
MS JAYNE THOMAS

NOISE IMPACT ASSESSMENT REPORT

**DOG DAYCARE: TAN Y GRAIG ISSA, TY BIRTH LANE,
MINERA LL11 3DW**

Client: Ms Jayne Thomas

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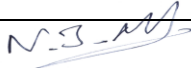
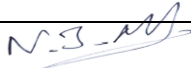
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P7097-R1-V1	26/02/2024	M.J. Malone, AMIOA	N. J. Malone, MIOA
			
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1 INTRODUCTION

1.1.1 By instruction from Ms Jayne Thomas, ('the client'), NoiseAir was commissioned to undertake a noise impact assessment (NIA) for a proposed dog daycare facility, to be located at Tan y Graig Issa, Ty Birth Lane, Minera LL11 3DW, herein referred to as the 'development site'.

1.1.2 This noise report has been prepared in support of a planning application and assesses the results of a noise survey carried out in accordance with current guidance and includes recommendations and mitigation as appropriate.

1.2 Site Description

1.2.1 At the time of writing, the development site is located on the South side of Ty Birth Lane, Minera. The development site is located in a predominantly rural / agricultural area with the closest, non-incidental, noise sensitive receptors (NSRs) located approx. 30 m southeast, 50 m northwest and 75 m southwest of the proposed dog daycare facility closest boundary. Residential receptors in all other directions from the development site are located in excess of 230 m.

1.2.2 It is noted that there are two additional residential receptors located immediately north/northwest of the development site. The aforementioned properties are owned and lived in by Mr S Hughes and Mrs D Hughes. It has been advised by the client both parties are in support of the proposals. While on site Mrs D Hughes also intimated this directly to NoiseAir staff.

1.2.3 **Figure 1** shows an aerial photograph of the development site with respect to the local area and its context.

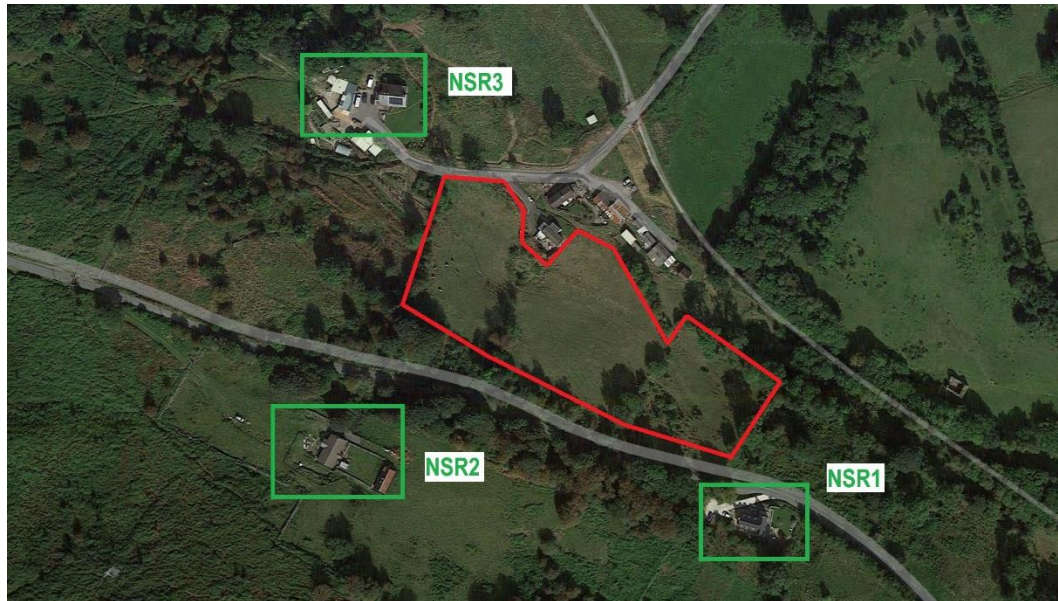


Figure 1: Site aerial photograph and NSR locations.

- 1.2.4 While it is noted that the boundary of the dog daycare facility extends across the grounds and in relative close proximity to the NSRs, most of the use of the site is to be within the central area.

1.3 Development Proposals

- 1.3.1 At the time of writing, proposals provided to NoiseAir detail the change of land use to allow the land to be used as a dog daycare facility.
- 1.3.2 The facility will be open Monday to Friday only. Clients will drop off and pick up their dogs at a purpose constructed/ converted building. The building has been designed to allow clients to take their dogs into to a meet and greet area which is within the building and therefore any noise from dogs barking can be contained and minimised.
- 1.3.3 The business will operate a collection and drop-off service, where a member of staff will collect and drop-off of dogs direct from the clients' homes. The vehicle will use existing vehicular access to the land.
- 1.3.4 The business will offer the following services for up to a maximum of 20 dogs.
- Collection of dogs from clients' homes, dog arrive at the development site at approx. 09:00.
 - Indoor and outdoor supervised play, stimulation, and walk intermittently throughout the morning and early afternoon.
 - Dogs are dropped off back home leaving the development site at approximately 14:00 hours.

2 ASSESSMENT METHODOLOGY AND SCOPE OF WORKS

2.1 Planning Guidance and Noise

2.1.1 This acoustic report has been prepared in support of a proposed planning application and therefore it is considered that reference should be made to the appropriate planning guidance documentation, specifically:

- Planning Policy Wales – Edition 10 (PPW), 2018; and,
- Planning Guidance (Wales) – Technical Advice Note 11 - Noise (TAN11), 1997.

2.1.2 A summary of the relevant planning documentation and its relevance with respect to noise is provided below.

2.2 Planning Policy Wales [PPW 2018]

2.2.1 Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

2.2.2 The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

2.2.3 Section 6.7 of the PPW outlines planning policy with respect to Air Quality and Noise. PPW outlines that the planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

2.2.4 PPW also aligns with the agent of change principle which says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air

quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable.

2.2.5 In proposing new development, planning authorities and developers must, therefore:

- address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors
- not create areas of poor air quality or inappropriate soundscape; and
- seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes.

