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MS AMY LLOYD

NOISE IMPACT ASSESSMENT REPORT

MOSS BANK FARM, BORRAS ROAD, WREXHAM

Client: Ms Amy Lloyd

Report Ref: P9041-R1-V1

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1 INTRODUCTION

1.1 Overview

1.1.1 By instruction from Ms Amy Lloyd ('the client'), NoiseAir was commissioned to undertake a noise impact assessment (NIA) with respect to a mobile home sited at Moss Bank Farm, Borras Road, Wrexham, herein referred to as the 'site'.

1.1.2 General limitations of this report are outlined in **Appendix A**.

1.2 Site Description and Noise Sensitive Receptors

1.2.1 At the time of writing the site is a residential site with multiple residential and outbuildings. The site is located close to Borras Quarry which is an active quarry site. The general location however is rural in nature.

1.2.2 The site fronts onto Borras Road, Borras Road is oriented in an approx. northeast to southwest direction and Borras Quarry itself is located to either side of Borras Road. It is noted that there are multiple existing and established dwellings with gardens and amenity space which are located along Borras Road, some of which with gardens which back onto the quarry boundary.

1.2.3 An aerial photograph is presented in **Figure 1** below which shows the site and locality in context.



Figure 1: Site aerial photograph showing locality and context.

1.2.4 As outlined, there are a number of residential buildings and outbuildings located at the site. **Figure 2** below shows a site layout plan of the site. The blue and red boundaries denote the existing ownership of the client, with this report relating specifically to the red boundary area.

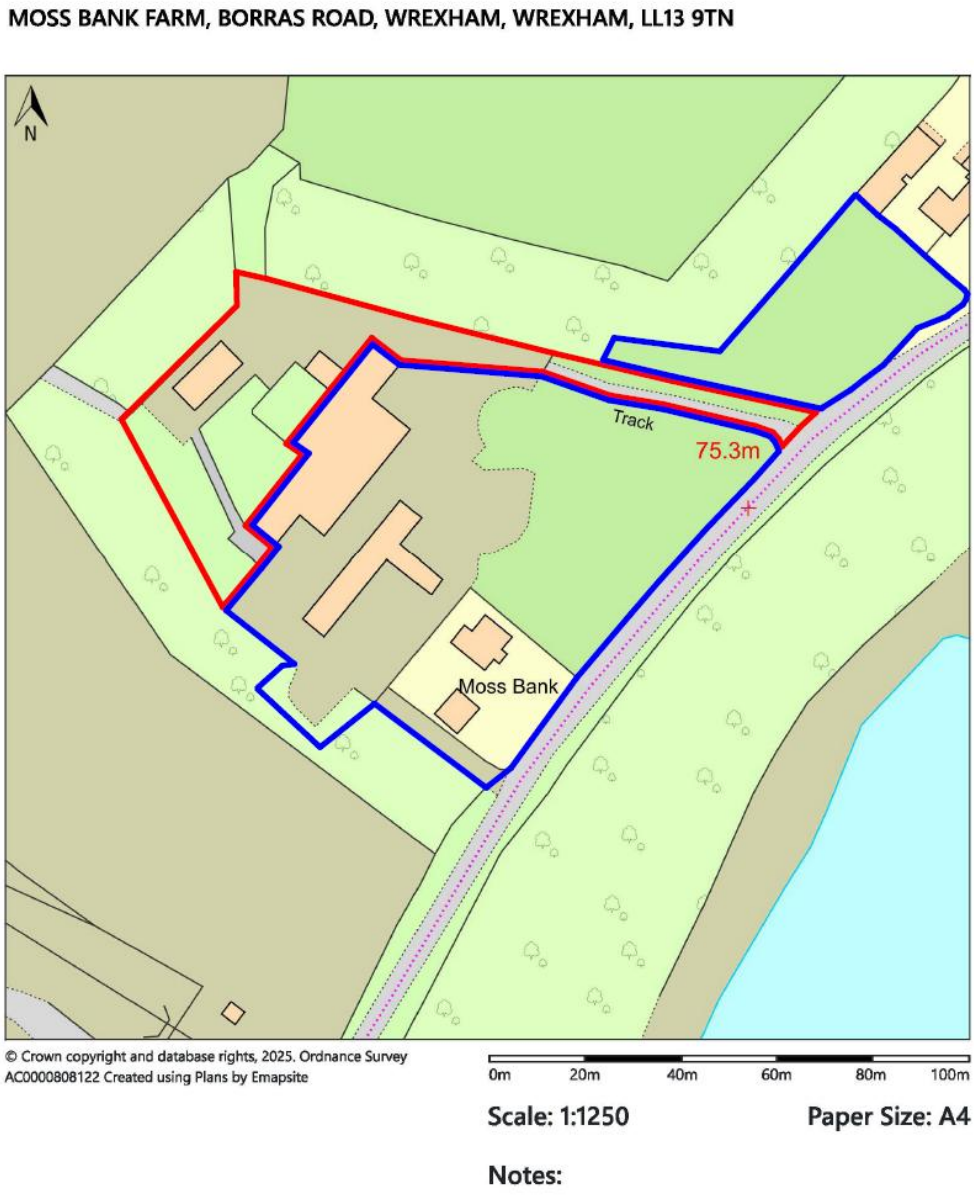


Figure 2: Site layout and ownership boundaries.

