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Environmental Noise Assessment revision a.

Date: 27th September 2023.

Site Address: Harefield Grove, Rickmansworth Road.

Planning Reference Number: 28301/APP/2023/1772.

Project Sound Consultant	Report Compiled By
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Acoustic Consultant	Senior Surveyor

1. Summary

1.1. Proposal

Change of use of chicken sheds for use as a dog training centre (Retrospective application).

1.2. Reason for Assessment

The local planning authority have requested a noise assessment due to the site being within proximity of a new housing development granted planning permission reference: LPA: 28301/APP/2013/3104. And a further application for housing development which is under consideration: 28301/APP/2022/2205. An objection was received by the planning department on behalf of the developer and submitted by Nia Powis of Savills. Nia Powis specifies in her objection letter:

'The submitted information does not disclose where the dogs will be kept at night. If they are to being kept on site this is likely to cause disturbance outside of these hours which will not be pleasant for neighbours, especially as they will need to be exercised outdoors in the evenings'.

The applicants have confirmed and stated that no dogs are kept on site at night and as such no training or exercise of the dogs will take place outside the specified hours of trading as stated. It must also be noted that the application is for a dog training centre not for a kennels or for animal boarding. Therefore no sound testing was carried out at night time.

1.3. Site aerial view.

The site is located in a semi-rural area, on an existing mixed-use site also comprising a Steel fabricators.

It should be noted that in general use, dogs in such a setting are accustomed to their environment, and for their welfare and obvious business sense reasons, they are well cared for and treated. As such, they are settled, and the degree of barking is minimised. This is unlike a dog rescue home or boarding kennels, where the animals are much more likely to be in an unfamiliar environment, and in a state of stress, and thus bark.

1.4. Planning Conditions & Criteria

For desirable internal and external noise levels to be maintained, given in BS8233:2019 as:

- 35dB LAeq within living rooms (07:00 – 23:00)
- 30dB LAeq within bedrooms (23:00 – 07:00)
- 45dB LAmax should not be regularly exceeded within bedrooms (23:00 – 07:00)
- <55dB LAeq,16hr within external amenity spaces

1.5. Assessment Standards & Justification

'BS8233:2019 – Guidance on sound insulation and noise reduction for buildings' is a recognised standard for noise sensitive developments.

The standard gives a rigorous calculation method for determining interior noise levels based on measured environmental noise levels and typical façade specifications.

'WHO Guidelines for Community Noise, 1999' gives recommended internal noise level and gives comment on guideline noise levels based on annoyance, speech ineligibility, disturbance of information extraction, sleep disturbance and hearing impairment. 'BS EN 12354-3:2000 – Estimation of acoustic performance in buildings from the performance of elements. Airborne sound insulation against outdoor sound' allows internal noise levels to be derived from point sources situated externally from the building façade. The noise emitting from the Dog Training Centre would emanate from a point source.

1.6. Measurements

In order to assess noise emissions, attended noise measurements were undertaken over a 3-hour daytime period on 25th September 2023 between 13:31-16:21. Cottage house (Residential Dwelling) was used as a reference point as this is the closest property to the training field.

Noise Measurement Summary

Measurement	Date	Period	LAeq (dB)	LAFmax (dB)
M1	25th September 2023	Day (3hr)	**55.8**	**77.3**

1.7. Noise Assessment Outcome

It is determined that by using the mitigation as specified below for the building façade at Cottage House, the outcome summarised in the following table is achieved. This is based on the assumption that all windows are closed and auxiliary methods of ventilation are used: **Internal Space**	**Noise Parameter**	**Internal Noise Level**	**Within Desired Criteria**
Living Room	Daytime $L_{Aeq,16hr}$	27.7	**Yes**
Bedroom	Daytime $L_{Aeq,8hr}$	19.9	**Yes**
External Space	**Noise Parameter**	**External Noise Level**	**Within Desired Criteria**
Amenity Space	Daytime $L_{Aeq,16hr}$	47.0	**Yes**

1.7.1. Assumed Façade Specifications

Living Rooms and Bedrooms – 4/12/4mm glazing and hit & miss trickle ventilators.