2.2.6 Furthermore, PPW states that the potential impacts of noise pollution arising from existing development (be this commercial, industrial, transport related or cultural venues i.e. music venues, theatres or arts centres), must be fully considered to ensure the effects on new development can be adequately controlled to safeguard amenity. Any necessary measures and controls should be incorporated as part of the proposed new development. This will help to prevent the risk of restrictions or possible closure of existing premises or adverse impacts on transport infrastructure due to noise and other complaints from occupiers of new developments. It will be important that the most appropriate level of information is provided and assessment undertaken.

2.3 Technical Advice Note (Wales) - Noise [TAN 11 1997]

2.3.1 TAN 11 was introduced in 1997 and sets out guidance on the assessment of noise in Wales. It should be noted however that this document is currently under review.

2.3.2 TAN 11 sets out a series of Noise Exposure Categories (NECs) which have been derived to assist local planning authorities in their consideration of planning applications for residential development near transport related noise sources. The NECs are set out in Annex A of TAN 11.

2.3.3 Measures introduced to control the source of, or limit exposure to, noise should be proportionate and reasonable, and may include:

- engineering: reduction of noise at point of generation (e.g. using quiet machines and/or quiet methods of working); containment of noise generated (e.g. insulating buildings which house machinery and/or providing purpose-built barriers around

sites); protection of surrounding noise-sensitive buildings (e.g. improving sound insulation in these buildings and/or screening them by purpose-built barriers);

- layout: adequate distance between noise source and noise-sensitive building or area; screening by natural barriers, other buildings, or non-critical rooms in a building;
- administrative: limiting operating time of noise source; restricting activities allowed on the site; specifying an acceptable noise limit.

2.3.4 Annex B of TAN 11 outlines guidance of assessment of noise from different sources. When considering noise from industrial and commercial developments TAN 11 outlines the following guidance.

2.3.5 The likelihood of complaints about noise from industrial development can be assessed, where the Standard is appropriate, using guidance in BS 4142: 1990. Tonal or impulsive characteristics of the noise are likely to increase the scope for complaints and this is taken into account by the "rating level" defined in BS 4142. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. The Standard states that, 'A difference of around 10 dB or higher indicates that complaints are likely. A difference of around 5 dB is of marginal significance'. Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable noise levels within buildings can be found in BS 8233:1987

2.3.6 It should be noted that the British standard documents referenced in TAN 11 have been superseded, specifically BS4142 the latest main issue being in 2014, BS4142:2014 is therefore considered the appropriate assessment document for assessment of noise from commercial and industrial sites.

2.4 Methodology and Scope of Works

2.4.1 It is considered that a detailed NIA is required to assess the likely impacts of the proposed dog daycare centre with respect to the existing residential receptors in the locality of the development site. The NIA presented in this report is based on site specific data collected at

the development site and assesses the likely impacts of the proposals with respect to the closest noise sensitive receptors.

2.5 Assessment Criteria

- 2.5.1 In order to achieve noise levels which are considered to be in alignment with the planning approaches and policies discussed in Section 2.1 it is considered that all efforts are made to ensure that existing residents are unlikely to be exposed to noise levels which might breach the acceptable planning criteria.
- 2.5.2 It should be noted however that planning guidance does not preclude development where some elevated noise levels are likely to be experienced in certain circumstances as long as reasonable efforts are made to mitigate and reduce such an effect.
- 2.5.3 As the NIA is to consider the potential effect of noise breakout from the proposed dog daycare centre with respect to the existing residential receptors, it is considered that the NIA should be undertaken in accordance with the South Holland District Council Supplementary Planning Guidance – Location of Premises for the Boarding and Breeding of Dogs and Other Animals (1999), a summary of which is provided below.

2.6 South Holland District Council Supplementary Planning Guidance – Location of Premises for the Boarding and Breeding of Dogs and Other Animals (1999)

- 2.6.1 SPG-LPBBD provides a method for assessing sound from proposed dog boarding and breeding premises along with other animals also, it also provides a means of assessing the suitability of new proposals for noise sensitive uses (e.g. new housing) in the vicinity of boarding and breeding premises.
- 2.6.2 There is no specific guidance nor recommended noise level standards relating to animal boarding or breeding establishments. In the absence of these, reliance must be placed upon proven methods of measurement and assessment published elsewhere.
- 2.6.3 In general, a noise is liable to provoke complaints whenever it exceeds the background noise by a certain margin or when it attains a certain absolute level. Noise levels at or below the existing background level are unlikely to give rise to complaints.
- 2.6.4 This fundamental acoustic principle underpins the guidance contained in the most relevant noise control documents, BS4142:2014 and BS5228: Part 1 2009. The methodology set out in SPG-LPBBD is based on these aforementioned documents.
- 2.6.5 Operational experience shows that the distance between an animal boarding / breeding establishment and noise sensitive locations is key to the incidence of complaints. The distance

required will depend upon specific circumstances of the individual case, particularly the background sound level which exists. SPG-LPBBD provides the procedure by which one can assess whether there is an adequate separation distance for a particular proposal. It provides safeguards to this particular type of commercial operation in any given location and at the same time ensures reasonable protection to nearby noise sensitive premises.

2.6.6 SPG-LPBBD provides an assessment procedure which takes into accounts the following influences on noise impact at the receptor location:

- The background sound level at the receptor location;
- Specific factors about the location of the proposal including the types of ground and any screening between the noise source and noise sensitive receptors in the vicinity;
- The influence of prevailing wind on noise impact; and,
- Where there are already boarding and breeding establishments within the vicinity of the proposed premises and noise sensitive locations then the cumulative noise impact.

3 ACOUSTIC SURVEY

3.1 Acoustic Survey Details

- 3.1.1 NoiseAir carried out fixed position primarily unattended noise monitoring on the dates ranging from 30th January to 1st February 2024 at the development site.
- 3.1.2 Noise monitoring was undertaken at one monitoring location (ML1). The noise monitoring location (ML1) is shown in **Figure 2** and **Table 1** below.