1.2.5 As outlined this report specifically relates to a mobile home which has been situated to the rear of the Moss Bank Farm site (the building shown to the northwest side of the red boundary area in **Figure 2**).

1.2.6 A photograph of the mobile home is shown in **Figure 3** below.



Figure 3: Photograph of the existing mobile home.

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 planning application and therefore it is considered that reference should be made to the appropriate planning guidance documentation, specifically:

- Planning Policy Wales – Edition 12 (PPW), 2024; 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 - Edition 12 (February 2024)

2.2.1 Planning Policy Wales – Edition 12 (PPW12)1 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 PPW11 provide the national planning policy framework for Wales.

2.2.2 The primary objective of PPW12 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 PPW12 outlines planning policy with respect to Air Quality and Noise. PPW12 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 PPW12 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, PPW12 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. It is noted however that TAN 11 does not make any specific recommendation for assessment of noise from quarry's and/ or open sites. It is generally recognised however that assessment of noise from construction and open sites is undertaken in accordance with BS 5228-1:2009: 'Code of practice for noise and vibration control on construction and open sites'.

2.4 Scope of Works

2.4.1 This report presents the results and details of an on-site noise survey over several days. The noise source assessed are emissions from the Borras Quarry site and therefore should be assessed in accordance with BS 5228-1:2009: 'Code of practice for noise and vibration control on construction and open sites', a summary of which is provided below.

2.4.2 It is also considered that BS 8233:2014 should also be considered given the mobile home is a residential residence. A summary is also provided below.

2.5 British Standard 5228-1:2009 'Code of practice for noise and vibration control on construction and open sites'

2.5.1 Guidance on the prediction and assessment of noise from construction and open sites is given in BS 5228 – 1:2009 "Code of practice for noise and vibration control on construction and open sites – Part 1 :Noise".

2.5.2 Noise from construction and open sites can have disturbing effects on the surrounding neighbourhood. The effects are varied and are complicated further by the ever changing locations of the site works throughout the construction process. The duration of site operations is also an important consideration. Higher noise levels may be acceptable if it is known that the levels will occur for a limited period. BS5228 -1 provides guidance on significance criteria for assessing the potential noise impact associated with the construction phase of large projects, which would be applicable to construction activities. For the purpose of this noise assessment, the noise likely to be generated during the construction phase have been assessed against the significance criteria established using the BS5228 -1 ABC method.

2.5.3 The ABC method for determining significance criteria requires the ambient noise levels at existing sensitive receptors to be determined. The ambient noise levels at each existing receptor location are then rounded to the nearest 5 dB(A) to determine the appropriate threshold value in accordance with the category value, A B or C, as detailed in **Table 3** below.

Table 1: Thresholds of significant impact from construction noise at residential receptors in accordance with the ABC method of BS5228-1			
Assessment category and threshold value period (LAeq)	Threshold value, in decibels (dB)		
	Category A*1	Category B*2	Category C*3
Daytime (0700 to 1900 hours) and Saturdays (0700 to 1300 hours)	65	70	75
Evening and weekends	55	60	56
*1 Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than this value. *2 Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values. *3 Category C: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values.			

2.5.4 The predicted noise level likely to be generated at the receptor during the construction phase, i.e. the ambient noise level plus construction noise, is then compared to the appropriate category value. If the noise level is greater than the appropriate category value, a significant noise impact may be registered.

2.6 BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings

2.6.1 BS 8233: 2014 sets out the following internal sound levels which are considered suitable to protect residential amenity which have been reproduced in **Table 2**.

Table 2: Summary of internal noise guidelines.			
Activity	Location	0700 – 2300 hours	2300 – 0700 hours
Resting	Living Room	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$ 45 dB L_{AMax}

2.6.2 BS 8233:2014 states that "the acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$". The standard continues… "These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited."

3 ACOUSTIC SURVEY

3.1 Acoustic Survey Details

3.1.1 NoiseAir conducted unattended noise monitoring between the 26th September 2025 to the 1st October 2025 at the development site.

3.1.2 Noise monitoring was undertaken at three monitoring locations (ML1, ML2 and ML3), the position of which are presented in **Figure 4** below.



Figure 4: Approximate noise monitoring locations

3.1.3 The noise measurements were made using Class 1, integrating sound level meters (SLMs).

3.1.4 The acoustic equipment was calibrated to comply with Section 4.2 of BS7445-1:2003[1] before and after the noise monitoring periods.

