Impact Assessment for Proposed Dog Kennels
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First Issue	17th July 2023	Noise impact assessment pertaining to the proposed dog kennels at the above address

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EXECUTIVE SUMMARY

ES Acoustics Ltd (ESA) have been commissioned by SJM Planning to prepare a noise impact assessment in support of a part retrospective planning application (Ref 23/500748/FULL) for the proposed dog kennels at Plot 2, Highlands Farm, Yalding Hill, Yalding, Kent, ME18 6AL.

An environmental noise survey has been undertaken to establish existing as ambient, residual and background sound levels of the area, as shown below:

Period	Ambient Sound Level $L_{Aeq,\,T}$ (dB)	Residual Sound Level $L_{Aeq,\,T}$ (dB)	Background Sound Level L_{A90} (dB)
Daytime 07:00-19:00	59	51	43
Night-time 23:00-07:00	55	47	33

Note: Ambient sound level defined as the noise level comprised of existing noise and dog barking noise. Residual sound level defined as noise level of existing noise only with periods of dog barking noise removed.

Analysis of the spectral content of the environmental noise survey data has also allowed source noise levels of dog barks to be established. The highest L_{AFmax} source noise levels associated with dog barks, measured during the automated survey, are presented below:

Descriptor	Octave band centre frequency sound levels, Hz dB								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Worst-case L_{AFMax} levels	73	72	70	94	100	90	78	78	101

A review of National and Local Planning Policy, Legislation, and Good Practice Guidance has been undertaken to establish a suitably robust noise criterion with regards to the proposed dog kennel use.

Using the worst-case source noise levels outlined above, detailed calculations have been undertaken to assess the noise emissions from dogs barking at each of the nearby noise sensitive receptor properties. The table below compares the resultant sound levels calculated against the set criterion:

Receptor Location	Assessment Descriptor	Assessment Location	Criterion	Calculated Source Sound Level Receptor	Compliant?
1	L_{AFMax}	1m from façade	≤ 45 dB L_{AFmax}	43	✓
2	L_{AFMax}	1m from façade	≤ 45 dB L_{AFmax}	35	✓
3	L_{AFMax}	1m from façade	≤ 45 dB L_{AFmax}	31	✓
4	L_{AFMax}	1m from façade	≤ 45 dB L_{AFmax}	42	✓

As shown in the table above, noise emissions from dogs barking would meet the set criterion at each of the receptor locations.

It is the professional opinion of ES Acoustics Ltd that noise associated with the dog kennel proposal would result in a low likelihood of adverse impact on the surrounding residential receptors.

No additional mitigation measures would be required to ensure the amenity of the surrounding receptors.

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LIST OF ATTACHMENTS

1 INTRODUCTION

ES Acoustics Ltd (ESA) have been commissioned by SJM Planning to prepare a noise impact assessment in support of a part retrospective planning application (Ref 23/500748/FULL) for the proposed dog kennels at Plot 2, Highlands Farm, Yalding Hill, Yalding, Kent, ME18 6AL.

The purpose of this report is to;

- Review appropriate national and local planning policy, legislation and guidance relevant to the proposal;
- Undertake an environmental noise survey on site to determine background noise levels at nearby noise sensitive receptor locations;
- Undertake a noise impact assessment of the proposed dog kennels to assess the likelihood of adverse impact of the proposal; and
- Where appropriate provide outline mitigation advice to ensure no adverse impact upon the closest noise sensitive receptors.

2 SITE CONTEXT AND BACKGROUND INFORMATION

2.1 Site Description

The Full Delated Officers Report describes the site as follows:

The application site is located on the northern side of Yalding Hill, in an area of open countryside outside the settlement confines of Yalding. The plot is a roughly rectangular in shape and measures approximately 30 metres long, 13 metres in wide and is enclosed by close board fencing. The plot contains a large dog kennel with five bays and the steel frame of the proposed storage barn. To the north and west of the site are polytunnels, whilst to the east there is a holiday park, with an authorised Gypsy site beyond. The southern boundary abuts open undeveloped agricultural fields characteristic of the wider Greensand Ridge Landscape of Local Value.

An indicative site plan is shown in Figure 1 below:

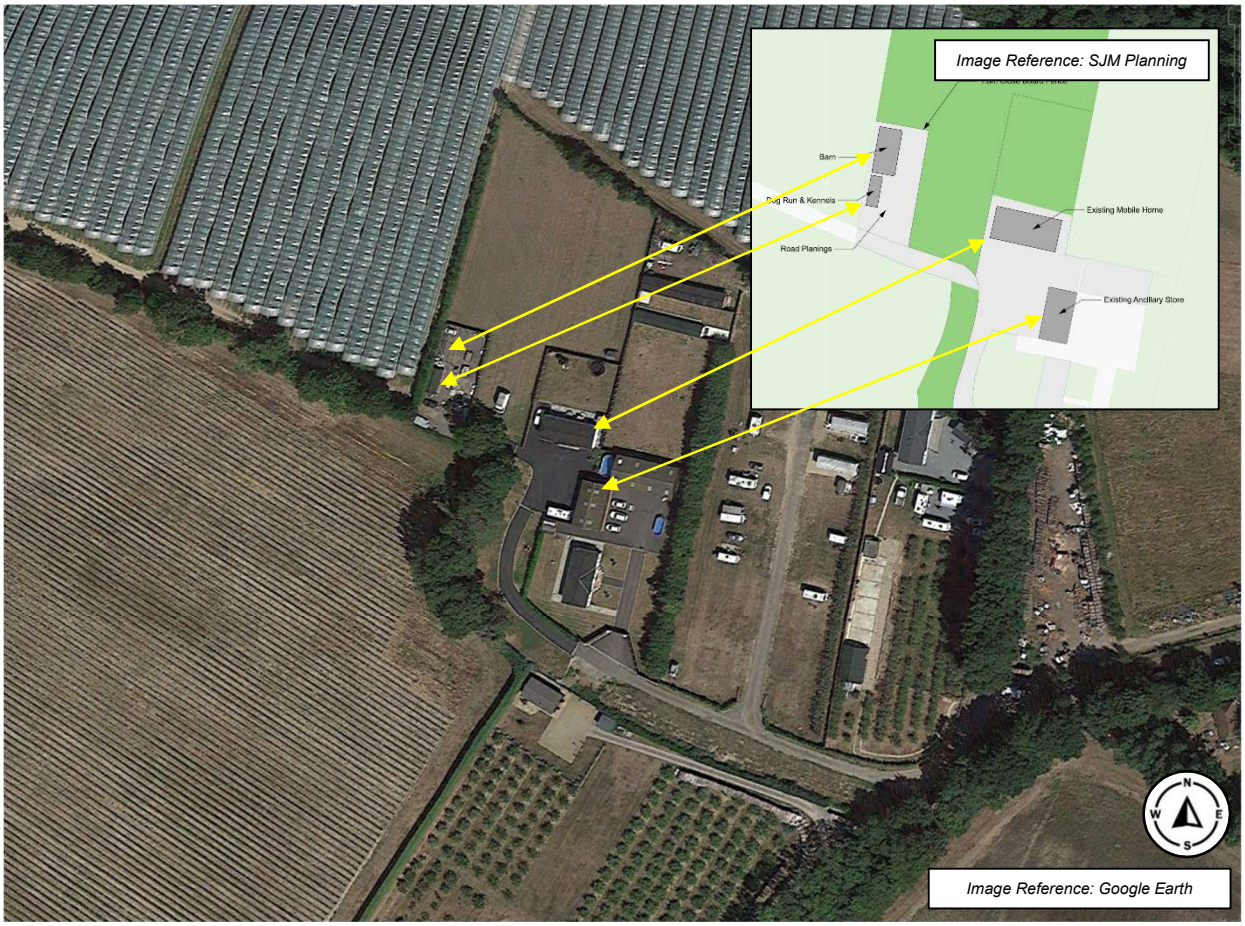


Figure 1 Indicative site plan indicating site (red) and closest noise sensitive receptors (green)

Note that the authorised Gypsy site to the north (as referenced above) is not shown on the Google Earth image above and is located to the north of the proposed dog kennel and barn.

