

Project:

Padel at Unit N, Chelworth Industrial Estate

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Padel Courts Acoustic Assessment

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Client:

**Padel People Limited
8 King Edward Street
Oxford
OX1 4HL**



Chremma House (Office 136)

14 London Road

Guildford

Surrey

GU1 2AG

Office Tel: 01483 924687

Email: hello@pulsaracoustics.co.uk

Website: <https://pulsaracoustics.co.uk/>



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Limitations			
This report has been prepared for the titled project and client in accordance with our agreed scope of work, document reference: PA-01331/SC1, dated 09 April 2026.			
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1.0 - Introduction

The project address is: Unit N, Whitehall Site, Chelworth Industrial Estate, Chelworth Road, Cricklade, SN6 6HE.

It is proposed to have 4x padel courts created inside the Unit N building.

The Council has stated:

“Despite the proposed development being on the edge of an industrial estate, there are properties within approximately 50m of the building. There may be a noise impact from Padel, which needs quantifying. To support the application the applicant should engage a noise consultant to assess the impact of the proposal at nearby receptors to include any mitigation to the existing building. The noise assessment should include measurements of the existing noise climate at times when the courts are to be in use.”

Pulsar Acoustics has therefore been commissioned to undertake an acoustic assessment of the proposed padel courts, to recommend acoustic guidance and criteria, determine its acceptability, and recommend acoustic mitigation measures if necessary.

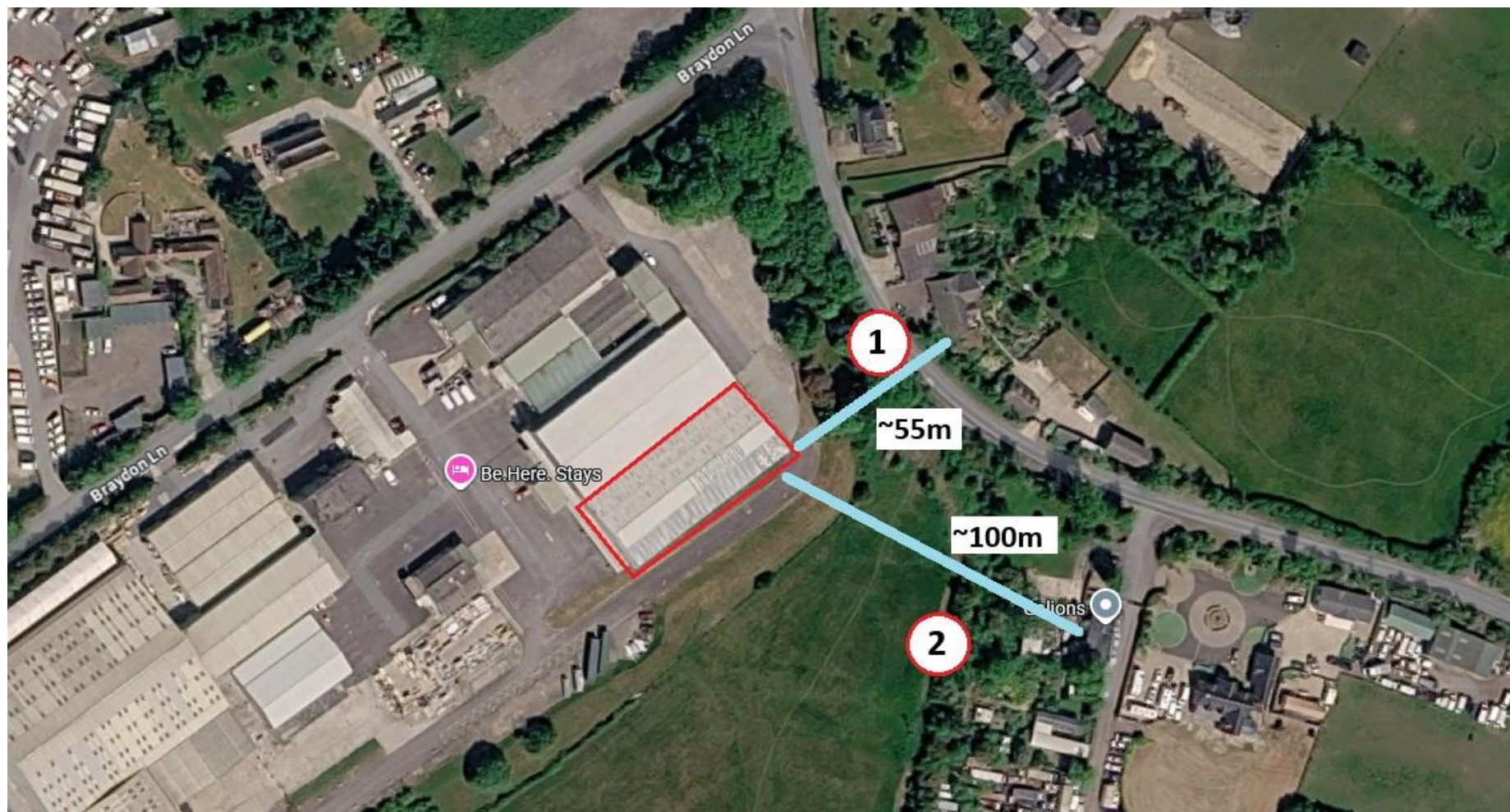
2.0 - Site Description and Proposals

The site has long established use as an industrial estate. Unit N is outlined red on the Google map image below.