3.1.5 Details of the SLM and associated field calibration can be found in **Table 3** below.

Table 3: 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 (1405015)	NOR1209 (14517)	NOR1225 (42327)	BK4231 (2699086)	-26.2	-26.3	0.1
NOR140 (1405016)	NOR1209 (12694)	NOR1225 (72914)	BK4231 (2699086)	-25.8	-25.9	0.1

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

3.1.6 The weather conditions were noted to be as outlined in **Table 4** at the start and end of the monitoring period.

Table 4: Summary of Weather Conditions Noted at the Start and End of the Monitoring Duration

	26th September 2025	1st October 2025
Roads	Dry	Dry
Temperature (˚C)	10	12
Wind speed (ms^{-1})	nil	Up to 3.6 (S)
Cloud Cover (Approx. %)	0	100
Humidity (%)	90	94

3.2 Measured Sound Levels

3.2.1 Data is shown in **Figure 5, Figure 6** and **Figure 7** 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, ML2 and ML3, respectively.

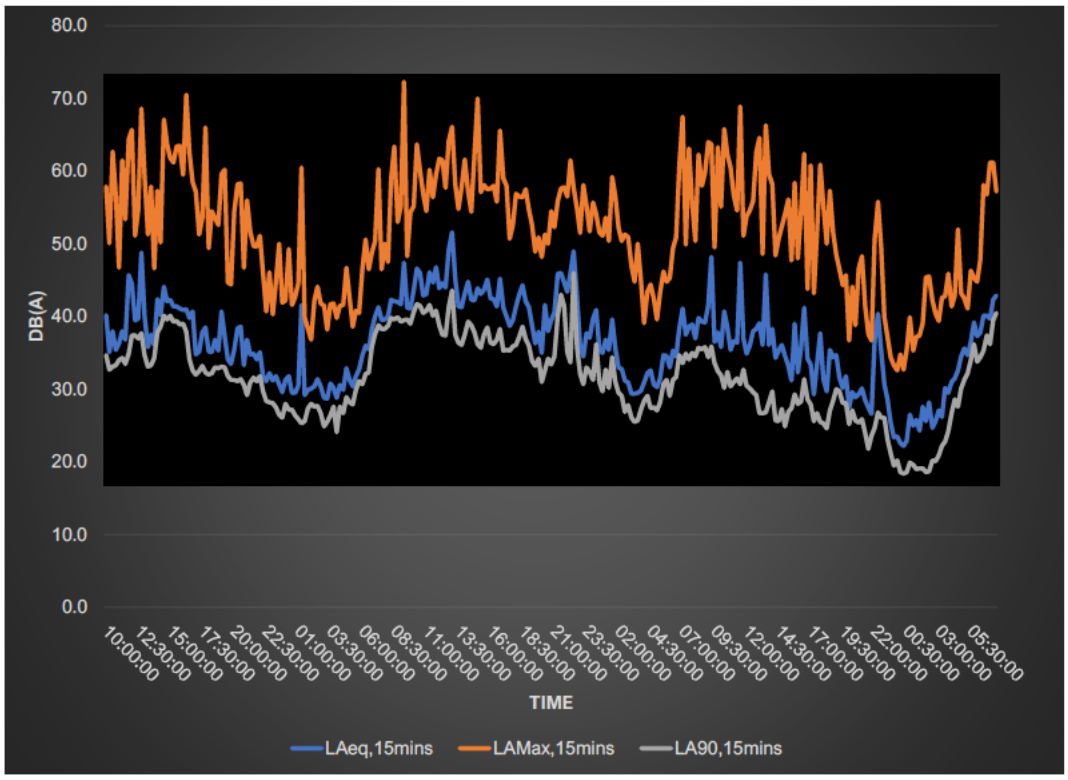


Figure 5: Level vs. time graph showing L_{Amax}, L_{Aeq} and L_{A90} sound levels – ML1.