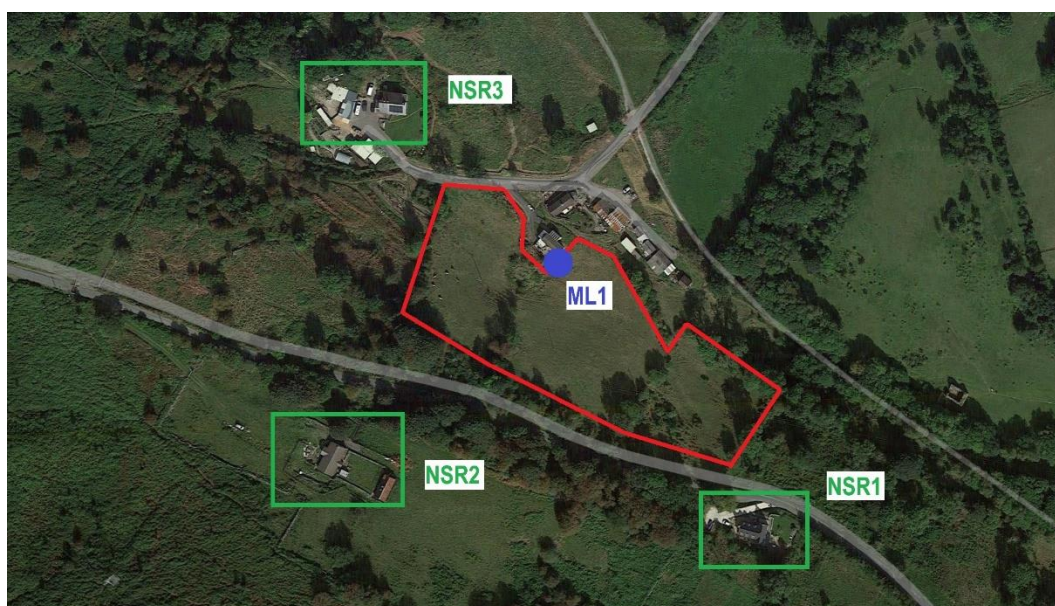


Figure 2: Noise monitoring locations.

Table 1: Summary of Noise Monitoring Locations				
Monitor Location Number	Location Description	Time Period Monitored		Attended or Unattended Monitoring
		Start	End	
ML1	At the boundary of the central area of the development site. The sound level meter microphone was mounted to an existing telegraph pole.	11:15 30/01/24	09:45 01/02/24	Unattended

- 3.1.3 The monitor location was positioned to be representative of the background noise levels in the locality when there were no dogs at the development site and representative of ambient noise levels when the dogs were at the development site.
- 3.1.4 The noise measurements were made using a Class 1, integrating sound level meter (SLM).
- 3.1.5 The microphone at ML1 was mounted on a telegraph pole, at an approximate height of 2.0 m from ground level.

3.1.6 The acoustic equipment was calibrated to comply with Section 4.2 of BS7445-1:2003¹ before and after the noise monitoring periods.

3.1.7 Details of the SLM and associated field calibration can be found in **Table 2** below;

Table 2: Summary of SLM used for survey and associated field calibration						
SLM (Serial Number)	Preamp (Serial Number)	Microphone (Serial Number)	Calibrator (Serial Number)	Start Calibration	End Calibration	Drift
NOR140 (1402826)	NOR1209 (15455)	NOR1225 (168289)	SVAN SV30A (10818)	-25.3 dB	-25.3 dB	0.0 dB

3.1.8 The weather conditions were noted to be as outlined in **Table 3** during the site visits at the start and end of the monitoring periods.

Table 3: Summary of weather conditions noted at the start and end of the monitoring duration.		
	30 th January 2024	1 st February 2024
Roads (Wet / Dry)	Dry	Dry
Temperature (°C)	5	4
Wind speed (ms ⁻¹)	Up to 5 NW	Up to 2.1 W
Cloud Cover (Approx. %)	40	70
Humidity (%)	83	86

3.1.9 The weather conditions remained approximately consistent over the duration of the noise survey with typical temperature fluctuations over night and daytime hours.

3.1.10 A-weighted² L_{eq}³ noise levels were measured to comply with the requirements of SPG-LPBBD. A-weighted L₉₀⁴ and L_{AMax}⁵ were also measured to provide additional information. The measured noise levels are set out in full in Appendix B.

3.1.11 Data is shown in **Figure 3** detailing a level vs. time graph of the recorded L_{AMax}, L_{Aeq} and L_{A90} sound level over 15-minute time periods for ML1 for over the entire measurement period.

¹ BS7445-2003 "Description and measurement of environmental noise – Part 1: Guide to quantities and procedures.

² An electronic filter in a sound level meter which mimics the human ear's response to sounds at different frequencies under defined conditions.

³ Equivalent continuous noise level; the steady sound pressure which contains an equivalent quantity of sound energy as the time-varying sound pressure levels.

⁴ The noise level which is exceeded for 90% of the measurement period.

⁵ The instantaneous maximum noise level recorded for a measurement period.