2. Environmental Noise Survey

2.1. Source Under Investigation

Primary noise sources identified onsite were from dogs barking whilst out on the training field. Secondary noise sources were from birdsong and light aircraft.

3.1. Measurement location

Noise levels were measured at the Northern extent of the training field, as close as possible to Orchard House.

3.2. Weather Conditions

Weather conditions were deemed acceptable for environmental noise measurements; detailed weather conditions are given in Appendix C.

3.3. Measurement Equipment

Measurement equipment used complies with accuracy requirements for common environmental noise measurement standards. A detailed equipment list is given in Appendix B with calibration information in Appendix D.

3.4. Measurement Results

The results from the measurement intervals are summarised in the tables below. Full measurement details and information can be found in Appendix E.

3.4.1. Measurement Results

Measurements were taken in September. Assuming the worst-case scenario of the training field having the capacity to double the number of dogs during peak months a 3dB penalty correction can be applied to all noise levels measured.
Results of measurements are as follows:

Measured Noise Levels 25th September 2023 $L_{Aeq, T}$ (dB)		L_{AFmax} (dB)
Daytime (M1)	55.8	77.3
Capacity Correction (M1)	58.8	80.3

4. BS8233:2019 Noise Assessment

4.1. Criteria

The target outcome for the assessment is for desirable internal and external noise levels to be maintained, given in BS8233:2019 as:

- 35dB LAeq within living rooms (07:00 – 23:00)
- 30dB LAeq within bedrooms (23:00 – 07:00)
- 45dB LAmax should not be regularly exceeded within living rooms (23:00 – 07:00)
- <55dB LAeq,16hr within external amenity spaces

4.2. External Noise Analysis

Measured noise levels are shown graphically in **Appendix E.**

4.4. Internal Noise Levels – Assumed Insulation

Internal noise levels have been calculated in order to demonstrate that the proposed development can achieve suitable internal noise levels inside rooms, when appropriate glazing and ventilation systems are used.

In order to describe the likely internal exposure to environmental noise at the site, suggested data was used from BS8233:2019 on standard construction. This will include all elements of the exposed living room and bedroom façades closest to the noise sources.

A summary of assumed construction details is provided within **Appendix F.**

4.5. Daytime Internal Noise Levels

Considering insulation with the addition of 4/12/4mm glazing and hit & miss trickle ventilation, daytime environmental noise would be reduced from 58.8 dB LAeq, 3hr to interior levels of **27.7 dB LAeq, 16hr**.

The desirable limit of BS8233:2019 suggests a guideline of 35dB LAeq, 16hr for resting conditions, and up to 40dB considered acceptable for necessary developments.

The assumed standard of construction would place the internal levels in living rooms as below 35dB LAeq, 16hr, therefore within the desirable criteria.

4.6. Maximum internal Noise Levels

Internal noise levels will be calculated in accordance with BS EN 12354:-3:2000 based on measured maxima.
Calculations of internal maxima levels are calculated within the sound insulation modelling software InsulTM (Marshall Day Acoustics) see **Appendix H** for full details (note: calculated room sound level is subject to a +3dB capacity correction).
The measured maxima (dogs barking) are line source distance corrected (line source is used to take into account a worst case scenario) to the nearest proposed residential façade 90m (Distance calculated from Orchard House from measurement equipment) away by a factor of 10*log(90/6) = 11.8dB.

Considering the insulation with the addition of 4/12/4mm glazing and hit & miss trickle ventilators, daytime maximum individual noise events due to dogs barking will be reduced from 68.5 dB LAfmax to **28.5dB LAfmax**

The desirable limit of BS8233:2019 suggests Individual noise events (Measured with fast time-weighted Maximum) should not normally exceed 45dB LAFmax (as in BS8233:1999).

The above standard of construction would place internal maximum noise level as below 45dB LAFmax, therefore in the desirable category when considering both daytime and night-time maxima.

4.7. Assessment of Internal Noise Impact

4.7.1. Impact of dog barking intermittency

Due to the cyclic nature of measurements resulting from dogs barking intermittently calculations are made for a noise break-in during periods where the dogs are quiet. This will be compared to the break-in due to dog noise levels in attempt to assess the impact of intermittent dog barking.