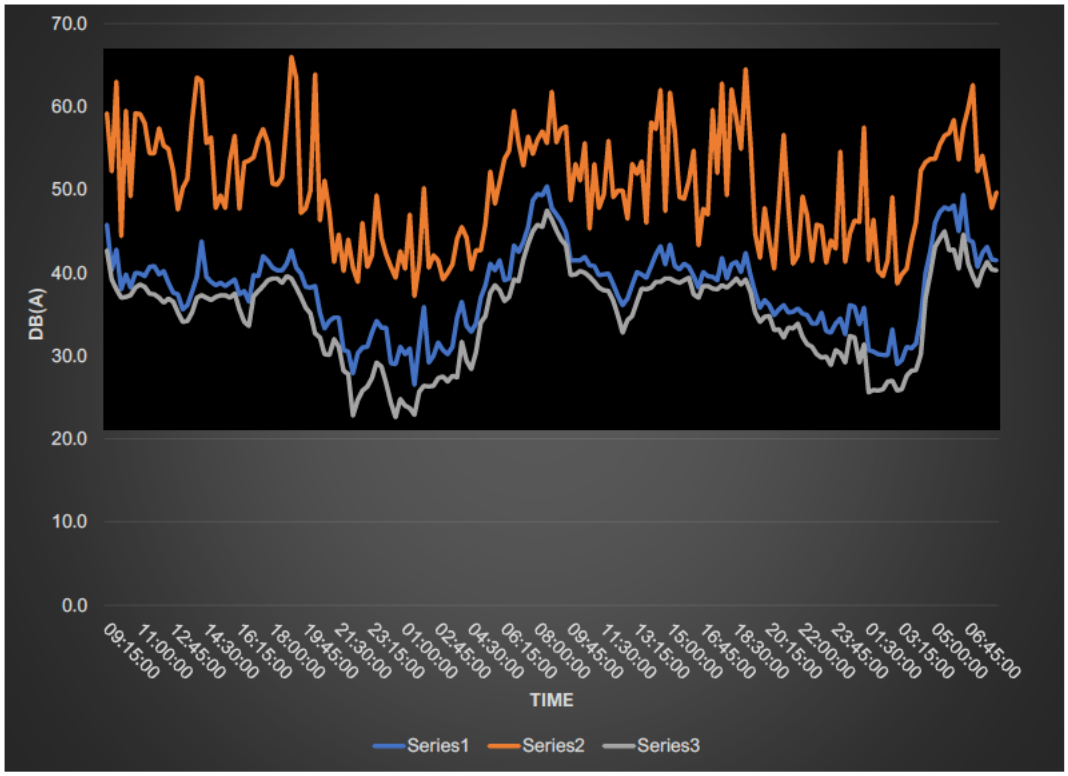


Figure 6: Level vs. time graph showing L_{Amax}, L_{Aeq} and L_{A90} sound levels – ML2.

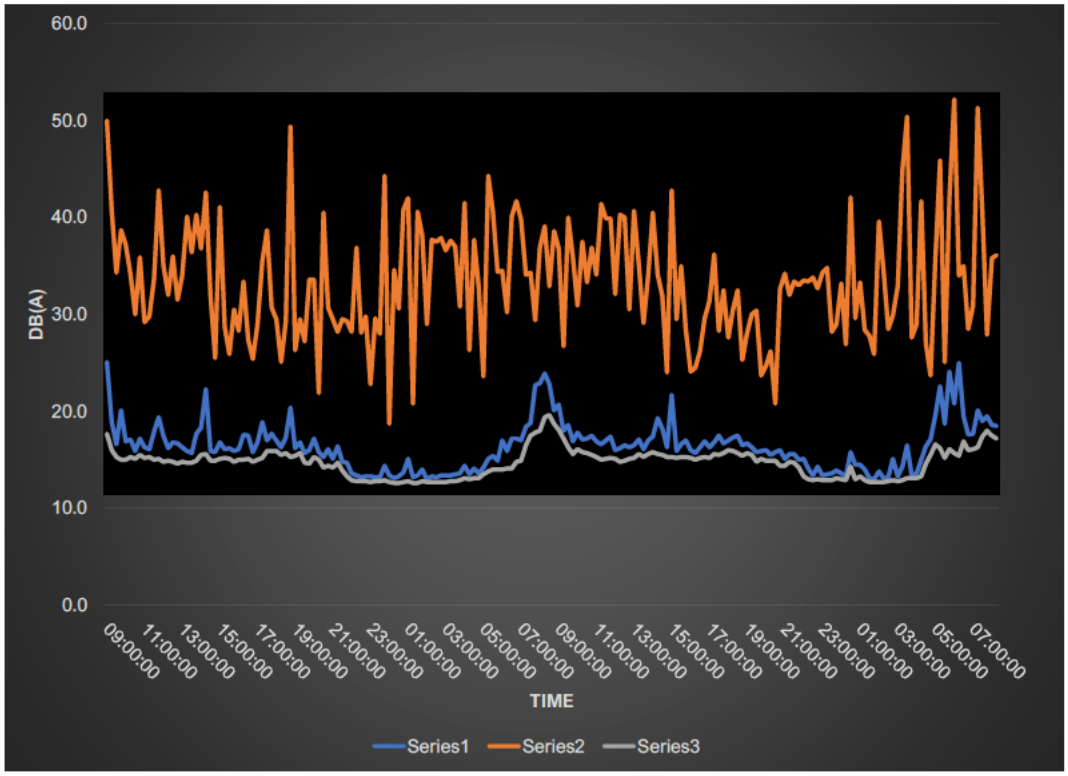


Figure 7: Level vs. time graph showing L_{Amax}, L_{Aeq} and L_{A90} sound levels – ML3 (Inside).

3.2.2 Measured sound levels were noted to consist of non-descript distant traffic noise with some low level noise emissions from the quarry, typically in the form of diesel engines.