3 no. mobile homes were noted on the during the site visits undertaken by ESA.

2.2 Proposal

The proposal, as detailed within the Full Delated Officers Report reads as follows:

The application proposes the change of use of agricultural land for storage of materials and erection of storage barn and dog kennels/runs with associated hardstanding and access. The proposed storage barn would measure 11.6 metres long and just under 6 metres in width. It would rise approximately 3.5 metres above ground level to the highest part of the pitched roof. The dog kennel would be 8 metres long and 3 metres in width, rising approximately 2.5 metres above ground level. The application is part retrospective, in that part of the proposals comprising of the dog kennel and the steel frame of the storage barn have already been erected at the site. The submission states the storage barn and dog kennel would be ancillary to occupation of the approved Gypsy/Traveller site.

2.3 Consultation Responses

The consultation responses presented in the Full Delated Officers Report are as follows:

Mid Kent Environmental Health

Raise no objection to the proposal, stating the following 'As there are nearby residential neighbours within 40m from the proposed kennels/dog run we would recommend the attachment of a noise management plan condition to any permissions granted to ensure that if any noise issues arise, they can be managed effectively.

Noise management plan condition: Prior to the operation of the development, a management plan covering the entirety of the dog amenity area (kennels and run) shall be submitted for approval to the local planning authority. The plan shall include but not be limited to examples such as operational arrangements and noise control measures (e.g. times for feeding and exercise, locations for external activity/walking, etc…). The plan should include procedures for response to complaints from residents or the local authority. It should include a review mechanism in response to justified complaints. Once approved the plan shall be implemented to the satisfaction of the local planning authority' with noise considerations are presented below:

2.4 Planning Officer Appraisal

The appraisal prepared by Planning Officer in relation to 'effects on living conditions' is presented below:

Policy DM1 (iv) of the Maidstone Borough Local Plan requires that development should respect the amenities of occupiers of neighbouring properties and uses and provide adequate residential amenities for future occupiers by ensuring that development does not result in, or is exposed to, excessive noise, vibration, odour, air pollution, activity or vehicular movements, overlooking or visual intrusion, and that the built form would not result in an unacceptable loss of privacy or light enjoyed by the occupiers of nearby properties. This is consistent with provisions in paragraph 130 of the NPPF (2021) which seeks protection of residential amenity for all existing and future occupiers of buildings.

The application site is within 25 metres of the approved gypsy traveller site and activities around the yard and barking of dogs would result in some level of noise and disturbance to existing occupiers of the gypsy

traveller site. Unfortunately, the application is not supported by a Noise Assessment detailing the acoustic environmental around the site, including the likely noise impact of the proposed dog kennel on the amenities of existing residents of the caravans with windows partially open. MBC Environmental Health Team have recommended a noise management plan condition is attached to any permissions granted to ensure that if any noise issues arise, they can be managed effectively.

Given the above, in the absence of a Noise Assessment, scheme would likely cause irritation and inconvenience to occupiers of nearby caravans. As a result, the proposal would conflict with the requirements of Policy DM1 (iv) of the Maidstone Borough Local Plan Local Plan, and paragraph 130 of the NPPF (2021). The policies jointly seek protection of residential amenity for all existing and future occupiers of buildings.

2.5 ESA Comments

Based on the feedback from the Local Authority, a noise impact assessment is presented throughout the following sections of this report to address the concerns raised in the Officers Report.

Noise emissions from the proposed dog kennels would be assessed to the mobile homes located to the north of the site to determine the likelihood of adverse impact (it is understood that whilst these homes do not currently have planning permission, an application is forthcoming and they have therefore been considered accordingly).

It must be clearly established that the dog kennels in question are for the applicant to keep his own dogs. This is not a commercial kennel whereby members of the public would pay to board their dogs. Therefore, the noise impact of the proposed kennel use would undoubtedly be less than a commercial kennel as the dogs are all familiar with one another and there would be no potential issue with unfamiliar dogs becoming nervous or aggressive with one another.

Nevertheless, the noise impact of the dogs within the kennels would be established upon the closest noise sensitive receptors to provide a clear indication of the likelihood of adverse impact with respect to noise.

With respect to the specific dog kennel use:

- *5 no. kennels would house the applicants 5 no. greyhounds;*
- *The greyhounds are fed at 0730 in the morning and 2030 in the evening;*
- *The dogs are exercised off-site, either using local footpaths that run past the site, or at other locations further afield.*

3 ENVIRONMENTAL NOISE SURVEY

3.1 Measurement Location and Procedure

A noise survey was undertaken on the proposed site as shown in the figure below. The location was considered suitable to obtain source noise levels from the dogs within the kennels, and background noise levels representative of the closest noise sensitive receptors to the north of the site:

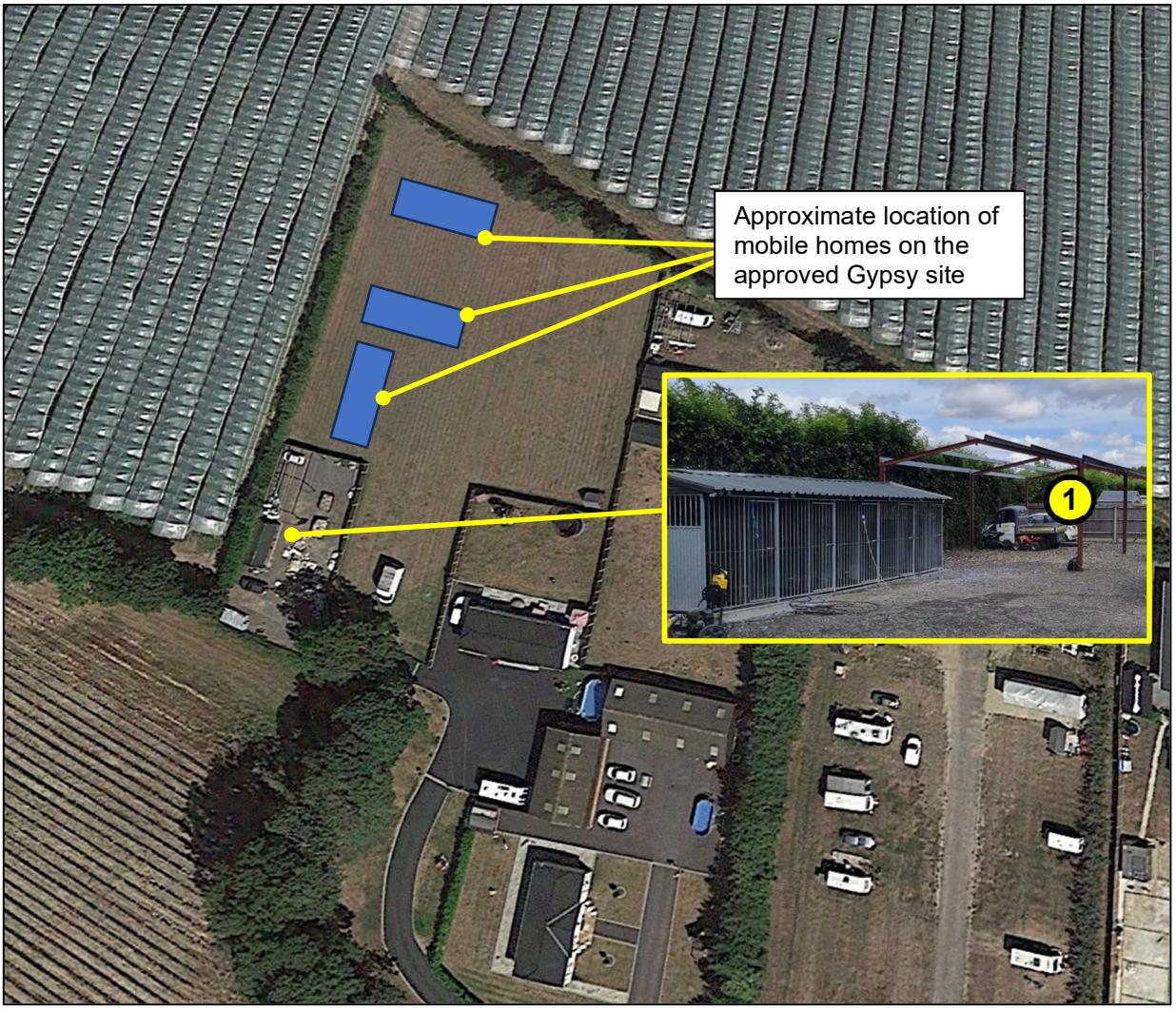


Figure 2 Automated noise survey measurement location

The measurement procedure complied with ISO 1996-2:2017 Acoustics '*Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels*', with automated monitoring undertaken between 11:20 on 10/07/2023 and 11:45 on 12/07/2023.

The key acoustic descriptors measured for this assessment are as follows:

- $L_{A90,T}$ *(the noise level exceeded for 90% of the measurement period T, referred to as the 'background' noise level);*
- $L_{Aeq,T}$ *(the continuous equivalent A-weighted noise level over a given time period, T); and*
- $L_{AFMax,T}$ *, the maximum sound level over each measurement period.*

An initial appraisal of the site noted that the area would be considered as a quiet rural location, with no observable dominant noise source.

3.2 Measurement Equipment

The table below presents the equipment used for the baseline noise survey. The equipment calibration was verified before and after use and no abnormalities were observed.

Equipment	Make and Model	Serial Number
Sound Level Meter	Svantek 977 Class 1 Sound Level Meter	81302
Microphone Capsule	ACO Pacific 7052E	74656
Microphone Preamplifier	Svantek SV 12L	110551
Calibrator	Svantek SV33 Class 1 Sound Calibrator	125829

Table 1 Noise survey equipment

3.3 Weather Conditions

Weather conditions during the automated monitoring were generally dry with light winds and therefore suitable for the measurement of environmental noise. Measurements of temperature and wind speed were undertaken over a 15-minute period on both the installation and collection visits as reported in the table below. Additional data on precipitation has been sourced from local weather stations. A summary of the weather data is reported in the table below:

Description	Installation Date 10/07/2023	Collection Date 12/07/2023
Temperature (º Celsius)	21*	19*
Wind speed (m/s)	2.5**	3.3**
Wind direction	Southwest	West
Precipitation***	0mm	0mm
Presence of damp roads/wet ground	None	None
Cloud cover (Oktas****)	2 ◑	4 ◑
Presence of fog/snow/ice	None	None

Table 2 Weather conditions
***measured during the site visit using a handheld anemometer**
****maximum speed measured over 15-minute period during the site visit using a handheld anemometer**
*****see additional notes on precipitation below**
******An okta is a unit of measurement used to describe the amount of cloud cover at any given location. Sky conditions are estimated in terms of how many eighths of the sky are covered in cloud, ranging from 0 oktas (completely clear sky) through to 8 oktas (completely overcast)**

3.4 Survey Results

A summary of the measurement results are presented in the table below for daytime and night-time:

Period	Ambient Sound Level $L_{Aeq,\,T}$ (dB)	Residual Sound Level $L_{Aeq,\,T}$ (dB)	Background Sound Level L_{A90} (dB)
Daytime 07:00-19:00	59	51	43
Night-time 23:00-07:00	55	47	33

Table 3 Measured noise levels
Note: Ambient sound level defined as the noise level comprised of existing noise and dog barking noise. Residual sound level defined as noise level of existing noise only with periods of dog barking noise removed.

Note that the background sound levels reported are the modal values for the time period presented.

A time history of the environmental noise survey is shown in Appendix B.

Analysis of the time history presents 'spikes' of noise throughout the survey. The single octave band frequency spectrum of each spike has been analysed to determine whether the noise event was as a result of dogs barking. A summary of the L_{Aeq} and L_{AFmax} noise levels during the spikes in noise are presented below:

Date/Time	Descriptor	Octave band centre frequency sound levels, Hz dB								dB(A)
		63	125	250	500	1k	2k	4k	8k	
10/07/2023 15:13	L_{Aeq}	64	57	55	71	74	63	50	42	75
	L_{AFMax}	78	73	66	89	93	85	75	59	94
10/07/2023 16:58	L_{Aeq}	66	59	54	65	68	59	47	40	69
	L_{AFMax}	83	73	67	88	93	86	72	57	95
10/07/2023 17:03	L_{Aeq}	68	61	56	67	70	59	47	43	71
	L_{AFMax}	86	75	70	89	96	85	73	58	97
10/07/2023 18:08	L_{Aeq}	64	57	52	76	75	70	49	44	78
	L_{AFMax}	86	76	70	100	96	91	71	67	100
10/07/2023 18:13	L_{Aeq}	64	57	51	54	66	59	48	44	67
	L_{AFMax}	79	69	67	76	96	86	71	63	96
10/07/2023 19:53	L_{Aeq}	58	52	48	68	73	65	48	41	75
	L_{AFMax}	73	64	63	94	98	90	73	64	100
10/07/2023 19:58	L_{Aeq}	57	51	48	54	68	59	48	45	69
	L_{AFMax}	73	66	61	83	96	89	72	70	97
11/07/2023 04:53	L_{Aeq}	60	53	55	73	74	65	52	47	76
	L_{AFMax}	77	69	75	93	94	87	72	67	96
11/07/2023 08:08	L_{Aeq}	59	48	45	55	63	54	55	56	65
	L_{AFMax}	67	65	64	88	98	88	69	72	98
11/07/2023 08:18	L_{Aeq}	59	51	48	53	67	60	55	53	68
	L_{AFMax}	72	66	73	78	96	85	81	77	97
11/07/2023 16:33	L_{Aeq}	62	51	47	70	69	62	44	39	72
	L_{AFMax}	71	68	69	98	96	89	68	62	99
11/07/2023 18:53	L_{Aeq}	55	48	47	63	73	64	53	51	74
	L_{AFMax}	73	72	70	94	100	90	78	78	101
11/07/2023 19:18	L_{Aeq}	52	46	47	69	66	59	47	46	70
	L_{AFMax}	68	65	69	95	92	84	70	71	96
11/07/2023 19:23	L_{Aeq}	50	43	42	61	59	55	40	36	63
	L_{AFMax}	67	56	63	91	88	86	69	62	93
11/07/2023 20:03	L_{Aeq}	51	48	48	69	63	54	41	40	68
	L_{AFMax}	65	60	70	99	91	82	68	65	97

Table 4 Source sound levels of dogs barking

As noted above, 15 events were observed over the 48-hour period, with L_{Aeq} levels ranging from 63-78 dB and L_{AFmax} levels ranging from 93-101 dB.