The nearest noise sensitive residential dwelling to Unit N, appears to be a house approximately 55m away to the north east.

There is another dwelling located around 100m away to the south east, however, this appears to be surrounded by significant separate industrial/commercial use with hundreds of vehicles, though it is not clear what the exact use is. In all other directions there is industrial/commercial property, and as such they are not deemed noise sensitive in the context of putting padel courts inside Unit N.

The approximate distances and location of the two noise monitoring positions is also annotated on the same image below.





The image below has been taken from the architectural drawing showing the proposed internal layout.





3.0 - Guidance & Criteria

We are unaware of any British Standard or Council specific guidance, methodology, or criteria for assessing padel noise.

Padel tennis is relatively new in the UK and in the absence of definitive official guidance, we note of recent years it is common for acoustic consultancies and planning applications to consider the following:

- Sport England Design Guidance - Artificial Grass Pitch (AGP) Acoustics - Planning Implications.
- British Standard BS8233 - Guidance on sound insulation and noise reduction for buildings.

3.1 - Sport England

The Sport England Design Guidance document - Artificial Grass Pitch (AGP) Acoustics - Planning Implications 2015, is often used by Councils when considering applications for multiuse games areas where various sports can be played, including football, hockey, rugby, tennis, netball, basketball, etc.

The Sport England guidance was determined following noise measurements made during nine sports sessions on three separate AGPs. The sessions included various sports and participation by men, women and children.

The purpose was to determine 'typical' noise levels from AGP sports sessions. Noise level measurements were taken at a distance of 10 metres behind the mid-way points along goal lines and sidelines. They were found to be highest behind the sideline halfway line. The most significant noise levels were found to be generally derived from the voices of players, with the exception of hockey where impact noises of balls hitting perimeter strike boards and goal back boards were more noticeable.

In terms of determining suitable noise criteria, the Sport England guidance suggests the following:

"Page 9 - The determining noise criteria for AGPs proximity to residential properties, to avoid moderate annoyance in the daytime and evenings, as set by The World Health Organisation's 'Guidelines for Community Noise': = 50dB LAeq1hour upper noise limit external to residential properties and within external living areas."



3.2 - BS8233

The guidance for noise impact on external amenity area from British Standard BS8233 - 'Guidance on sound insulation and noise reduction for buildings', Sport England AGP, and World Health Organisation 'Guidelines for Community Noise' (WHO), are very similar, and each make reference to a target 50dBA Leq,T value.

BS8233 Section 7.7.3.2 titled 'Design criteria for external noise' recommends:

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dBA Leq,T, with an upper guideline value of 55 dBA Leq,T, which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations, or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

"Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens, and terraces, which might be intended to be used for relaxation. In high-noise areas consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55dBA Leq,T or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."



3.3 - Example Padel Court Noise Data

It is necessary to obtain representative acoustic data for the use of padel courts. We have found an acoustic assessment report online commissioned by a company called 'Padel Tech', that appears to have been used numerous times to gain planning permission around the UK.

Project details:

Solihull Arden Club - *"Installation of 4 No. padel tennis courts (2 No. covered) with 16 No. 6m high floodlighting, a touch tennis court and the creation of 10 additional car parking spaces and 6 additional cycle parking spaces."*

The acoustic report is titled - Sharps Redmore *'Environmental Assessment of noise from the playing of Padel Tennis'* - Date 20 March 2019 Project No 1717065, and we have included this in Appendix A.

The report is available from Solihull Council website for planning reference = PL/2019/01566/PPFL.

- <https://publicaccess.solihull.gov.uk/>

The report provides noise measurement data from people playing padel tennis, and we use this example data for comparison to the above industry standards.

The Padel Tech/Sharps report provides noise measurement data from people playing padel in two courts, with four players in each court.