3.2.3 The results for ML1, ML2 and ML3 during the daytime and night-time periods are presented in **Table 5** below.

Table 5: Average Measured Daytime and Night-time Noise Levels

Monitoring Location	Time	Measured Noise Level		
		dB $L_{Aeq,16hour}$ / dB $L_{Aeq,8hour}$	dB $L_{Aeq,1hour}$ / dB $L_{Aeq,15mins}$	dB $L_{A90,1hour}$ / dB $L_{A90,15mins}$
ML1	07:00-23:00	38.3-45.5	28.4-47.1	23.8-41.1
	23:00-07:00	33.0-35.2	22.2-41.6	18.4-37.4
ML2	07:00-23:00	39.3-42.2	30.1-49.3	25.3-46.3
	23:00-07:00	36.1-41.9	26.5-49.4	22.6-45.0
ML3	07:00-23:00	17.4-19.0	13.4-22.6	12.8-18.9
	23:00-07:00	14.3-17.6	13.0-25.0	12.6-16.9

3.2.4 The maximum night-time noise levels ML1 are presented in **Table 6**.

Table 6: Summary of the Maximum Night-time Noise Levels (Figures in dB L_{AFmax}).

Monitoring Location	Measured Maximum Noise Level During the Night-Time Period (dB(A))
ML1	52
ML2	54
ML3	40

3.3 Measured Quarry Noise Levels (ML1 and ML2)

3.3.1 The datasets for both ML1 and ML2 are presented below as histograms of the measured $L_{Aeq,1hour}$ between the hours of 07:00 to 18:00 which are considered to be the core hours of operation of the quarry.

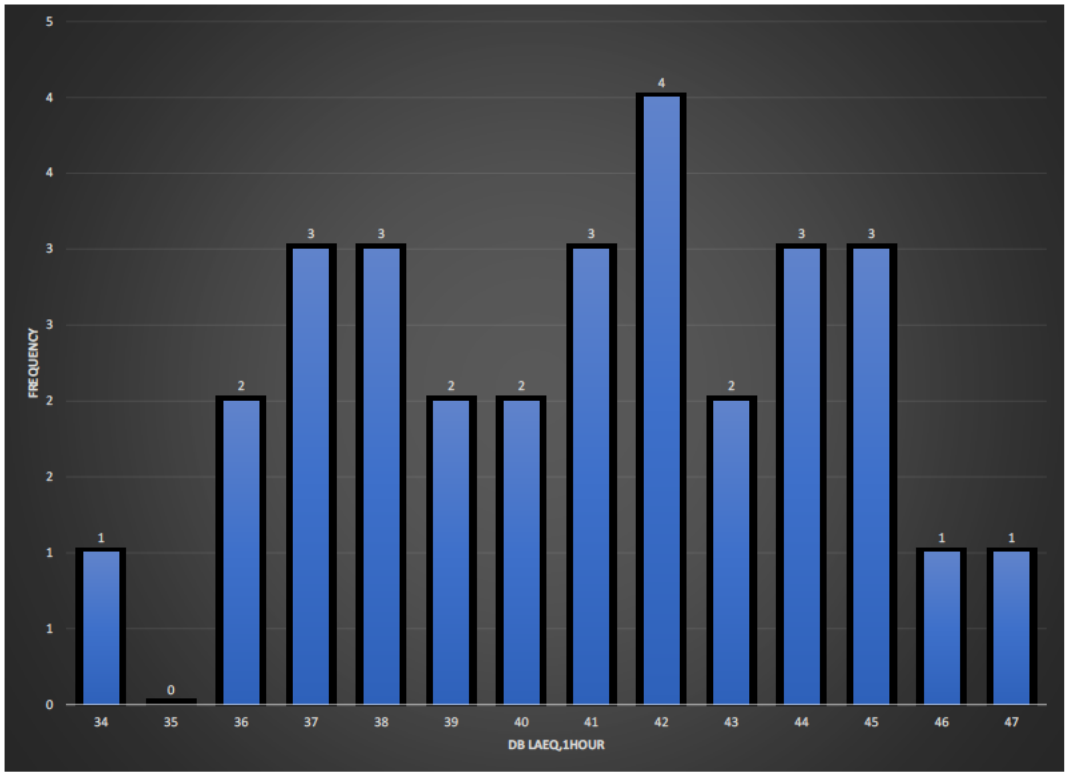


Figure 8: Histogram of the operational hours of the quarry – ML1 $L_{Aeq,1hour}$.