Averages of L_{Aeq} and L_{AFmax} levels are summarised below:

Descriptor	Octave band centre frequency sound levels, Hz dB								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Logarithmic average of L_{Aeq} levels	62	55	51	69	71	63	50	48	73
Average L_{AFMax} levels	75	68	68	90	95	87	72	66	96

Table 5 Source sound levels of dogs barking

The data is presented in graphical format below:

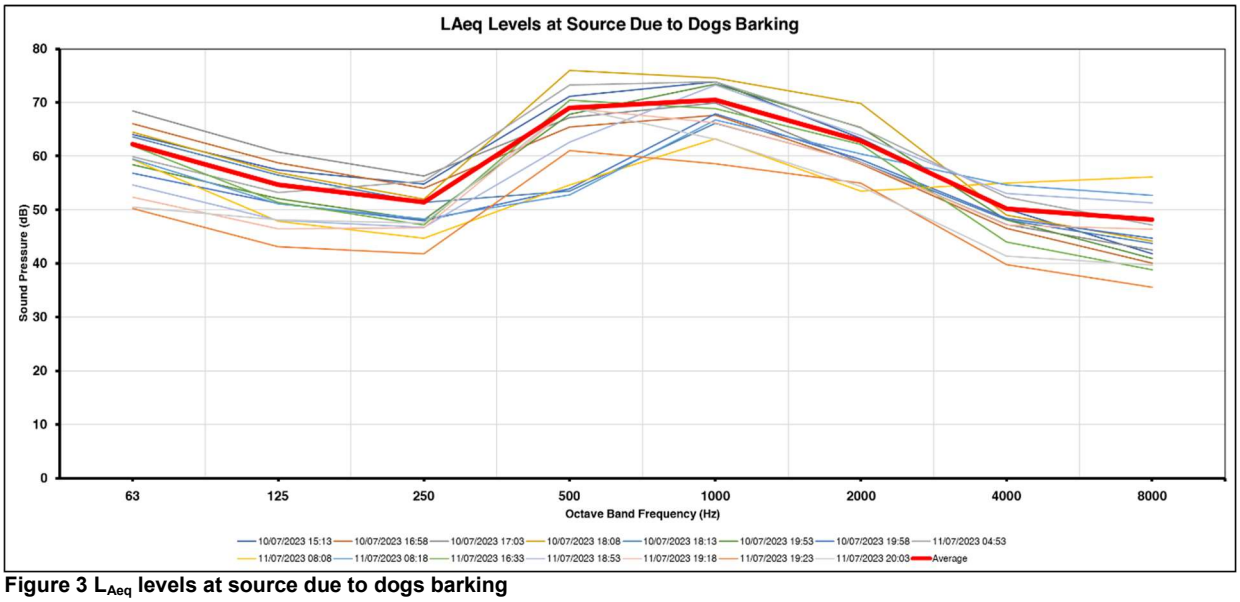


Figure 3 L_{Aeq} levels at source due to dogs barking

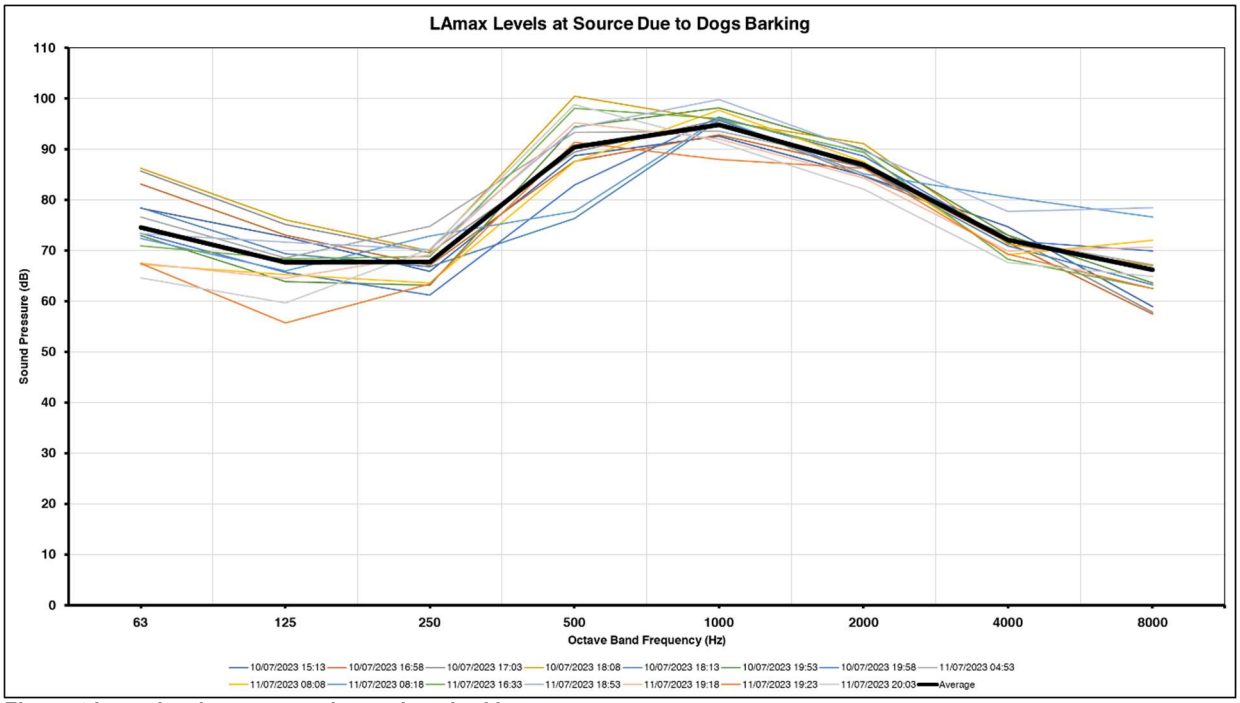


Figure 4 L_{AFmax} levels at source due to dogs barking

4 POLICY, LEGISLATION AND GUIDANCE

4.1 National Policy

4.1.1 National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) superseded and replaced Planning Policy Guidance Note 24 (PPG24), which previously covered issues relating to noise and planning in England.

The paragraphs relating to noise state:

174. 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

185. 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; […]

187. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

4.1.2 Noise Policy Statement for England (NPSE)

The Noise Policy Statement for England (NPSE) was developed by DEFRA and published in March 2010. The long-term vision of the Government noise policy is to '*Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development*.'

The NPSE vision noted above is supported by the following aims:

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development.