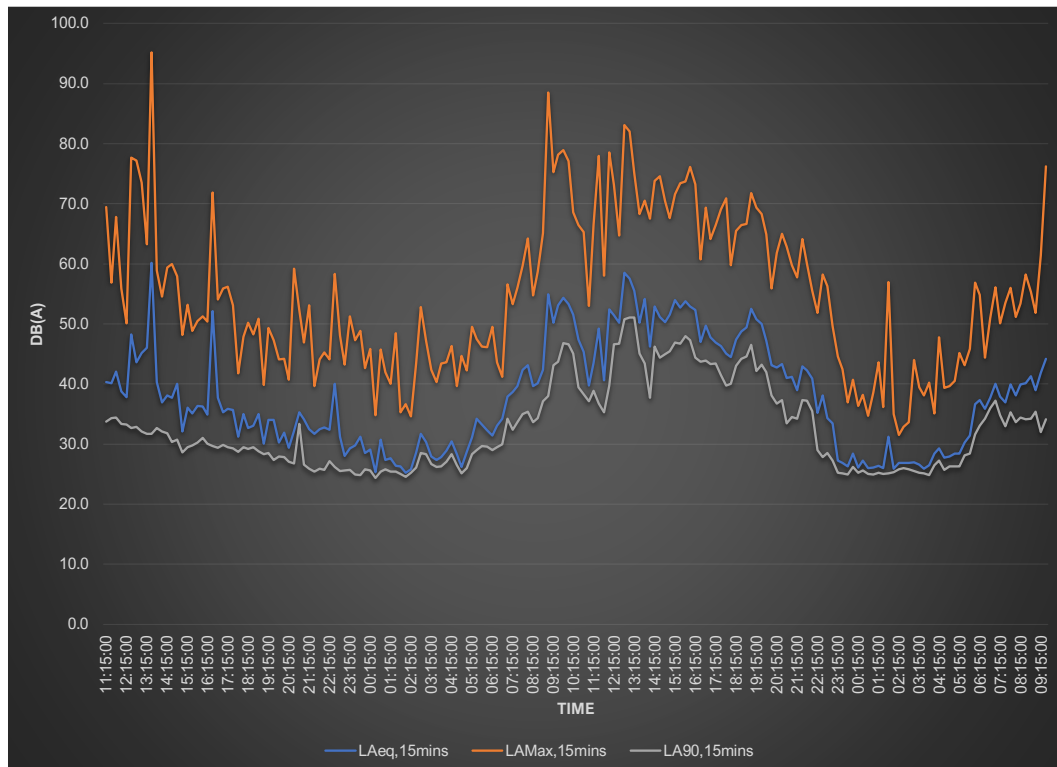


Figure 3: Level vs. time graph showing L_{Amax} , L_{Aeq} and L_{A90} sound levels – ML.

3.2 Background Sound Levels (15:00 to 18:00 hours)

- 3.2.1 Data analyses has been performed on the background sound levels in order to determine typical values required for the NIA. A histogram showing the distribution of existing $L_{A90,15mins}$ sound levels for the dog daycare facility is presented in **Figure 4** for ML1. The background dataset has been restricted to the measurements between 15:00 hours and 18:00 hours as there were no dogs at the development site during these hours and it is considered that measurement are typical of normal daytime noise levels.

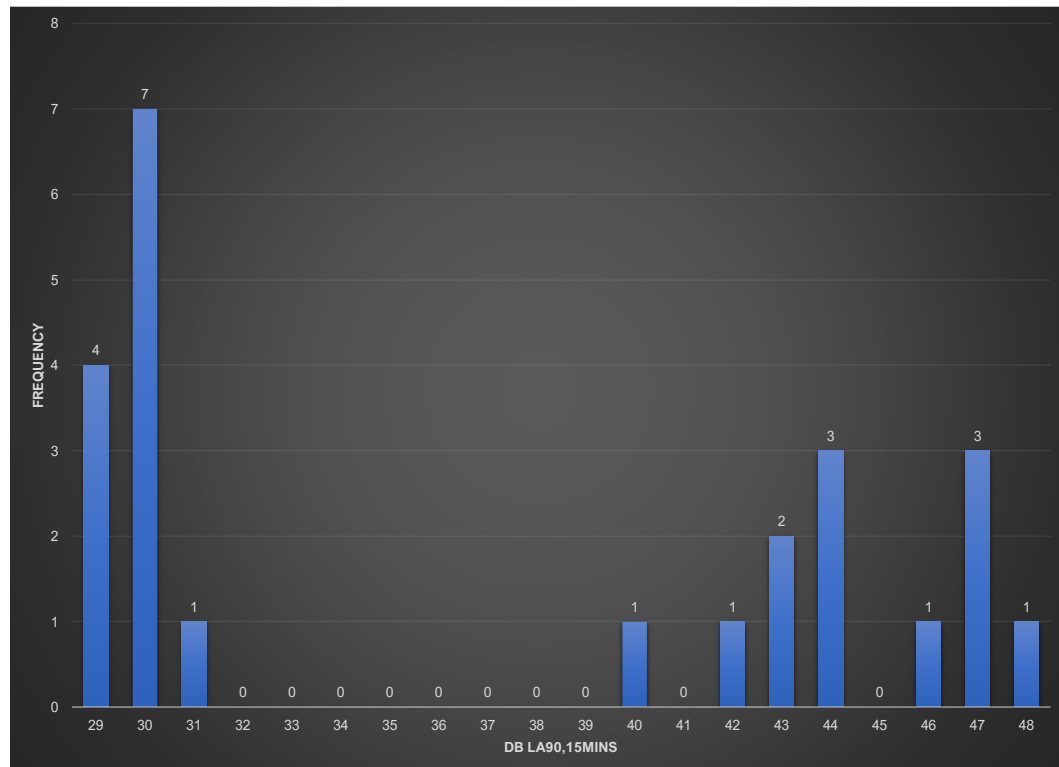


Figure 4: Histogram showing frequency distribution of $L_{A90,15mins}$ noise readings at ML1 – Between 15:00 and 18:00 hours.

3.2.2 **Figure 4** above, shows the daytime background sound level ranged between 29 dB L_{A90} and 48 dB. For the selected period at ML1, a background L_{A90} sound level of 30 dB has been adopted for this assessment, being a typical value and being selected mode average value of the dataset obtained.

3.3 Ambient Sound Levels (09:00 to 14:00 hours)

3.3.1 Data analyses has been performed on the measured ambient sound levels in order to determine typical values. A histogram showing the distribution of existing $L_{Aeq,15mins}$ sound levels for the dog daycare facility is presented in **Figure 4** for ML1. The ambient dataset has been restricted to the measurements between 09:00 hours and 14:00 hours when up to 11 dogs were present at the daycare facility.

3.3.2 The measured noise levels were also supplemented by audio recording to ensure that the ambient sound levels were measurements of the dog noise and this was verified through audio playback.