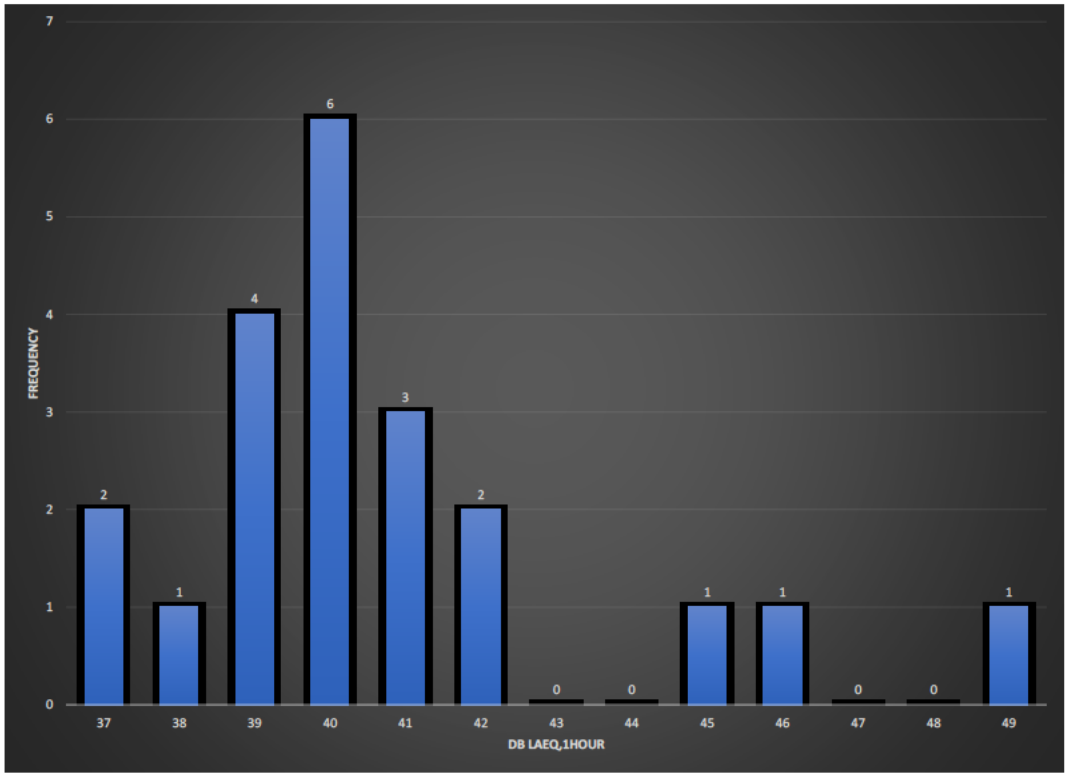


Figure 9: Histogram of the operational hours of the quarry – ML2 $L_{Aeq,1hour}$.

3.4 Measured Ambient Noise Levels (ML1 and ML2)

3.4.1 The datasets for both ML1 and ML2 are presented below as histograms of the measured $L_{Aeq,1hour}$ between the hours of 20:00 to 23:00 when the quarry was not operational.

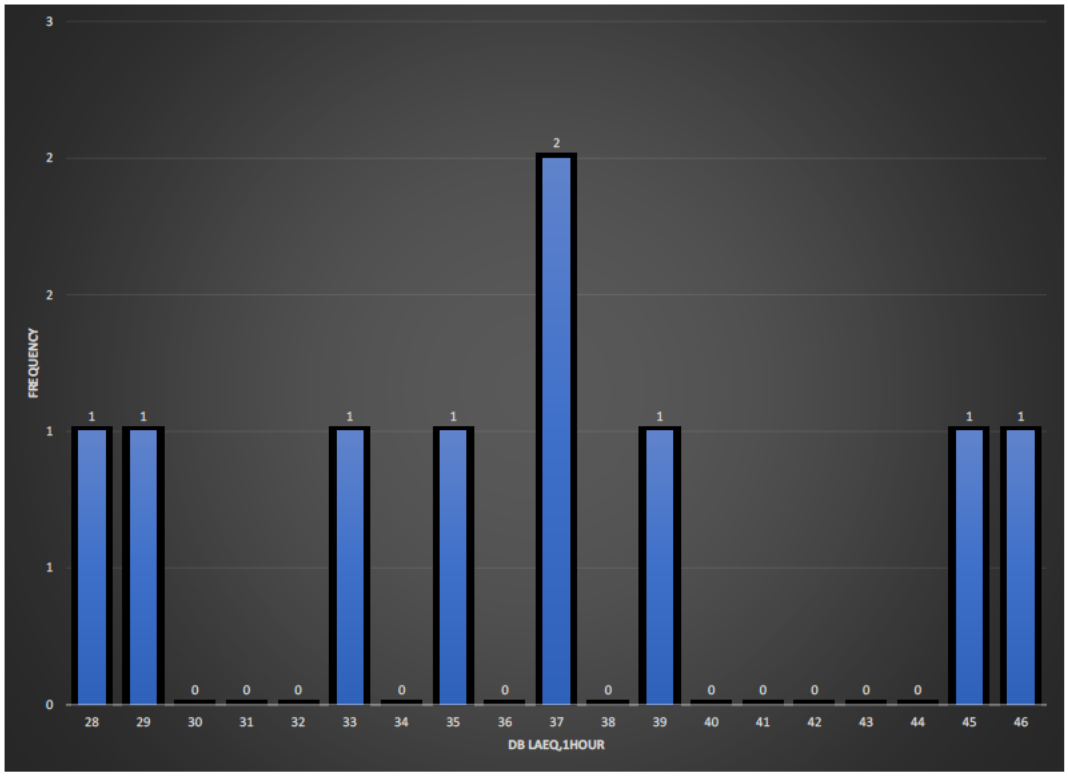


Figure 10: Histogram of the non-operational hours of the quarry – ML1 $L_{Aeq,1hour}$.