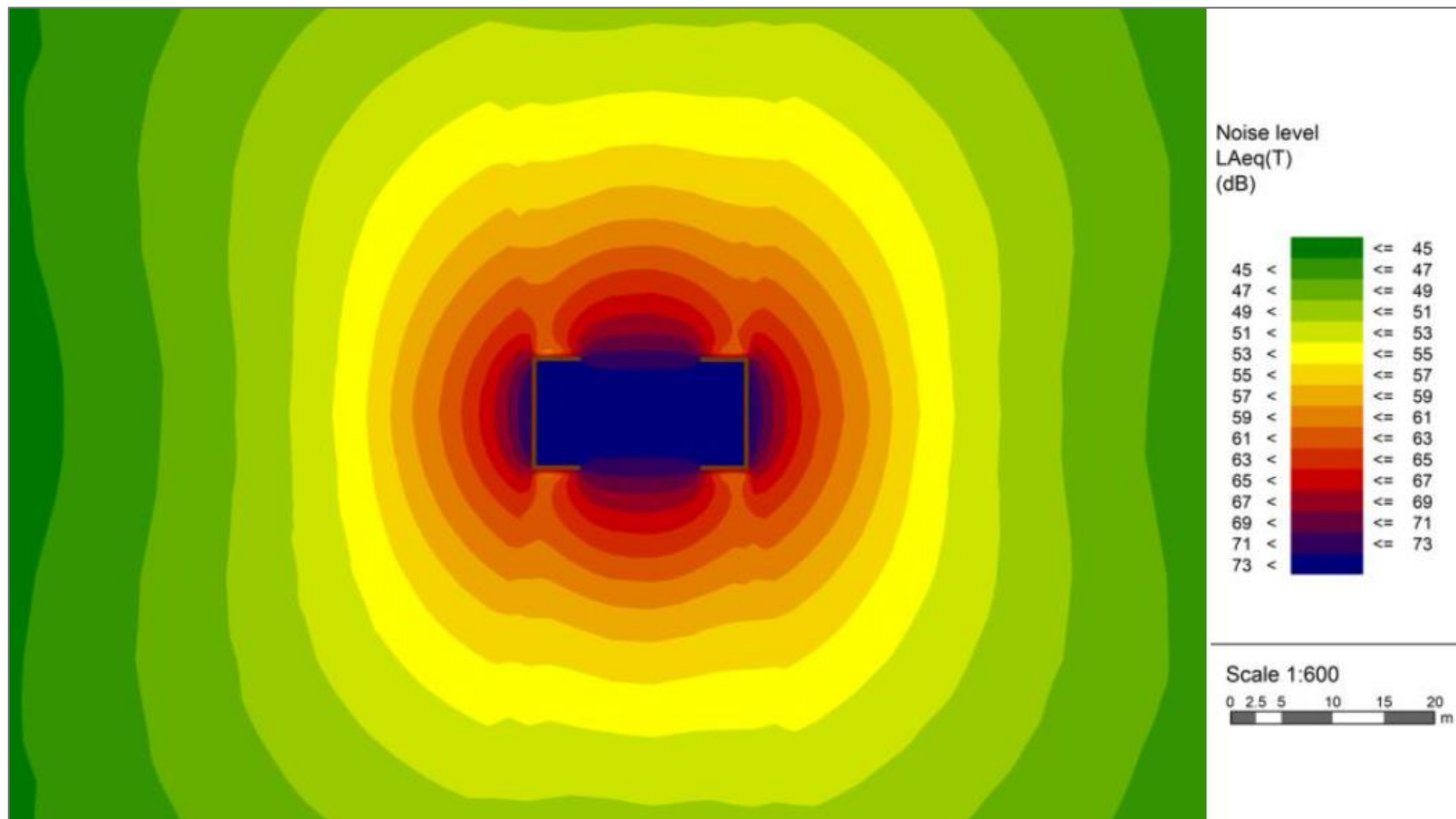
The measurements were undertaken at various distances from the side and rear of the court, following methodology which appears to be comparable to the recognised Sport England guidance for artificial grass pitches (AGP).

As described in the report, it was noted there was no significant difference in noise levels measured at the side and rear of the court. The results of the survey were input and analysed using computer noise modelling software.

The data from the Padel Tech/Sharps report has been extracted and reproduced in the table and noise model image presented below.



Distance from court - Metres	Noise level dBA Leq,1h
5	60.1
10	56.3
20	51.2
30	49.3
40	46.1





4.0 - Environmental Noise Survey

4.1 - Methodology

Sound level measurements were undertaken to determine the existing noise climate around site.

Two fixed position sound level meters were set up from approximately 12:00 hours on 21 April 2026 to 12:00 hours on 24 April 2026.

The equipment was set to log many statistical parameters in 1-hour and 15-minute intervals, including dBA Leq,_T for comparison to the industry standard guidance described in Section 3.0.

The following equipment was used to undertake the survey.

Position	Item	Make	Model	Serial Number
1	Combined SLM, Preamp & Microphone	Convergence	NSRTW_mk4	AtFWr9WQUVWXirHiy6rxvD
2	Combined SLM, Preamp & Microphone	Convergence	NSRTW_mk4	CtLOBN2y2901qLHSYyB5ID
Both	Handheld Calibrator	G.R.A.S.	GRAS-42AG	280968

The equipment was checked using the handheld calibrator before and after the survey. No significant drift was measured (no more than 0.1dB). The handheld calibrator and equipment have been calibrated to traceable standards within 12 months prior to the survey.

The sound level meters used at both positions were attached to an extension pole, which was positioned protruding from a tree, fixed using cable ties at a height of approximately 2m above ground level.

Position 1 was located towards the north east boundary approximately 6m away south from the road.