4.8. Effect of Open Windows

BS8233:2019 states that a 15dB attenuation can be applied to measured noise levels to represent internal noise levels when windows are open, however this is assuming road traffic noise also. The attenuation due to road traffic noise is based upon the assumption that the noise is emanating from a line source, in the case of this report the noise emanating from dogs barking is more likely to have a more severe impact on susceptibility, therefore a 12dB attenuation is assumed.

The following table shows the levels internal noise will be when windows are open: **Open Window Corrected Measurements**	**Difference from BS8233 criteria**
Day, dB LAeq	35.0	0

The following table shows the difference in noise levels from periods where dogs are barking to periods to where they are quiet. Calculations are made assuming all windows are shut: **Overall Internal Noise Levels 90m from training field.**	**Internal Noise Level when dogs quiet**	**Difference**
Day, dB LAeq	15.9	16.0	-0.1

4.9. External Amenity Space Noise Levels

BS8233:2019 provides a desirable guideline of 50dB LAeq,16hr for external amenity spaces and an acceptable guideline of 55dB LAeq,16hr.
External noise levels were measured as **58.8 dB LAeq,16hr**. This is distance corrected to the nearest external amenity space using line source distance correction as in section 4.7 (10*log(90/6) = 11.8dB) resulting in a daytime noise level of **47.0dB, 3.0dB** within the desirable criteria.

5. BS8233:2019 Effect Level and Exposure Outcomes

A summary of internal noise levels and their respective BS8233 classifications can be found below: **Internal Space**	**Noise Parameter**	**Internal Noise Level**	**BS8233 Classification**
Living Room	Daytime $L_{Aeq,\ 16hr}$	27.7	'Desirable'
External Space	**Noise Parameter**	**External Noise Level**	**BS8233 Classification**
Amenity Area	Daytime $L_{Aeq,\ 16hr}$	47.0	'Desirable

APPENDIX A - Measurement Details

Measurement	Kit	Start Date	Start Time	End Date	End Time
M1	A3	25/09/23	13:31	25/09/23	16:21

APPENDIX B - Equipment Details

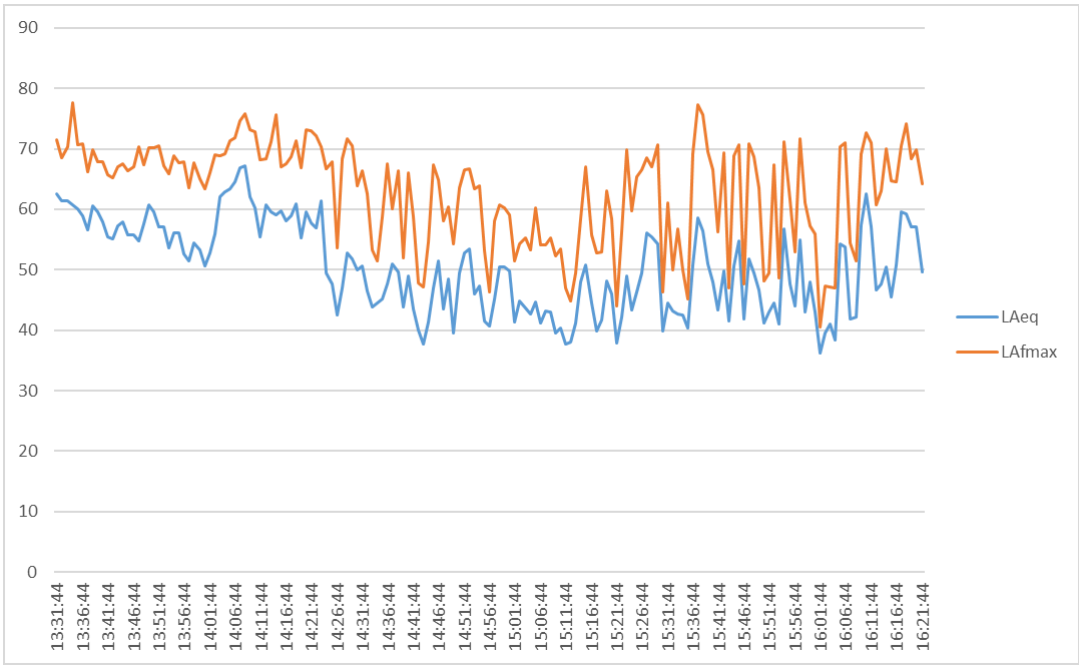
Kit	Equipment	Make	Model	Class	Serial Number
A3	Sound Meter	Svantek	958	1	40305
A3	Pre-Amp	Svantek	SV12L	1	41651
A3	Calibrator	Svantek	SV31	1	32507