- *Avoid significant adverse impacts on health and quality of life;*
- *Mitigate and minimise adverse impacts on health and quality of life; and*
- *Where possible, contribute to the improvement of health and quality of life*

The NPSE outlines observed effect levels relating to the above, as follows:

- *No observed effect level (NOEL): this is the level of noise exposure below which no effect at all on health or quality of life can be detected;*
- *Lowest observed adverse effect level (LOAEL): this is the level of noise exposure above which adverse effects on health and quality of life can be detected;*
- *Significant observed adverse effect level (SOAEL): This is the level of noise exposure above which significant adverse effects on health and quality of life occur;*

Noise effect levels are not set at absolute noise level targets, but instead vary depending on the context and character of the noise and site specific factors which may impact on the severity of the effect. The NPSE states:

'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.'

4.1.3 National Planning Practice Guidance (NPPG)

The NPPG provides practical guidance on how the NPPF should be applied as well as and guidance on the factors influencing whether noise may be a concern at the planning stage and how adverse effects can be mitigated. The table below summarises the effect levels presented within the NPSE, as follows:

Response	Examples of Outcomes	Increasing Effect Level	Action
Not present	No Effect	No Observed Effect	No specific measures required
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific Measures required

Response	Examples of Outcomes	Increasing Effect Level	Action
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate & reduce to a minimum
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting 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
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

Table 6 Noise exposure hierachy

4.2 Local Policy

Policy referenced within the Officers Report in relation to noise and/or the effects on living conditions are presented below:

Policy DM 1 – Principles of Good Design

Proposals which would create high quality design and meet the following criteria will be permitted:

iv. Respect the amenities of occupiers of neighbouring properties and uses and provide adequate residential amenities for future occupiers of the development by ensuring that development does not result in, or is exposed to, excessive noise, vibration, odour, air pollution, activity or vehicular movements, overlooking or visual intrusion, and that the built form would not result in an unacceptable loss of privacy or light enjoyed by the occupiers of nearby properties.

4.3 National Legislation

4.3.1 Environmental Protection Act 1990 (EPA 1990)

Section 79 of the EPA 1990 defines statutory noise nuisance as '*noise emitted from premises so as to be prejudicial to health or a nuisance*', and notes that Local Planning Authorities have a duty to inspect and detect such nuisances in their area. The specifics of noise nuisance are not defined, however, and the law only requires that the investigating officer be of the opinion that the effect of the noise in question on the average reasonable person would cause a nuisance or be prejudicial to health.

Section 80 of the EPA 1990 provides Local Planning Authorities with powers to serve an abatement notice requiring the cessation of a nuisance or requiring works to be undertaken to prevent their occurrence.

It should be noted that annoyance is not necessarily a noise nuisance, with noise nuisance being defined in Common Law as "*an unlawful interference with a person's use or enjoyment of land, or of some right over, or in connection with it*" (Read v Lyons and Co. Ltd, 1945). Noise nuisances are often assessed against the judgment of Mr Justice Luxmoore as "*interfering with the ordinary physical comfort of human existence not merely according to elegant or dainty modes of living but according to plain and sober and simple notions obtaining among English people*" (Vanderport v the Mayfair Hotel Co Ltd, 1930). Therefore, the interference in question must be unreasonable such that it can be considered a noise nuisance.

It should be noted that businesses have a defence against noise nuisance of 'best practicable means', which is defined in section 79(9) of the Act as follows:

- *'practicable' means reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications.*
- *'the means' to be employed include the design, installation, maintenance and manner and periods of operation of plant and machinery and the design, construction and maintenance of buildings and structures.*
- *The test is to apply only so far as is compatible with any duty imposed by law and only so far as is compatible with safety and safe working conditions, and with the exigencies of any emergency or unforeseeable circumstances.*

A noise management plan and best practicable means of ensuring noise is minimised on site will be outlined within this report.

4.4 Best Practice and Guidance

4.4.1 World Health Organization (WHO) Guidelines

WHO Guidelines for Community Noise (1999) provides guideline values for community noise in specific environments. This has since been supplemented by WHO Environmental Noise Guidelines for European Region (WHO, Regional office for Europe, 2018).

The WHO guideline values most relevant to residential development are outlined in the table below:

Specific Environment	Critical Health Effects	L_{Aeq} [dB]	Time [hours]	L_{Afmax} [dB]
Dwelling, indoors	Speech intelligibility and moderate annoyance, daytime and evening	35	16	n/a
	Sleep disturbance night-time	30	8	45
Outside bedrooms (from noise sources other than road traffic, railways, aircraft or wind turbines)	Sleep disturbance, window open (outdoor values)	45	8	60

Table 7 Guideline Values from WHO Guidelines for Community Noise (1999)

The effects of noise in dwellings are typically sleep disturbance, annoyance and speech interference. For bedrooms the critical effect is sleep disturbance. Indoor guideline values for bedrooms at night are 30dB

L_{Aeq} for continuous noise and 45dB L_{Amax} for single sound events, but the guidance also notes that lower noise levels may be disturbing depending on the nature of the noise source.

The value of 45dB L_{Aeq} outside bedrooms (at night, due to the reference of sleep disturbance) assumes a partially open window, with the value was obtained by assuming that the noise reduction from outside to inside with the window open is 15dB i.e. 30dB + 15dB = 45dB. However, the logic of needing a window open would be for the purpose of purge ventilation (as defined in Approved Document F of the Building Regulations) or to provide increased ventilation rates for the purpose of overheating mitigation (as now defined in Approved Document O of the Building Regulations).

While the above guidance has limited relevance to the application in question, it provides useful context as to what acceptable internal noise levels are in an ideal situation.

4.4.2 BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'

Table 4 of BS 8233:2014 (reproduced below) provides guidance on recommended internal ambient noise levels in residential spaces based on World Health Organisation (WHO) research.

Room	Daytime (07:00-23:00)	Night-time (23:00-07:00)
Living Room	≤ 35 dB $L_{Aeq,16hr}$	N/A
Dining Room	≤ 40 dB $L_{Aeq,16hr}$	N/A
Bedroom	≤ 35 dB $L_{Aeq,16hr}$	≤ 30 dB $L_{Aeq,8hr}$

Table 8 BS 8233:2014 indoor ambient noise levels for dwellings

As above, while the above guidance has limited relevance to the application in question, it provides useful context as to what acceptable internal noise levels are in an ideal situation.

4.4.3 Dog Kennel Specific Guidance

At present there is an absence of specific guidance which defines a methodology to assess the impact of noise from dog kennels. This is due to the lack of UK specific guidance, the uncertainty surrounding the applicability of BS 4142: 2014+A1:2019 to the assessment of dog barking noise.

Noise emissions from dog kennels are chiefly associated with dog vocalisations including barking, but may also include whining, howling and yelping.

Such developments create challenging and often contentious consultation work for Local Authorities due to the highly characterful nature of dog barking noise. Barking is designed to attract attention; it is highly distinguishable against background (close to source), it is unpredictable and intermittent, and consists of short bursts which last seconds but will recur repeatedly.

The issues which arise within assessment methodologies currently is that the L_{Aeq}, which is a time-integrated measure, is deemed to be of little use in predicting the annoyance impact. Effectively, the L_{Aeq} parameter does not characterise or represent the highly intermittent and impulsive nature of dog barking sound, as these are "smoothed" out over longer duration measurements. Approaches have been put forward in the past which suggest limiting the on-time of the barking to a 5 minutes in a 1-hour reference

period, but such methods can have a dramatic effect on the overall predicted noise impacts. The applicability of applying acoustic feature corrections for impulsivity, intermittency and the distinct nature of noise and the deemed source noise level are subject to recurring challenges, with acoustic experts unable to agree and concerned receptors where such proposals may impact upon their amenity objecting due to uncertainties. The aforementioned reasons are further justifications as to why BS 4142:2014+A1:2019 is not a suitable standard to assess noise associated with dog barking.