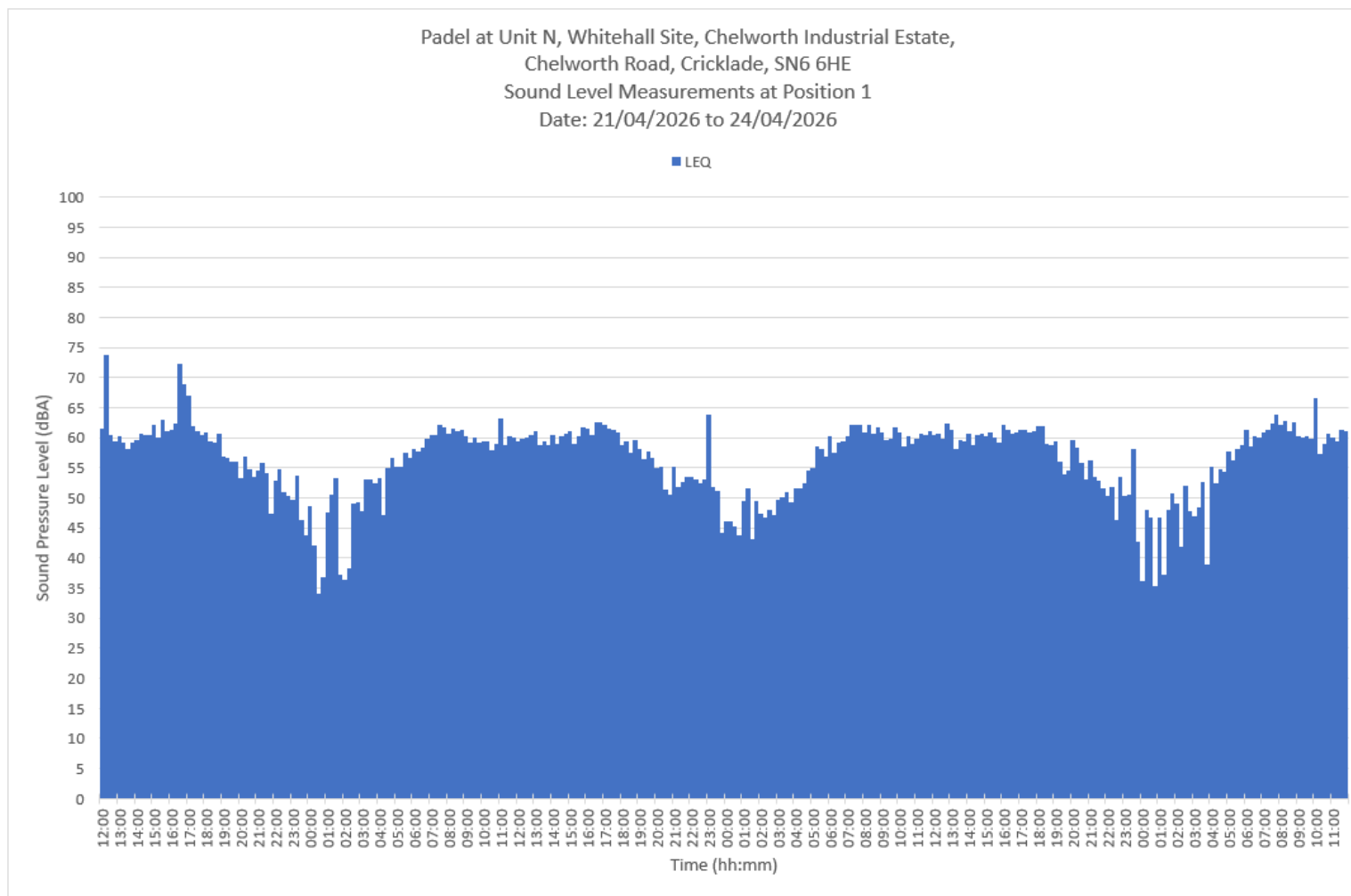
Position 2 was located on the south east boundary approximately 50m away south from the road.