APPENDIX C - Meteorology Details						
Measurement	Temp C	Wind Speed m/s	Wind Direction	Humidity %	Precipitation mm	Cloud Cover (Oktas)
M1	14	4.8	ENE	58	0.0	2/8

APPENDIX D - Calibration Details					
Measurement	Calibrator Ref Level (dB)	Level Before (dB)	Deviation Before (dB)	Level After (dB)	Deviation After (dB)
M1	114.0	113.53	0.47	113.44	0.56

APPENDIX E – Noise Survey Results

Day-time environmental noise measurements, 25th September 2023.



APPENDIX F – Assumed Construction Details

Values are given according to two key areas covered by BS8233:2019, which are listed as the following:

- Living rooms between hours of 07:00 and 23:00;

For the purposes of this assessment, daytime levels are assessed in living room spaces. Typical room sizes are taken from BS8233 as:

- Living room 5m x 4m x 2.4m

The building envelope is assumed as having standard construction, with façade materials and elements, such as:

- External wall, concrete block & brickwork leaves with >75mm cavity
- Pitched roof with mineral wool and plaster ceiling
- Hit & Miss Trickle Ventilators
- 4/12/4mm double glazing

The following are Sound Reduction Indices of the specifications identified previously:

Sound Reduction Index of the external wall, dB (R_w) **Frequency Band (Hz)**	**125**	**250**	**500**	**1000**	**2000**
R_w of External wall	41	45	45	54	58

This report determines values based on the assumption that ventilation is **NOT from open windows**, but from auxiliary methods of external ventilation. Summary calculations are made following the BS8233:2019 Rigorous Design Calculation shown in **Appendix G**.

APPENDIX G – Attenuation Calculation Sheets

BS8233 Rigorous Design Calculation – Internal Daytime Noise 125	250	500	1000	2000
Leq1	50.3	46.6	57.7	55.7	48.3
Dne	34	27	37	35	34
Rwi	24	20	25	34	37
Rew	41	45	45	54	58
Rrr	27	37	43	48	52
A	16	16	16	16	16

Sf	9.6	S	10
Sw1	1.8	A0	10
Sew		7.8	
Srr		20.0	

6). Noise Mitigation/Reduction.

The following measures in combination may be considered:
 A reasonable separation distance to receptors thereby reducing the resultant noise level of barking;
 A layout which limits the disturbance/agitation of the dogs and which uses barriers and shielding to minimise impacts upon nearby receptors; and
 Excellent management practices to ensure the minimal barking during, arrival, feeding, exercise and pick-up times.

Noise Management Plan

A noise management plan has been produced by the applicant and approved by Hillingdon Council Licensing team – A 5 Star rated licence has been approved for the applicant and the dog training centre.

Details which are included in the plan:

a). Capacity for animals/ maximum number of dogs.

b). Operational Arrangements/Noise Control Measures: including times for feeding, exercise locations for external activity/walking.

c). A complaint response system.

d). Control Measures Included in the Management Plan are:

e). Design and layout must mitigate noise where dogs are kept outside or have free access to outside areas during daytime hours.

f). Consideration of areas for the walking of dogs as part of the training activity, should be demonstrated as having effective management measures in place to negate adverse noise impacts.

g). Depending on context/ site location it may be acceptable to include 2 periods no longer than 30 minutes each where the noise level between 08:00hrs and 17.00hrs may exceed the background sound level. This may be suitable to accommodate feeding times or other such activity.