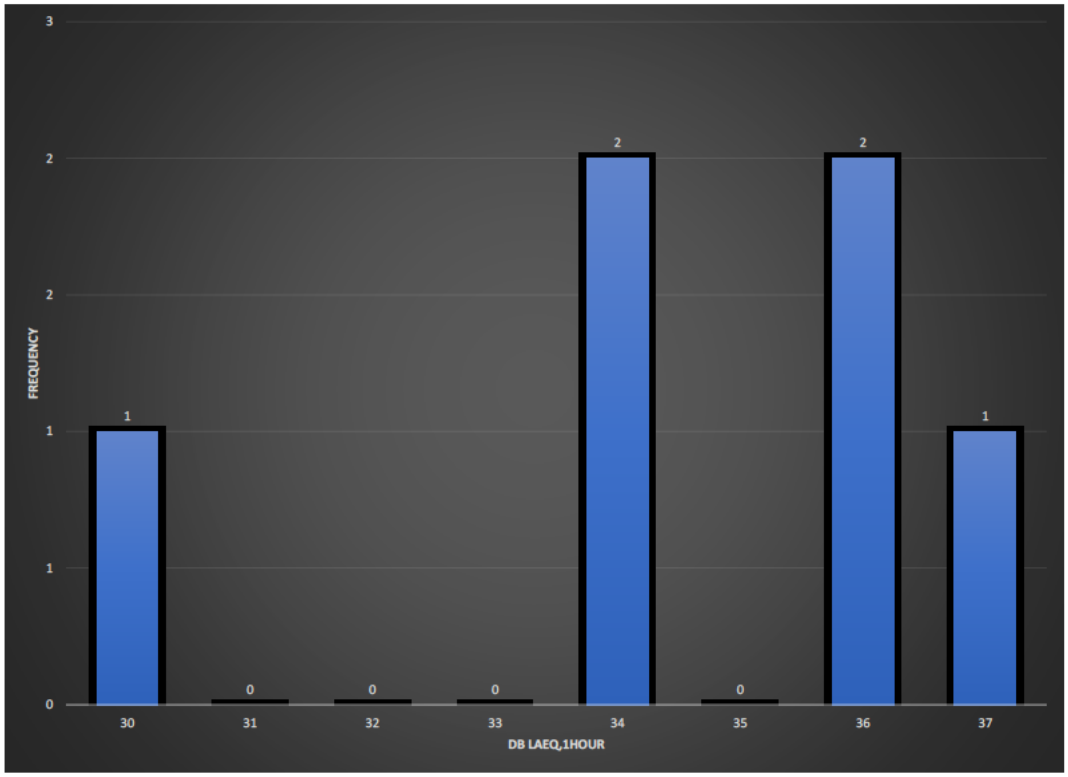


Figure 11: Histogram of the non-operational hours of the quarry – ML2 $L_{Aeq,1hour}$.

4 BS 5228-1:2009 ASSESSMENT

4.1 Introduction

4.1.1 The noise emissions assessed in this report are predominantly from the nearby quarry site and therefore the measured noise levels have been compared with the levels prescribed in BS 5228-1:2009 which provides guidance on the prediction and assessment of noise from construction and open sites.

4.2 Measured Sound Levels – Quarry Non-Operational

4.2.1 Measured sound levels are presented in Section 3.

4.2.2 Assessment of the noise levels will be conducted against externally located monitoring positions (ML1 and ML2). ML1 and ML2 present approximately five days of noise measurement data in close proximity to the quarry boundary.

4.2.3 Typical one hour averaged noise levels are presented below measured when the quarry was not operational:

- ML1 – 28-46 dB(A); and,
- ML2 – 30-37 dB(A).

4.2.4 These noise levels are below the Category A noise levels when rounded to the nearest 5 dB and therefore operational noise levels from the quarry will be compared to the Category A levels.

4.3 Category A Criteria

4.3.1 The noise levels from the quarry are to be screened against the Category A noise levels, these are presented below:

- Daytime (0700 to 1900 hours) and Saturdays (0700 to 1300 hours) – 65 dB(A); and,
- Evening and weekends – 55 dB(A).

4.4 Measured Sound Levels – Quarry Operational

4.4.1 Worst case one hour averaged noise levels are presented below measured when the quarry was operational:

- ML1 –47 dB(A); and,
- ML2 – 49 dB(A).

4.4.2 These noise levels are below the Category A noise levels. This is a positive indication that a potential significant impact is not likely.

4.4.3 Additional review of the noise levels has also been undertaken in Section 5 with respect to the measured noise levels and the comparison with BS 8233:2014.