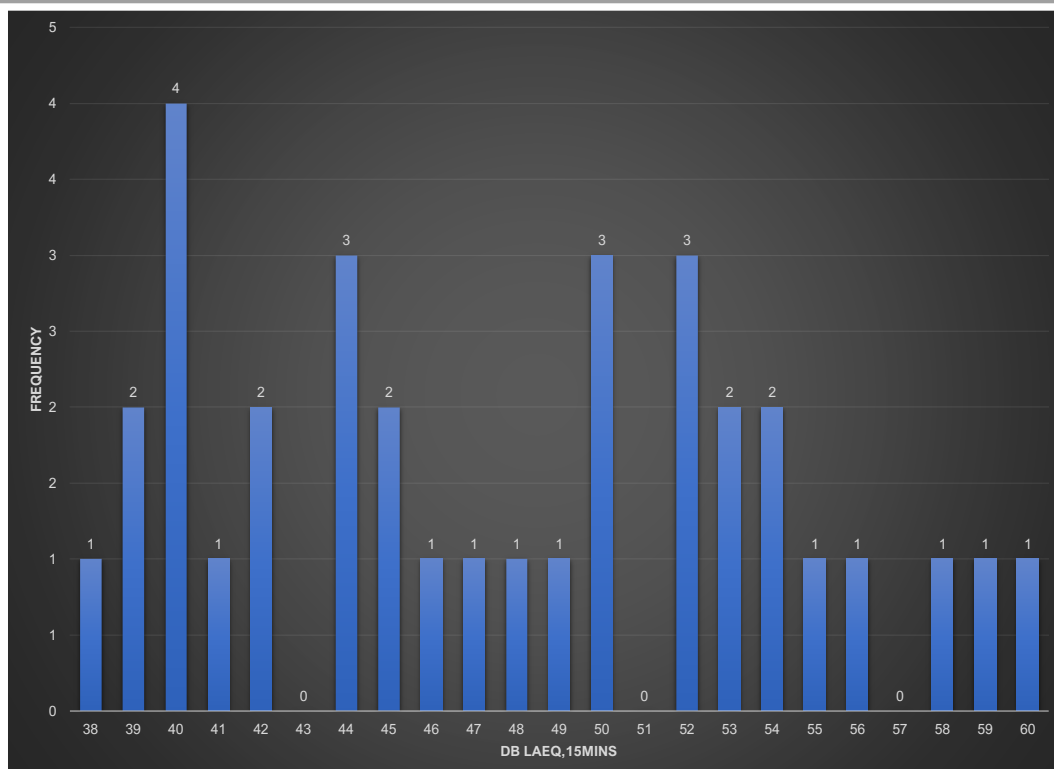


Figure 5: Histogram showing frequency distribution of $L_{Aeq,15mins}$ noise readings at ML1 – Between 09:00 and 14:00 hours.

3.3.3 **Figure 5** above, shows the daytime ambient sound level ranged between 38 dB L_{A90} and 60 dB. For the selected period at ML1, an ambient $L_{Aeq,T}$ sound level of 52 dB has been adopted for this assessment, being a typical value. While it is noted that dogs will typically move around the location, ML1 has been assumed to be an average of 10 m distance from the dogs.

4 NOISE IMPACT ASSESSMENT

- 4.1.1 Data collected from the development site over approx. two days has provided a robust dataset from which to determine a typical background and typical ambient sound level.
- 4.1.2 As discussed in Section 2 of this report assessment of the proposed canine day care facility is to be undertaken in accordance with SPG-LPBBD 1999.
- 4.1.3 The dog noise emissions have been determined based on the measurements presented in Section 3 and a noise model calibrated as appropriate to demonstrate noise propagation.

4.2 3D Sound Model

- 4.2.1 A 3D sound model has been constructed in SoundPLAN™ to calculate the predicted sound pressure levels at selected NSRs. The model uses the calculation method from ISO 9613-2:1996⁶ to account for the distance between the source and receiver and any screening or reflections provided by the surrounding buildings.
- 4.2.2 The 3D sound model has been calibrated to an ambient sound level of 52 dB(A) at ML1. This has been based on an area source which extends across the central field associated with the development site. Area sources have then been included for the southern and northern fields to demonstrate noise emissions which maintain the same calibrated level as that determined for the central field.
- 4.2.3 Three scenarios have therefore been modelled as below:
- **Scenario 1** – Central field noise emissions;
 - **Scenario 2** – Southern field noise emissions; and,
 - **Scenario 3** – Northern field noise emissions.
- 4.2.4 A noise contour plot illustrating the propagation of sound from source to receptor during the day ($L_{Aeq,15mins}$) is given in **Figure 6**, **Figure 7** and **Figure 8** for Scenario 1, Scenario 2 and Scenario 3, respectively.

⁶ ISO9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation"

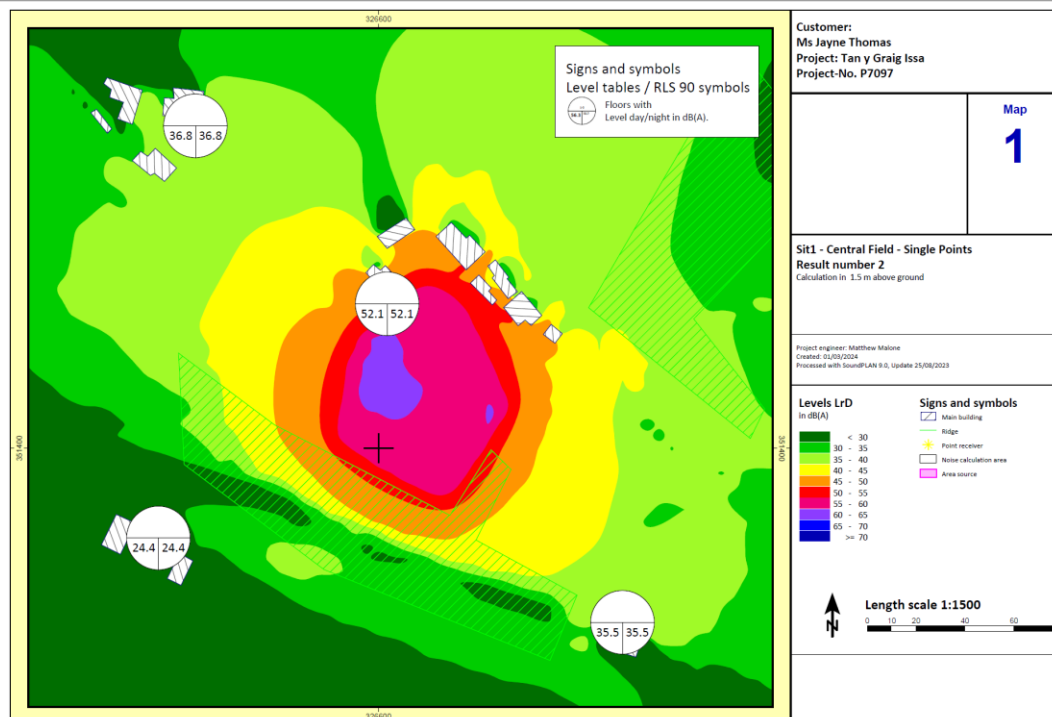


Figure 6: Noise contour plot illustration of the predicted dog noise propagation to the existing residential receptors during the daytime, Scenario 1 – $L_{Aeq,15mins}$.