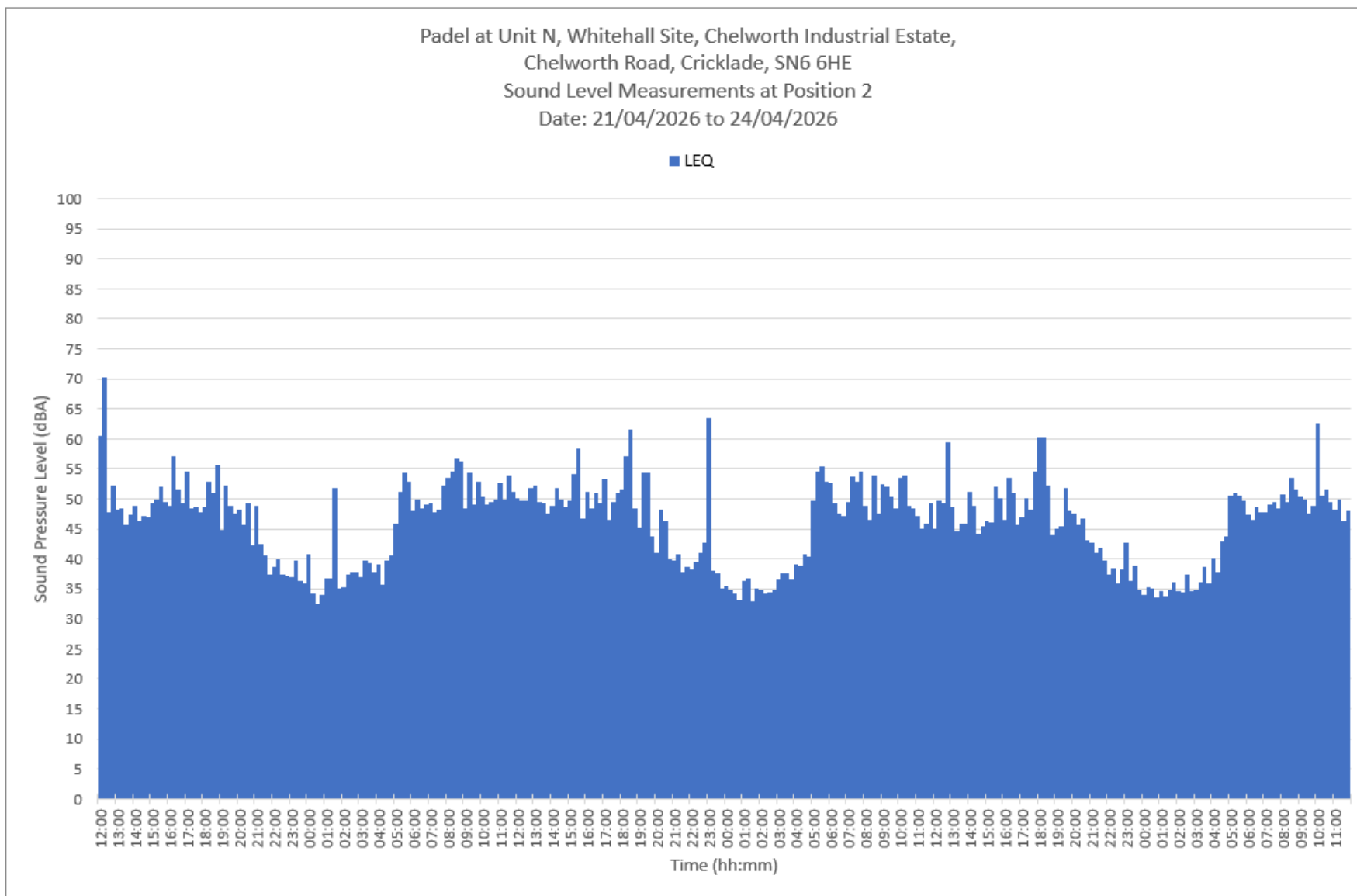
The approximate measurement positions are indicated on the site plan in Section 2.0 above.



4.2 –Measurement Data

The measured sound level data has been plotted on the time history graphs below.







The data collected each day across the proposed opening hour periods (05:00h to 23:00h), has been used to calculate the range of dBA Leq,1hour values at each position, as described in the table below.

Time	Position 1 dBA Leq,1h	Position 2 dBA Leq,1h
05:00h - 06:00h	56 to 58	50 to 54
06:00h - 07:00h	59 to 60	48 to 50
07:00h - 08:00h	61 to 62	49 to 53
08:00h - 09:00h	61 to 62	50 to 55
09:00h - 10:00h	60 to 61	49 to 52
10:00h - 11:00h	59 to 63	50 to 57
11:00h - 12:00h	61	47 to 52
12:00h - 13:00h	60 to 62	50 to 61
13:00h - 14:00h	59 to 60	47 to 50
14:00h - 15:00h	60	47 to 50
15:00h - 16:00h	60 to 62	49 to 54
16:00h - 17:00h	61 to 68	50 to 53
17:00h - 18:00h	61 to 64	51
18:00h - 19:00h	59 to 61	53 to 58
19:00h - 20:00h	56 to 57	49 to 52
20:00h - 21:00h	54 to 57	45 to 47
21:00h - 22:00h	53 to 54	39 to 44
22:00h - 23:00h	51 to 53	38 to 41

The lowest dBA Leq,1hour measured at Position 1 was 51dBA.

The lowest dBA Leq,1hour measured at Position 2 was 38dBA.

The dominant noise sources noted during the survey period was mainly due to road traffic noise and some industrial activities.



4.3 - Sound Insulation Testing

The padel courts are proposed to be located inside the Unit N building. It was therefore necessary to undertake sound insulation testing of the building to determine the inside to outside sound level difference.

The building has a large loading bay door facing the nearest house, which poses an acoustic weakness compared to the solid building fabric. The sound insulation tests were therefore undertaken through the loading bay end of the building.

Testing was undertaken by playing loud broad band diffuse 'pink noise' from a PA loud speaker within the industrial unit. Spatial average measurements of the octave band noise levels were obtained within the industrial unit using a handheld sound level meter. The measurement procedure was then repeated outside of the loading bay, and background noise levels were also measured.

The receive levels were corrected for background noise and subtracted from the source levels, to determine the Sound Level Differences (SLD) over the frequency range from 63Hz to 8,000Hz.

The test data is presented in the table below.

Source	Receive	Measurement	Sound Pressure Level (dB) at Octave Band Frequency (Hz)								dBA	SLD
			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz		
Inside	Outside	Source	83	93	95	91	90	87	93	90	98	27dBA
		Receive	69	78	73	68	64	59	57	52	71	
		Background	58	55	49	45	47	42	36	30	51	
		Corrected Receive	69	78	73	68	64	59	57	52	71	
		SLD	14	15	22	23	26	28	36	38	27	

The testing has determined the worse case inside to outside sound level difference is 27dBA.