The lack of consistent approach has not gone without recognition and has been the subject of a published Article within the Institute of Acoustics Bulletin (available online[1]). However, the guidance vacuum has not been addressed.

4.4.4 ESA Comments on Suitable Assessment Criteria in the Context of the Application

With regards to this specific project and dog kennel, it is important to note that the proposal is not for a commercial dog kennel. The maximum capacity is for 5 no. dogs which are all owned by the applicant. Often, noise issues associated with dog kennels are centred around the fact that dogs are taken to an unfamiliar location and placed with other dogs whom they are not familiar with, and kennel staff whom they are not familiar with. This can result in heightened levels of excitement, anxiety, or nervousness in dogs, which in turn can result in excessive vocalisations. In this case, the dogs are familiar with their environment and the owner, therefore removing the potential excitement, anxiety, or nervousness from the equation.

It should also be noted that the bread of all of the dogs kept within the kennels would be greyhounds, which are notoriously quiet and passive dogs[2]. It is understood that greyhounds usually use body language as communication between one another rather than sound. During our visits to site, no barking was observed from the dogs when approaching the kennels. Research shows that the main reason that Greyhounds bark are as follows:

- *Getting overexcited – "They are creatures of routine and will know precisely when you're due home from work or when it's time for a walk. At these times, especially if they occur at the same time each day, you might experience a short influx of excited barking."*
- *Other dogs – "While greyhounds aren't natural barkers, they can be influenced by other dogs that are. If you have more than one dog, they can influence your greyhound, creating a barking habit."*
- *Chase Instinct – "Greyhounds have a chase instinct, meaning they'll chase rabbits, birds, cats and squirrels while you're out walking. Chasing is fun for them, which is why they love racing so much. The excitement from the activity might make them bark.*
- *Separation Anxiety – "Greyhounds are very friendly dogs and can thus suffer quite severely from separation anxiety if they're left alone for long periods. If they aren't kept occupied throughout the day or get lonely, they can start barking, which is a sign of distress. If this is the problem,*

[1] https://www.ioa.org.uk/sites/default/files/Acoustics%20Bulletin%20May-June%202016_0.pdf
[2] https://azgreyhounds.com/greyhounds-bark/

you'll typically find that those who live close to you let you know that your dog is barking during the day while you're out, even if they always seem quiet when they're with you."

Due to the nature of the unattended automated noise survey, the reasons for barking cannot be stated with any level of certainty. During the site visits, it was also noted that there were at least two other dogs owned by occupants of the Gypsy traveller site, who were free to roam around the immediate area. Therefore, it is unknown whether the dog barks measured were associated with the applicant's greyhounds or the neighbouring dogs.

Given the context of the dog kennel and the fact that the neighbouring properties also own dogs, nearby residents to the kennel would be expecting of some level of dog barking, irrespective of the kennel use. Furthermore, analysis of the noise survey data shows that only 15 events were captured during a 48-hour period, which would not be considered significant when compared to commercial boarding kennels.

Setting a target of inaudibility at the closest receptor properties would be overly onerous and unnecessary in ensuring a low likelihood of adverse impact in this case.

Based on the available guidance above, we would propose that L_{AFmax} levels from dog barking does not exceed the L_{AFmax} target level presented in WHO guidelines of 45 dB within the closest noise sensitive properties. It is the professional opinion of ESA, that given the context of the application and the area in which the sound would occur, the above noise targets would be sufficient to ensure a low likelihood of adverse impact.

5 NOISE IMPACT ASSESSMENT

5.1 Noise Criterion

Based on the guidance and discussion presented in Section 4, suitable noise criterion to ensure a low likelihood of adverse impact have been established as follows:

Acoustic Descriptor	Target	Location
L_{AFmax} Source Levels	≤ 45 dB L_{AFmax}	Inside the rooms of the closest noise sensitive properties

Table 9 Noise emissions criterion for dog kennel at the closest noise sensitive properties

5.2 Receptor Locations

Noise propagation calculations would be undertaken to all nearby noise sensitive receivers, defined as follows:

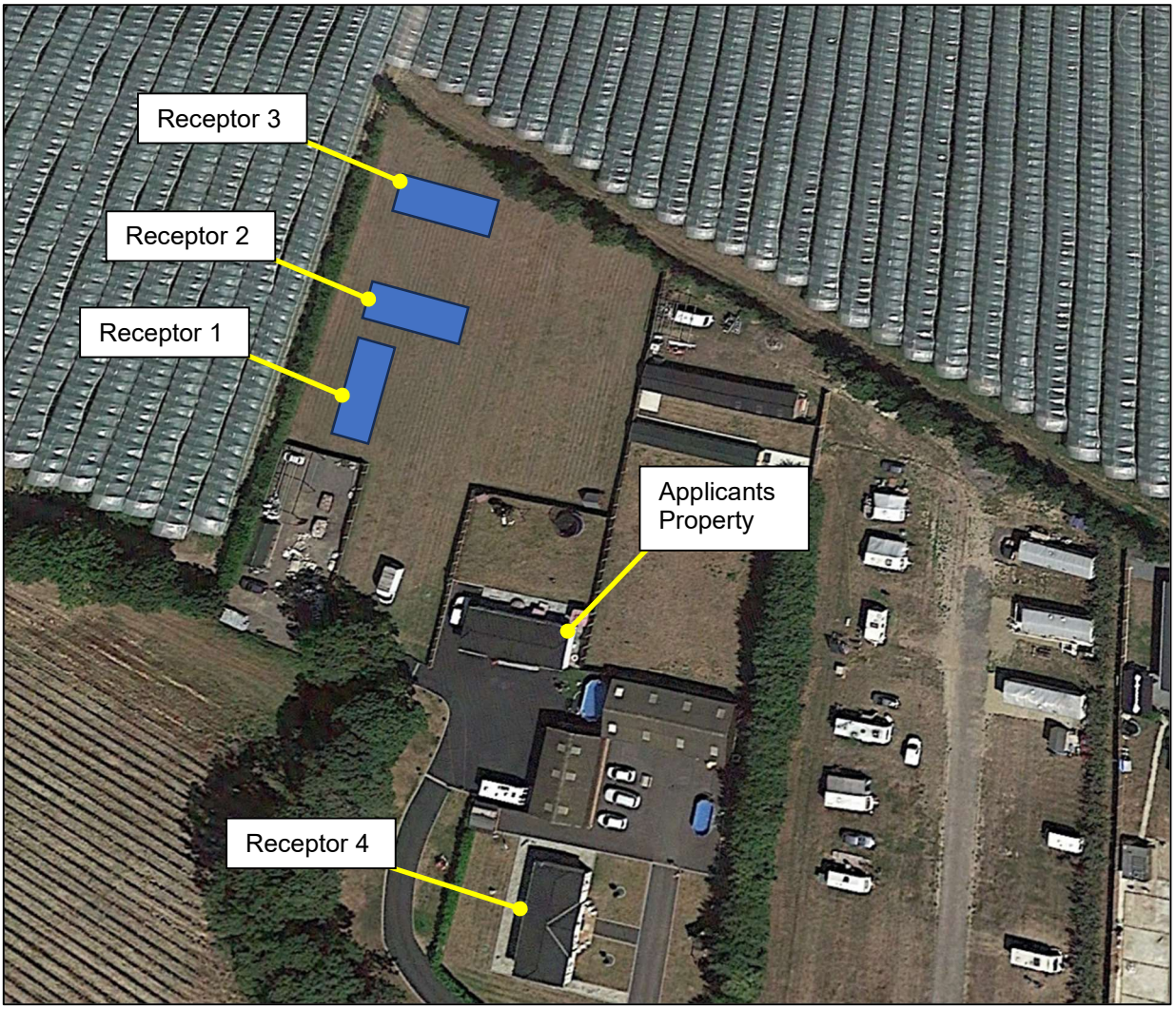


Figure 5 Closest noise sensitive receptor locations

5.3 Source Noise Levels

In order to ensure a worst-case scenario, the highest L_{AFmax} source noise levels measured during the automated survey would be used for the assessment. Levels are presented below:

Descriptor	Octave band centre frequency sound levels, Hz dB								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Worst-case L_{AFMax} levels	73	72	70	94	100	90	78	78	101

Table 10 Worst-case source sound levels of dogs barking

5.4 Predicted Noise Levels at Closest Noise Sensitive Receptor

The worst-case L_{AFmax} source noise levels have been assessed to the closest noise sensitive receptor locations, considering various factors such as attenuation over distance, surface reflections, barrier/screening effects, etc.

The table below compares the resultant sound level calculated at each the receptor against the criterion defined above. Full calculations are presented in Appendix C.

Receptor Location	Assessment Descriptor	Assessment Location	Criterion	Calculated Source Sound Level Receptor	Compliant?
1	L_{AFMax}	Inside the closest noise sensitive properties	≤ 45 dB L_{AFmax}	43	✓
2	L_{AFMax}		≤ 45 dB L_{AFmax}	35	✓
3	L_{AFMax}		≤ 45 dB L_{AFmax}	31	✓
4	L_{AFMax}		≤ 45 dB L_{AFmax}	42	✓

Table 11 Summary of the sound levels at receptor locations from dogs barking

As shown in the table above, noise emissions from dogs barking would meet the set criterion at each of the receptor locations.

It is the professional opinion of ES Acoustics Ltd that noise associated with the dog kennel proposal would result in a low likelihood of adverse impact on the surrounding residential receptors.

6 CONCLUSION

An environmental noise survey has been undertaken at Plot 2, Highlands Farm, Yalding Hill, Yalding, Kent, ME18 6AL to establish both source noise levels from the existing dog kennels on site, and background sound levels representative of the closest noise sensitive receptor location relative to the dog kennels.

National, Local and Good Practice Guidance has been reviewed, and a suitable noise criterion established to ensure a low likelihood of adverse impact from dog barking upon the nearby receptors.

Noise propagation calculations show that noise emissions from dogs barking would meet the set criterion, therefore ensuring a low likelihood of adverse impact.

No additional mitigation measures would be required to ensure the amenity of the surrounding receptors.

APPENDIX A

ACOUSTIC TERMINOLOGY

Decibel scale - dB

The decibel (dB) is a relative unit of measurement used in acoustics. The dB is a logarithmic ratio between a measured level and a reference level of 0 dB (i.e the threshold of human hearing). Simply put, the decibel compresses the wide range of sounds we hear into more manageable numbers.

Addition of noise from several sources

Sound produced by multiple sound sources are added logarithmically e.g. power ratio of 2 = 3dB, power ratio of 10 = 10dB. Therefore, two equally intense sound sources operating simultaneously produce a sound level which is 3dB higher than a single source e.g. 60dB + 60dB = 63dB.

Subjective impression of noise

Human response to sound is highly individualized and often based on psychological factors such as emotion and expectation. Sensitivity to sound typically depends on the loudness, pitch, duration of the occurrence, and time of occurrence (e.g. a sound source could cause annoyance during the night where it would not during the day). The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level	Change in perceived loudness
1 dB	Imperceptible
3 dB	Just barely perceptible
6 dB	Clearly noticeable
10 dB	About twice as loud

'A' Weighted Frequency Filter - dB(A)

The human ear is not equally sensitive in all frequencies. The A-weighting filter was devised to take this into account when undertaking noise measurements and allows a sound level meter to replicate the human ears response to sound.

$L_{Aeq, T}$

Sound can fluctuate widely over a given period. L_{Aeq} is the A-weighted equivalent continuous sound level, with T denoting the time period over which the fluctuating sound levels were averaged e.g. $L_{Aeq,16h}$ is the equivalent continuous noise level over an 16 hour period.

L_{A90}

A-weighted sound level exceeded for 90% of the measurement period, calculated via statistical analysis. The L_{A90} descriptor is typically used to establish background sound levels for noise impact assessments

L_{A10}

A-weighted sound level exceeded for 10% of the measurement period, calculated via statistical analysis.

L_{AFmax}

A-weighted sound level maximum sound pressure level that has been measured over a given time period

APPENDIX A

ACOUSTIC TERMINOLOGY

Octave Bands

The audio or frequency spectrum of the human ear is in the range of 20Hz to 20 kHz. The spectrum tells how the energy of the sound signal is distributed in frequency. Octave bands divides the audio spectrum into 10 equal parts. The International Standards Organisation defines the centre frequency of these bands as 31.5Hz, 63 Hz, 125 Hz, 250 Hz, 500 Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz.

Noise Rating (NR) Curves

A method of rating noise using a set of curves relating octave band sound pressure levels. Typically used for building services systems within offices

Airborne sound

Sound radiated from a source into the surrounding air e.g. musical instruments, tv/radio, machinery/equipment. Airborne sound insulation refers to the reduction or attenuation of airborne sound, usually via a solid partition between a source and receiver.

Impact sound

Sound resulting from the impact between colliding objects, e.g. footfall impact upon a floor. Impact sound insulation refers to the resistance of a floor to the transmission of impact sound, typically via the installation of a 'resilient layer'

Flanking sound

The transmission of airborne sound between two adjacent rooms by paths other than via the separating partition between the rooms, e.g. the abutment point of a wall and floor.

Structure-borne noise

Noise caused by the vibration of elements of a structure. This can result in reradiated noise, whereby the vibrating element transmits airborne sound into a space e.g. vibration caused by mechanical plant installed within a plant room which is not adequately isolated from the structure, or construction/demolition work in an adjacent building.