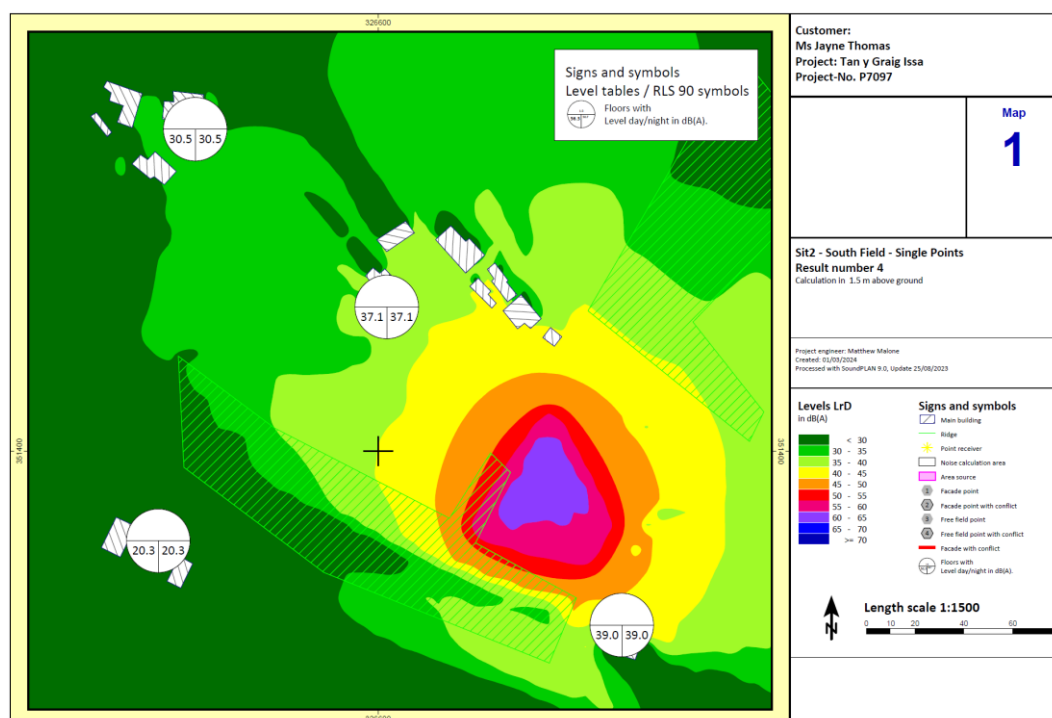


Figure 7: Noise contour plot illustration of the predicted dog noise propagation to the existing residential receptors during the daytime, Scenario 2 – $L_{Aeq,15mins}$.

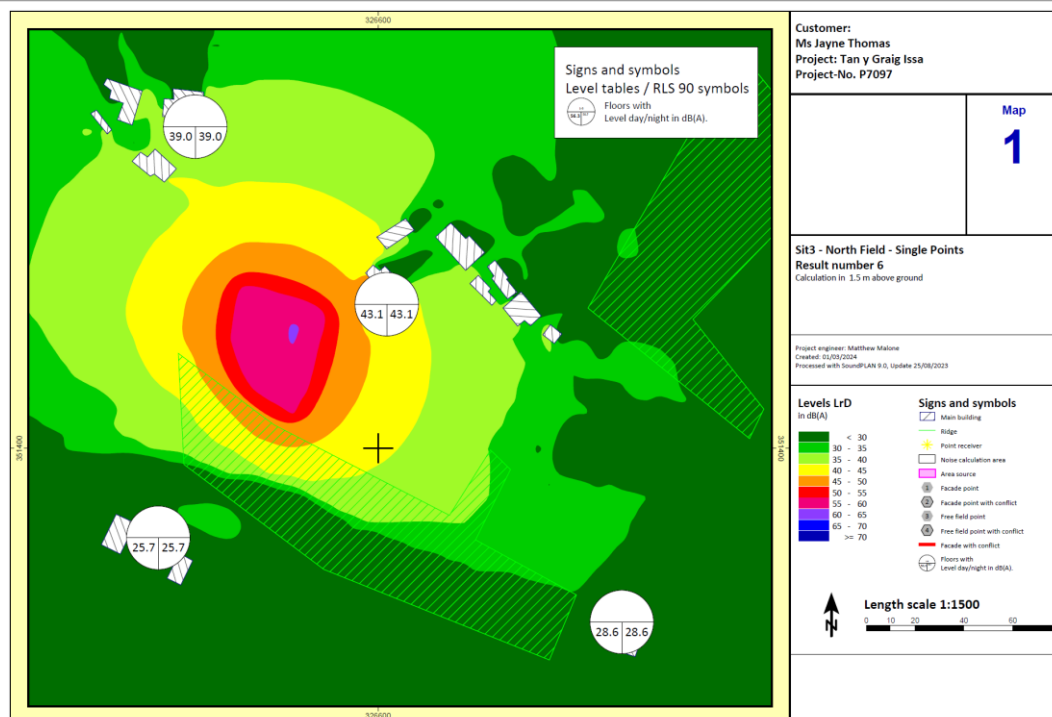


Figure 8: Noise contour plot illustration of the predicted dog noise propagation to the existing residential receptors during the daytime, Scenario 3 – $L_{Aeq,15mins}$.

4.2.5 **Table 4** below details the predicted noise levels at each façade receptor location.

Table 4: Summary of predicted façade sound levels from 3D sound model			
Scenario	Calculated Noise Level (Figures in dB $L_{Aeq,T}$)		
	NSR 1	NSR 2	NSR 3
1	35.5	24.4	36.8
2	39.0	20.3	30.5
3	28.6	25.7	39.0

4.3 SPG-LPBBD Assessment

4.3.1 The SPG-LPBBD assessment for the proposed dog daycare facility with respect to the nearest NSRs is detailed in **Table 5** for the proposed operating hours.