5.0 - Padel Court Noise Assessment

5.1 - Comparison to BS8233 Guidance

As described in Section 3.2, BS8233 suggests - *“For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50dBA Leq,T, with an upper guideline value of 55dBA Leq,T, which would be acceptable in noisier environments.”*

The Padel Tech/Sharps Redmore noise data presented in Section 3.3, suggests that at distances over around 15m away from a padel court the noise levels would be less than 55dBA Leq,T, and over 30m away from a padel court the noise levels would be less than 50dBA Leq,T.

The padel courts are proposed to be at least 55m away from the nearest noise sensitive residential property, and additional attenuation is provided because the courts are inside the building.

Including the inside to outside sound level difference, and with consideration for the distance being 55m, we would anticipate the resultant padel noise outside the nearest residential dwelling to be circa 25dBA Leq,1hour.

This value is significantly lower than the outdoor BS8233 criteria, and at least 13dBA less than the lowest dBA Leq,1hour ambient background noise levels measured at Positions 1 and 2.

We believe the noise from padel would go unnoticed and should be deemed acceptable.



5.2 - Comparison to Sport England Guidance

Sport England guidance uses criteria established by the World Health Organisation (WHO), which is comparable to the BS8233 guidance described above.

As described in Section 3.1, Sport England recommends - *“The determining noise criteria for AGPs proximity to residential properties, to avoid moderate annoyance in the daytime and evenings, as set by The World Health Organisation’s ‘Guidelines for Community Noise’: = 50dB LAeq1hour upper noise limit external to residential properties and within external living areas.”*

The Padel Tech/Sharps Redmore noise data presented in Section 3.3, suggests that at distances over 30m away from a padel court the noise levels would be less than 50dBA Leq,T.

The padel courts are proposed to be at least 55m away from the nearest noise sensitive residential property, and additional attenuation is provided because the courts are inside the building.

Including the inside to outside sound level difference, and with consideration for the distance being 55m, we would anticipate the resultant padel noise outside the nearest residential dwelling to be circa 25dBA Leq,1hour.

This value is significantly lower than the outdoor Sport England and WHO criteria, and at least 13dBA less than the lowest dBA Leq,1hour ambient background noise levels measured at Positions 1 and 2.

We believe the noise from padel would go unnoticed and should be deemed acceptable.



6.0 - Conclusion

It is proposed to have 4x padel courts created inside the Unit N building and the Council has request an acoustic assessment.

Pulsar Acoustics has therefore been commissioned to undertake an acoustic assessment of the proposed padel courts, to recommend acoustic guidance and criteria, determine its acceptability, and recommend acoustic mitigation measures if necessary.

We have undertaken an environmental noise survey around site, and have undertaken sound insulation tests through the building.

We have reviewed the proposals and recommended industry standard criteria. We have compared padel court noise and environmental noise measurement data to the recommended criteria.

In the context of Sport England, WHO, and BS8233 guidance, our assessment indicates the padel noise would be significantly lower than recommended guidance, it should go unnoticed, and would pose no adverse noise impact on the nearest noise sensitive residential neighbours.

Therefore, based on the above we see no acoustic reason why planning permission would be refused.



APPENDIX A - Padel Tech/Sharps Redmore Acoustic Report

SHARPS REDMORE
ACOUSTIC CONSULTANTS • Established 1990



Report

Environmental Assessment of
noise from the playing of
Padel Tennis

Prepared by
Gary King MIOA & Stephen Jay
BSc (Hons) MIEEnvSc

Date 13 September 2017
Project No 1717065

Head Office
Sharps Redmore
The White House, London Road,
Copdock, Ipswich, IP8 3JH
T 01473 730073
E contact@sharpsredmore.co.uk
W sharpsredmore.co.uk

Regional Locations
South England (Head Office),
North England, Wales, Scotland

Sharps Redmore Partnership Limited
Registered in England No. 2993995
Directors
TJ Redmore BEng(Sci), MSc, PhD, MIOA,
CIS Registered Engineer, PhD, CEng, MIOA, MASE, MASA;
DS Evans MSc, MIOA,
KJ Millar BSc(Eng), MIOA





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- A. Acoustic Terminology



1.0 Introduction

- 1.1 Sharps Redmore (SR) to undertake an assessment of noise generated by the typical use of a padel tennis court
- 1.2 This report will be used as a generic study in support of planning applications for new padel tennis courts.
- 1.3 A guide to the assessment methodology and criteria used within this report is included in section 2.0. Details of survey noise survey is presented in section 3.0



2.0 Assessment Methodology & Criteria

2.1 The National Planning Policy Framework (NPPF), March 2012, sets out the Government's planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 123 of the NPPF states the following:

"Planning policies and decisions should aim to:

- *avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
- *mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*
- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*
- *Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

2.2 Guidance on the interpretation of the policy aims contained within the NPPF is contained within National Planning Policy Guidance (NPPG). The NPPG introduces the concept of a noise exposure hierarchy based on likely average response. The guidance contained in the NPPG is summarised in the table below:

Table 2.1: Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
		Significant Observed	



Perception	Examples of Outcomes	Increasing Effect Level	Action
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.3 The NPPF and planning practice guidance reinforces the March 2010 DEFRA publication, "Noise Policy Statement for England" (NPSE) which states three policy aims, as follows:

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

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

2.4 Together, the first to aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

"All reasonable steps should be taken to mitigate and minimise adverse effect on health and quality of life whilst also taking into consideration the guiding principles of sustainable development. This does not mean that such effects cannot occur."