5 BS 8233:2014 ASSESSMENT

5.1 Introduction

5.1.1 The noise levels incident at the site have been assessed in the preceding section against the primary standard considered to be appropriate for noise emissions for a quarry. The resultant outcome is a positive indication that a potential significant impact is not likely.

5.1.2 It is also considered appropriate however to undertaken a screening assessment of the measured noise levels against generally accepted noise level threshold adopted throughout the UK.

5.1.3 As set out in Section 2, BS 8233:2014 sets out recommended noise levels for residential dwellings. The noise levels recommended are internal noise levels.

5.2 Measured Noise Levels Compared to BS 8233:2014 Criteria

5.2.1 **Table 7** below presents the measured internal noise levels within the bedroom of the mobile home compared against the BS 8233:2014 recommended internal noise levels. The bedroom window was closed, and the window trickle vent was open. To provide a thorough assessment the screening assessment has been conducted against the worst case one hour measured noise level for the daytime and the worst case 15 minute measured noise level for the night-time.

Table 7: Comparison of Measured Internal Noise Levels Vs. BS 8233:2014 Recommended Noise Levels.

Room	Daytime ($L_{Aeq,T}$) / Night-Time ($L_{Aeq,T}$ / L_{Amax})	Measured Noise Level	Recommended BS 8233:2014 Noise Level	Criteria Achieved
Bedroom	Daytime $L_{Aeq,1hour}$	23	35	Yes
	Night-Time $L_{Aeq,15mins}$	25	30	Yes
	Night-Time L_{Amax}	40	45	Yes

5.2.2 It should be noted that the recommended guideline noise levels as presented in BS 8233:2014 are to apply to continuous traffic noise. In the case of the site the noise source emissions do not fall into this category, being from a quarry. It is considered however that the measured noise is considerably below the recommended guideline levels such that, in conjunction with the BS 5228:2009 assessment outcome, a potential significant impact is not likely.

5.3 Assessment of Daytime Noise Levels in Outdoor Living Areas

5.3.1 The world health organisation recommends the following noise threshold guidelines for outside living areas:

- 50 dB(A) for people being moderately annoyed; and,
- 55 dB(A) for people being seriously annoyed.

5.3.2 Measured sound levels during the daytime are below the 50 dB(A) level for people being moderately annoyed and therefore considered to be acceptable.

6 CONCLUSIONS

6.1.1 NoiseAir was commissioned to undertake a noise impact assessment (NIA) with respect to a mobile home sited at Moss Bank Farm, Borras Road, Wrexham.

6.1.2 Moss Bank Farm is a residential site with multiple residential and outbuildings located close to Borras Quarry which is an active quarry site.

6.1.3 This report evaluates noise levels at Moss Bank Farm, focusing on emissions from the quarry. Assessment has been undertaken through on-site noise measurements over a series of days and includes external and internal noise measurements within the mobile home at the Moss Bank Farm site.

6.1.4 An assessment of the measured noise level has been conducted in accordance with BS 5228-1:2009, the noise measurements demonstrate a positive indication that a potential significant impact is not likely.

6.1.5 When considering the noise levels in relation to BS 8233:2014, which recommends acceptable internal noise levels for habitable rooms, the measured noise levels are comfortably below the recommended criteria.

6.1.6 Based on the measurements and assessments undertaken the noise levels incident at the Moss Bank Farm site are considered to be within acceptable limits.

APPENDIX A - REPORT LIMITATIONS

This Report is presented to Ms Amy Lloyd 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 Amy Lloyd 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.

Where / if estimates and projects are made within this report, are made based on reasonable assumptions as of the date of this report, such statements however by their very nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. NoiseAir Limited specifically does not guarantee or warrant any estimates or projects contained in this report.

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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. *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.*
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. *NOTE: The ambient sound comprises the residual sound and the specific sound when present.*
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 *NOTE: The ambient sound level is a measure of the residual sound and the specific sound when present.*
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. *NOTE: The reference values used within the C_{tr} calculation are based on urban traffic noise.*
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 (m2), 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. *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.*
Free-field level	Sound pressure level away from reflecting surfaces. *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.*

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. *NOTE: The location(s) within the room at which the ambient indoor noise is to be measured or calculated ought to be considered.*
Measurement time interval, T_m (BS4142:2014)	Total time over which measurements are taken. *NOTE: This may consist of the sum of a number of non-contiguous, short-term measurement time intervals.*
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. *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.*
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. *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.*
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, $L_{Ar,Tr}$	Equivalent continuous A-weighted sound pressure level of the noise, plus any adjustment for the characteristic features of the noise. *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.*
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, *LAE*	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, $L_s = L_{Aeq,Tr}$ (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. *NOTE Common sources of ground-borne noise include railways and heavy construction work on adjacent construction sites.*
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. *NOTE Common sources of structure-borne noise include building services plant, manufacturing machinery and construction or demolition of the structure.*
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. *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).*
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)
$L_{Ar,Tr}$	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)
$LAeq,T$	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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