Table 5: Summary of SPG-LPBBB for the proposed dog daycare centre at the development site							
Scenario	Background Sound Level dB(A)	Sound level dB(A)					
		NSR 1		NSR 2		NSR3	
		Specific Sound Level	Excess of Rating over Background	Specific Sound Level	Excess of Rating over Background	Specific Sound Level	Excess of Rating over Background
1	30	36	+6	24	-6	37	+7
2	30	39	+9	20	-10	31	+1
3	30	29	-1	26	-4	39	+9

4.4 Context

- 4.4.1 **Table 5** indicates that NSR 2 is not likely to be exposed to dog noise emission levels above the prevailing background and therefore NSR 2 is likely to present as a **low impact**.
- 4.4.2 With respect to NSR1 and NSR3, which are located approximately similar distances to the south and north extents of the development site, both present a +9 dB excess over the background sound level in their respective worst-case scenarios (Scenario 2 and Scenario 3).
- 4.4.3 A target noise level which can be considered as acceptable would typically be 0 dB above the background sound level, however it is considered that given the locality and limited operational hours, especially for each field, the excess of the background sound level can be relaxed somewhat.
- 4.4.4 In the case of Scenario 1, where noise emissions from dogs are limited to the central field, NSR1 and NSR3 indicate a slightly reduced excess of the background sound level of +6 dB and +7 dB. Considering all aspects of the assessment such as the limited operational hours and the conservative background sound level selection, it is considered in this case that Scenario 1 presents a **low impact** to NSR 1 and NSR3.
- 4.4.5 While it is noted that the use of the north and south fields indicates a slightly elevated excess of the rating over the background sound level of up to +9 dB (when compared with the noise emissions from the central field only), the use of the north and south fields also reduces the impact of the properties at further distance. Therefore, in effect, the use of all the fields, allows

a greater amount of management of the land and therefore noise emissions and the location of noise emissions.

4.5 Uncertainty

- 4.5.1 Uncertainty of measurements can have a significant effect on the outcome and findings of an assessment and therefore such constraints are documented and discussed below.
- 4.5.2 The SLM used was Norsonic Class 1 SLM, it is generally recognised that Class 1 SLM's offer an uncertainty of ± 1.0 dB. The instrumentation used for the survey has been calibrated by UKAS approved laboratories
- 4.5.3 The sound levels measured (which include busier and quieter periods) are considered to be typical for a rural area.
- 4.5.4 It is however noted that background sound levels have been obtained close to the development site and the NSR locations investigated, and therefore background sound levels are considered to be conservative.
- 4.5.5 Wind speeds during the survey visits were typically less than 5 ms^{-1} and the effect of wind generated noise is not considered to have a significant impact on this assessment.

5 RECOMMENDATIONS

5.1 Introduction

5.1.1 An assessment of the dog daycare noise emissions has been presented in this report. The assessment has investigated three scenarios relating to the client's operational space.

5.1.2 Recommendations are therefore provided below to minimise impact on the NSRs investigated.

5.2 Noise Management Plan

5.2.1 We recommend that the client compile a noise management plan for the operation of the development site. The noise management plan should cover the following main points:

- Identify an individual/ manager responsible for noise management for the business;
- Outline clear procedures to minimise noise breakout which should include;
 - Procedures for non-compliant dogs (in terms of excessive barking);
 - Procedures to ensure dogs are stimulated appropriately;
 - Procedures for separation of dogs into groups where appropriate;
 - Procedures to stagger dog exercise as appropriate;
- Provide an appropriate channel for the reporting of noise complaints by residents to the business;
- Provide appropriate complaints logs and procedures when a complaint is received;
- Outline procedures for investigation of any complaints that may be received and options for remedial action. This should include logging of any actions taken.
- Where complaints persist a procedure to undertake professional noise investigation.

6 CONCLUSIONS

- 6.1.1 NoiseAir has carried out a noise impact assessment with respect to a proposed dog daycare facility to be located at Tan y Graig Issa, Ty Birth Lane, Minera LL11 3DW.
- 6.1.2 At the time of writing, proposals provided to NoiseAir detail the change of land use to allow the land to be used as a dog daycare facility.
- 6.1.3 As part of this assessment, NoiseAir has carried out a primarily unattended noise survey to complete an NIA with respect to likely noise breakout from the development site.
- 6.1.4 The noise impact assessment indicates that, with the implementation of some basic noise mitigation measures, the overall noise emissions are likely to present as **low impact**.
- 6.1.5 Recommendations are subsequently provided to minimise the impact of noise emissions from the site along with a recommendation for a noise management plan to ensure appropriate management of noise over the longer term.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to Ms Jayne Thomas and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this report.

Notwithstanding anything to the contrary contained in the report, NoiseAir Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Ms Jayne Thomas and NoiseAir shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

This report has been prepared by NoiseAir Limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from who it has been requested and that such information is accurate. Information obtained by NoiseAir Limited has not been independently verified by NoiseAir Limited unless otherwise stated in the report and should be treated accordingly.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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APPENDIX B - GLOSSARY

A-weighted sound pressure, p_A	Value of overall sound pressure, measured in pascals (Pa), after the electrical signal derived from a microphone has been passed through an A-weighting network. <i>NOTE: The A-weighting network modifies the electrical response of a sound level meter with frequency in approximately the same way as the sensitivity of the human hearing system.</i>
A-weighted sound pressure level, L_{pA}	Quantity of A-weighted sound pressure in decibels (dBA).
Acoustic environment	Sound from all sound sources as modified by the environment [BS ISO 12913-1:2013].
Ambient sound	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. <i>NOTE: The ambient sound comprises the residual sound and the specific sound when present.</i>
Ambient sound level, $L_a = L_{Aeq,T}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level of the totally encompassing sound in a given situation at a given time, usually from many sources near and far, at the assessment location over a given time interval, T <i>NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.</i>
Background sound	Underlying level of sound over a period, T, which might in part be an indication of relative quietness at a given location.
Background sound level, $L_{A90,T}$ (BS4142:2014)	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting F and quoted to the nearest whole number of decibels.
Break-in	Noise transmission into a structure from outside.
Break-out	Noise transmission from inside a structure to the outside.
Cross-talk	Noise transmission between one room and another room or space via a duct or other path.
C_{tr}	Correction term applied against the sound insulation single-number values (R_w , D_w , and $D_{nT,w}$) to provide a weighting against low frequency performance. <i>NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.</i>
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$	Value of the A-weighted sound pressure level in decibels (dB) of a continuous, steady sound that, within a specified time interval, T, has the same mean-squared sound pressure as the sound under consideration that varies with time.
Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$ (BS4142:2014)	Value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, $T = t_2 - t_1$, has the same mean-squared sound pressure as a sound that varies with time.
Equivalent sound absorption area of a room, A	Hypothetical area of a totally absorbing surface without diffraction effects, expressed in square metres (m ²), which, if it were the only absorbing element in the room, would give the same reverberation time as the room under consideration
Facade level	Sound pressure level 1 m in front of the façade. <i>NOTE: Facade level measurements of L_{pA} are typically 1 dB to 2 dB higher than corresponding free-field measurements because of the reflection from the facade.</i>
Free-field level	Sound pressure level away from reflecting surfaces. <i>NOTE: Measurements made 1.2 m to 1.5 m above the ground and at least 3.5 m away from other reflecting surfaces are usually regarded as free-field. To minimize the effect of reflections the measuring position has to be at least 3.5 m to the side of the reflecting surface (i.e. not 3.5 m from the reflecting surface in the direction of the source). Estimates of noise from aircraft overhead usually include a correction of 2 dB to allow for reflections from the ground.</i>