2.5 The above standards do not contain technical advice; however, technical design standards are given within World Health Organisation Guideline Values and British Standard (BS) 8233:2014.

2.6 Both the above documents focus on the achievement of acceptable living standards for future developments when the development is completed.

2.7 The WHO guideline values are appropriate to what are termed "critical health effects". This means that the limits are at the lowest noise level that would result in any



psychological, physiological or sociological effect. They are, as defined by NPSE, set at the Lowest Observed Adverse Effect Level (LOAEL), but do not define the level above which effects may be considered significant (SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.

2.8 The WHO LOAEL guideline values are summarised in the following table:

Value	Guidance	Location
$L_{AeqT} = 55 \text{ dB}$	Few seriously annoyed, Daytime and evening	Continuous noise, outdoor living areas
$L_{AeqT} = 50 \text{ dB}$	Few moderately annoyed, Daytime and evening	Continuous noise, outdoor living areas
$L_{AeqT} = 35 \text{ dB}$	Acceptable level to avoid speech disturbance interference, daytime and evening	Continuous noise, dwellings, indoors
$L_{AeqT} = 45 \text{ dB}$	To avoid sleep disturbance, window open at night	Continuous noise, outside bedrooms, outdoor values
$L_{AeqT} = 30 \text{ dB}$	To avoid sleep disturbance	Continuous noise, bedrooms, indoors
$L_{Amax} = 60 \text{ dB}$	To avoid sleep disturbance, window open at night	Noise peaks, outside bedrooms, outdoor values
$L_{Amax} = 45 \text{ dB}$	To avoid sleep disturbance at night	Noise peaks, bedrooms, indoors

2.9 The use of the WHO Guidelines is supported by the advice contained within Sport England Design Guidance Note on Artificial Grass Pitch (AGP) Acoustics – Planning Applications which was published in 2015. This guidance although relating to artificial grass pitches considers the noise impact from sporting activities and is therefore relevant in this case.

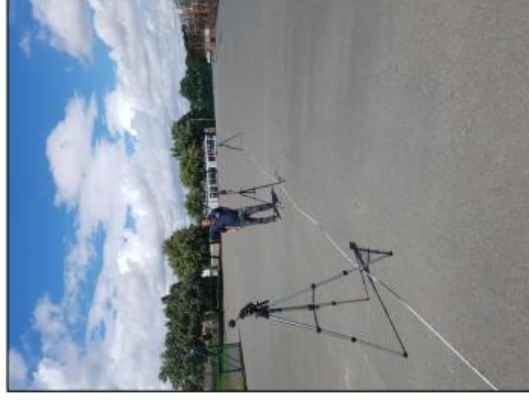
2.10 Therefore taking in account the above a noise criteria of 50 dB L_{Aeq1hr} is recommended.



3.0 Survey Details

- 3.1 Noise measurements of padel tennis court activity have been made at various positions around the Padel Tennis Court site at Streetly Academy, Sutton Coldfield. Measurements were taken during a game of mixed doubles.

Figure 1: Padel Tennis Courts, Streetly Academy



Court Activity

- 3.2 Based on observations court activity noise levels were made up of the following elements:

- Players shouting;
- Ball hitting padel tennis rackets;
- Noise hitting court screens.

- 3.3 Noise measurements of the court were undertaken with a Norsonic 118 precision sound level meter and Norsonic 140 precision sound level meter, the meters were calibrated at the beginning and end of each survey and showed no significant signs of drift. The meters were mounted on a tripod at a height of approximately 1.2 metres above ground level. Weather conditions during the survey were suitable for taking noise measurements being dry, warm with a light breeze.

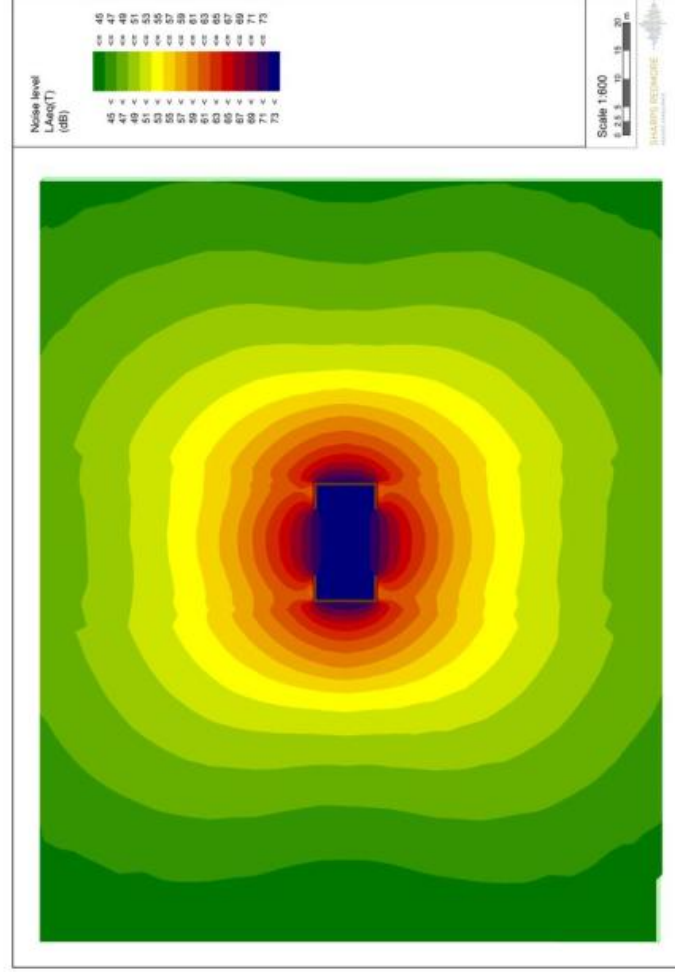
- 3.4 During the survey, 2 courts were in use with four players in each court. Measurements were taken at the rear and side of the court. There was no significant difference in noise levels measured at the side and rear of the court.