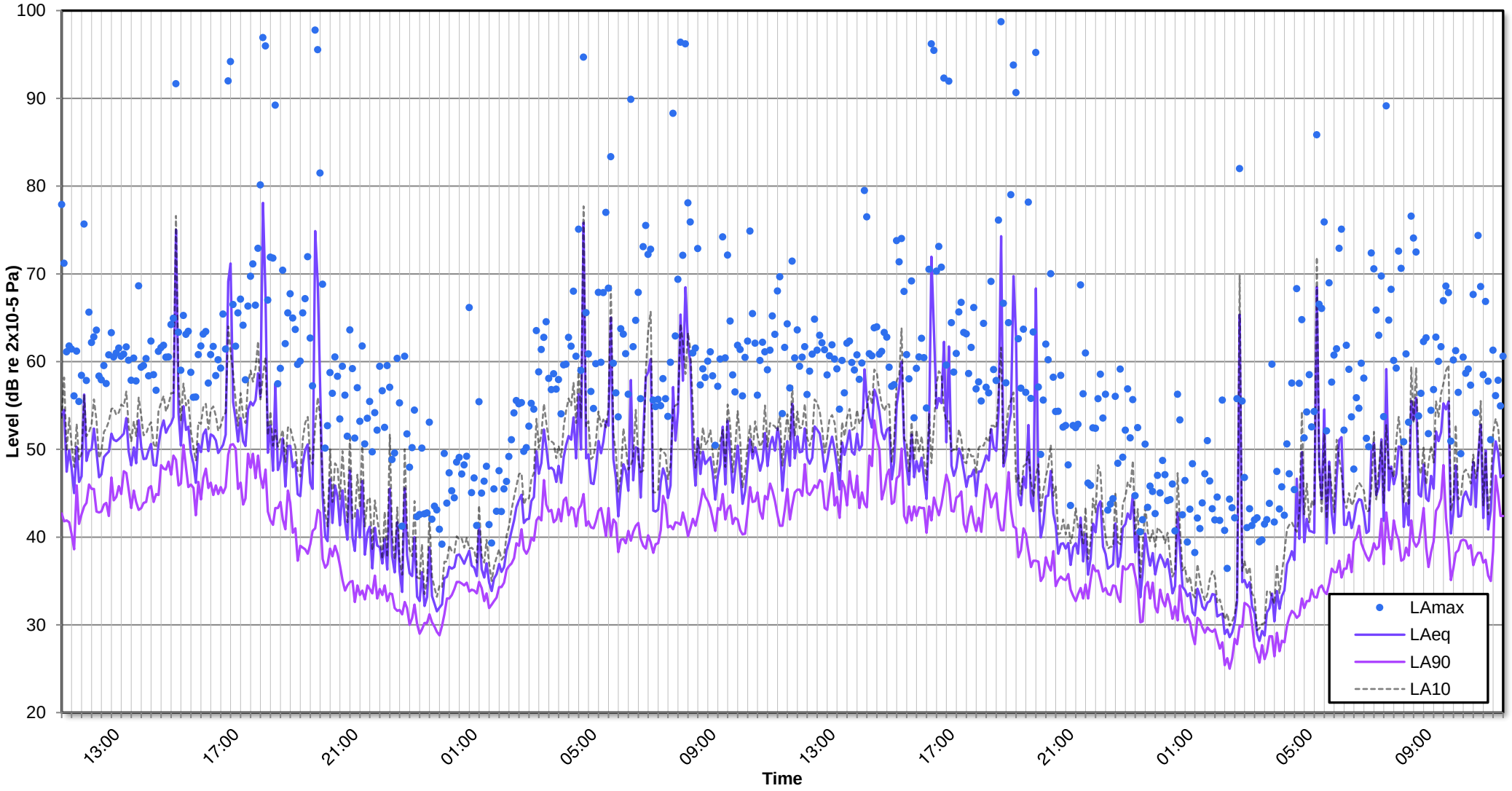
Reverberant sound

Sound in an enclosed space (usually a room), which results from repeated reflections at the boundaries. Reverberation time is the time taken for a steady sound level in an enclosed space to decay by 60dB, measured from the moment the sound source is switched off. A example of a typically reverberant space would be a classic church. Absorptive materials can be used to reduce reflections and reverberation times.

APPENDIX B

ENVIRONMENTAL NOISE TIME HISTORY

20480.NIA-RPT.01
11:25 on 10th July to 11:45 on 12th July 2023



APPENDIX C
KENNEL NOISE EMISSIONS CALCULATIONS

Receiver 1	Frequency, Hz 63	125	250	500	1k	2k	4k	8k	dB(A)
Source Sound Level, dB	73	72	70	94	100	90	78	78	101
Attenuation over distance (25m), dB	-28	-28	-28	-28	-28	-28	-28	-28	
Barrier/screening loss, dB	-8	-10	-13	-16	-19	-22	-25	-27	
Façade reflection, dB	3	3	3	3	3	3	3	3	
Attenuation provided by a partially open window, dB	-19.7	-13.7	-17.1	-14.9	-13.9	-18.7	-21.5	-15.0	
Total L_{AFmax} Noise Level Within Receptor 1 Property, dB	**20**	**23**	**15**	**39**	**42**	**24**	**7**	**11**	**43**

Receiver 2	Frequency, Hz 63	125	250	500	1k	2k	4k	8k	dB(A)
Source Sound Level, dB	73	72	70	94	100	90	78	78	101
Attenuation over distance (45m), dB	-33	-33	-33	-33	-33	-33	-33	-33	
Barrier/screening loss, dB	-11	-13	-16	-19	-22	-25	-28	-31	
Façade reflection, dB	3	3	3	3	3	3	3	3	
Attenuation provided by a partially open window, dB	-19.7	-13.7	-17.1	-14.9	-13.9	-18.7	-21.5	-15.0	
Total L_{AFmax} Noise Level Within Receptor 2 Property, dB	**13**	**14**	**7**	**30**	**34**	**16**	**-2**	**2**	**35**

Receiver 3	Frequency, Hz 63	125	250	500	1k	2k	4k	8k	dB(A)
Source Sound Level, dB	73	72	70	94	100	90	78	78	101
Attenuation over distance (70m), dB	-37	-37	-37	-37	-37	-37	-37	-37	
Barrier/screening loss, dB	-11	-13	-16	-19	-22	-25	-28	-31	
Façade reflection, dB	3	3	3	3	3	3	3	3	
Attenuation provided by a partially open window, dB	-19.7	-13.7	-17.1	-14.9	-13.9	-18.7	-21.5	-15.0	
Total L_{AFmax} Noise Level Within Receptor 3 Property, dB	**9**	**11**	**3**	**26**	**30**	**12**	**-6**	**-2**	**31**

Receiver 4	Frequency, Hz 63	125	250	500	1k	2k	4k	8k	dB(A)
Source Sound Level, dB	73	72	70	94	100	90	78	78	101
Attenuation over distance (65m), dB	-36	-36	-36	-36	-36	-36	-36	-36	
Barrier/screening loss, dB	-6	-6	-8	-9	-11	-14	-17	-19	
Façade reflection, dB	3	3	3	3	3	3	3	3	
Attenuation provided by a partially open window, dB	-19.7	-13.7	-17.1	-14.9	-13.9	-18.7	-21.5	-15.0	
Total L_{AFmax} Noise Level Within Receptor 4 Property, dB	**15**	**18**	**12**	**37**	**41**	**24**	**6**	**11**	**42**

Notes:
Note 1: No directivity corrections have been applied. Note that Receivers 1-3 would benefit from additional directivity loss between source and receiver locations.
Note 2: Attenuation provided by a partially open window taken from research conducted by The Building Performance Centre titled "NANR116: 'Open/Closed Window Research - Sound Insulation Through Ventilated Domestic Windows (https://www.napier.ac.uk/~/media/worktribe/output-239387/no010768134frppdf.pdf). The research assesses the performance of various window types while partially to determine the sound attenuation provided. The type of window that would be considered representative of the windows of the mobile homes would be Type A-3 or Type E, shown below:

A-3 Window A, top hung outward opening casements

E Window E, top hung outward opening (PVC-U)

D_{ne} results have been derived in the research for the windows types being open varying amounts. Considering the widest opening tested, window Type A-3 results in a D_{neW} of 17dB while window Type E results in a D_{neW} of 18dB. Therefore, the values used in the table above are from the worst-case window Type A-3 with the window open to the largest degree to ensure a worst-case scenario