Impact sound pressure level, L_i	Average sound pressure level in a specific frequency band in a room below a floor when it is excited by a standard tapping machine or equivalent.
Indoor ambient noise	Noise in a given situation at a given time, usually composed of noise from many sources, inside and outside the building, but excluding noise from activities of the occupants. <i>NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.</i>
Measurement time interval, T_m (BS4142:2014)	Total time over which measurements are taken. <i>NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.</i>
Noise criteria	Numerical indices used to define design goals in a given space.
Noise rating, NR	Graphical method for rating a noise by comparing the noise spectrum with a family of noise rating curves.
Normalised impact sound pressure level, L_n	Impact sound pressure level normalized for a standard absorption area in the receiving room. <i>NOTE: Normalised impact sound pressure level is usually used to characterize the insulation of a floor in a laboratory against impact sound in a stated frequency band.</i>
Octave band	Band of frequencies in which the upper limit of the band is twice the frequency of the lower limit.
Percentile level, $L_{AN,T}$	A-weighted sound pressure level obtained using time-weighting "F", which is exceeded for $N\%$ of a specified time interval.
Reference time interval, T_r (BS4142:2014)	Specified interval over which the specific sound level is determined. <i>NOTE: This is 1 h during the day from 07:00 h to 23:00 h and a shorter period of 15 min at night from 23:00 h to 07:00 h.</i>
Residual sound (BS4142:2014)	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Residual sound level, $L_r = L_{Aeq,T}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T .
Rating level, L_{A,r,T_r}	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. <i>NOTE: This is used in BS 7445 and BS 4142 for rating industrial noise, where the noise is the specific noise from the source under investigation.</i>
Reverberation time, T	Time that would be required for the sound pressure level to decrease by 60 dB after the sound source has stopped.
Sound exposure level, L_{AE}	Level of a sound, of 1 s duration, that has the same sound energy as the actual noise event considered.
Sound level difference, D	Difference between the sound pressure level in the source room and the sound pressure level in the receiving room.
Sound pressure, p	Root-mean-square value of the variation in air pressure, measured in pascals (Pa) above and below atmospheric pressure, caused by the sound.
Sound pressure level, L_p	Quantity of sound pressure, in decibels (dB).
Sound reduction index, R	Laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.

Specific sound level, $L_s = L_{Aeq,T_r}$ (BS4142:2014)	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r .
Specific sound source (BS4142:2014)	Sound source being assessed.
Standardised impact sound pressure level, L'_{nT}	Impact sound pressure level normalized to a reverberation time in the receiving room of 0.5 s.
Standardised level difference, D_{nT}	Difference in sound level between a pair of rooms, in a stated frequency band, normalized to a reference reverberation time of 0.5 s for dwellings.
Groundborne noise	Audible noise caused by the vibration of elements of a structure, for which the vibration propagation path from the source is partially or wholly through the ground. <i>NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.</i>
Structure-borne noise	Audible noise caused by the vibration of elements of a structure, the source of which is within a building or structure with common elements. <i>NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.</i>
Third octave band	Band of frequencies in which the upper limit of the band is 2% times the frequency of the lower limit.
Weighted level difference, D_w	Single-number quantity that characterizes airborne sound insulation between rooms, but which is not adjusted to reference conditions. <i>NOTE Weighted level difference is used to characterize the insulation between rooms in a building as they are. Values cannot normally be compared with measurements made under other conditions (see BS EN ISO 717-1).</i>
Weighted normalised impact sound pressure level, $L'_{n,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted sound reduction index, R_w	Single-number quantity which characterizes the airborne sound insulating properties of a material or
Weighted standardised impact sound pressure level $L'_{nT,w}$	Single-number quantity used to characterize the impact sound insulation of floors over a range of frequencies.
Weighted standardised level difference, $D_{nT,w}$	Single-number quantity that characterizes the airborne sound insulation between rooms.

Symbols

D_w	Weighted level difference (dB)
D_{nT}	Standardized level difference (dB)
$D_{nT,w}$	Weighted standardized level difference (dB)
L_{Amax}	Maximum noise level (dB)
$L_{Ar,T}$	Rating level (dB)
L_n	Normalised impact sound pressure level (dB)
L'_{nT}	Standardised impact sound pressure level (dB)
$L'_{nT,w}$	Weighted standardised impact sound pressure level (dB)
$L'_{n,w}$	Weighted normalised impact sound pressure level (dB)
L_p	Sound pressure level (dB)
L_{pA}	A-weighted sound pressure level (dB)
$L_{AN,T}$	Percentile level (dB)
L_{AE}	Sound exposure level (dB)
$L_{Aeq,T}$	Equivalent continuous A-weighted sound pressure level (dB)
p	Sound pressure (Pa)
p_A	A-weighted sound pressure (dB)
$p_{A(t)}$	Instantaneous A-weighted sound pressure (Pa)

R	Sound reduction index (dB)
R_w	Weighted sound reduction index (dB)
T	Time interval (also used for reverberation time) (s)
t_0	Reference time interval (s)

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