- 3.5 The noise levels from padel tennis court activity noise levels at various distances is shown in Table 1 and Figure 1 below:

Table 1: Padel Tennis Court Activity

Distance from court - metres	Ambient noise level L_{Aeq1hr} dB	Peak noise level L_{Amax} dB
5 m	60.1 dB	72 dB
10 m	56.3 dB	66 dB
20 m	51.2 dB	58 dB
30 m	49.3 dB	51 dB
40 m	46.1 dB	48 dB

Figure 1: Sound Propagation for Padel Tennis Court



- 3.6 Based on survey data to avoid exceeding the recommended guideline values in World Health Organisation and the advice contained within Sport England Design Guidance Note on Artificial Grass Pitch (AGP) Acoustics – Planning Applications, the minimum distance of the court to any noise sensitive properties over open space would need to be at least 30 metres.
- 3.7 Notwithstanding the above there are situations where for example there is additional screening or high ambient noise levels where padel tennis courts could be placed closer than 30 metres. In these situations a detailed noise assessment including survey of existing noise levels should be carried out.



APPENDIX A

ACOUSTIC TERMINOLOGY



Acoustic Terminology

A1 Noise, defined as unwanted sound, is measured in units of decibels, dB. The range of audible sounds is from 0 dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB, i.e. 50 dB + 50 dB = 53 dB. Increases in continuous sound are perceived in the following manner:

1 dB increase - barely perceptible.

3 dB increase - just noticeable.

10 dB increase - perceived as twice as loud.

A2 Frequency (or pitch) of sound is measured in units of Hertz. 1 Hertz (Hz) = 1 cycle/second. The range of frequencies audible to the human ear is around 20Hz to 18000Hz (or 18kHz). The capability of a person to hear higher frequencies will reduce with age. The ear is more sensitive to medium frequency than high or low frequencies.

A3 To take account of the varying sensitivity of people to different frequencies a weighting scale has been universally adopted called "A-weighting". The measuring equipment has the ability automatically to weight (or filter) a sound to this A scale so that the sound level it measures best correlates to the subjective response of a person. The unit of measurement thus becomes dBA (decibel, A-weighted).

A4 The second important characteristic of sound is amplitude or level. Two units are used to express level, a) sound power level - L_w and b) sound pressure level - L_p . Sound power level is an inherent property of a source whilst sound pressure level is dependent on surroundings/distance/directivity, etc. The sound level that is measured on a meter is the sound pressure level, L_p .

A5 External sound levels are rarely steady but rise or fall in response to the activity in the area - cars, voices, planes, birdsong, etc. A person's subjective response to different noises has been found to vary dependent on the type and temporal distribution of a particular type of noise. A set of statistical indices have been developed for the subjective response to these different noise sources.

A6 The main noise indices in use in the UK are:

L_{A90} : The sound level (in dBA) exceeded for 90% of the time. This level gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background sound level" of an area.

L_{Aeq} : The equivalent continuous sound level in dBA. This unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the intermittent noise". In other words, the energy average level. This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as aircraft and trains.



L_{A10'}: The sound level (in dBA) exceeded for 10% of the time. This level gives an indication of the sound level during the noisier periods of time in any given sample. It has been used over many years to measure and assess road traffic noise.

L_{Amax} The maximum level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.

A7 The sound energy of a transient event may be described by a term SEL - Sound Exposure Level. This is the L_{Aeq} level normalised to one second. That is the constant level in dBA which lasting for one second has the same amount of acoustic energy as a given A weighted noise event lasting for a period of time. The use of this unit allows the prediction of the L_{Aeq} level over any period and for any number of events using the equation;

$$L_{AeqT} = SEL + 10 \log n - 10 \log T \text{ dB.}$$

Where

n = Number of events in time period T.

T = Total sample period in seconds.

A8 In the open, known as free field, sound attenuates at a rate of 6 dB per each doubling of distance. This is known as geometric spreading or sometimes referred to as the Inverse Square Law. As noise is measured on a Logarithmic scale, this attenuation in distance = 20 Log (ratio of distances), e.g. for a noise level of 60 dB at ten metres, the corresponding level at 160 metres is:

$$60 - 20 \log \frac{160}{10} = 60 - 24 = 36 \text{ dB}$$