



Ponderosa, Church Street, Briton Ferry

Noise Assessment for Planning Application

3rd February 2023

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1. INTRODUCTION

1.1. Overview

inacoustic has been commissioned to assess the impact of noise at a traveller site, off at No.1 Ponderosa, Church Street, Briton Ferry, in respect of the site's suitability for residential development.

The following technical noise assessment has been produced to provide supporting information to accompany a partially retrospective planning application to Neath Port Talbot County Borough Council and is based upon environmental noise measurements undertaken at the site.

This noise assessment is necessarily technical in nature; therefore a glossary of terms is included in Appendix A to assist the reader.

1.2. Scope and Objectives

The scope of the noise assessment can be summarised as follows:

- A sound monitoring survey was undertaken at discrete locations around the Site;
- A detailed assessment of the suitability of the Site, in accordance with relevant standards in respect of sound from the existing sources; and
- Recommendation of mitigation measures, where necessary, to comply with the requirements of TAN11¹, and BS8233:2014².

¹ Planning Guidance (Wales), Technical Advice Note (TAN) 11: Noise – October 1997.

² British Standard Institution. BS 8233:2014: Guidance on noise reduction and sound insulation for buildings.

2. LEGISLATION AND POLICY FRAMEWORK

The development proposals for the Site are guided by the following policy directives and guidance:

2.1. National Policy

2.1.1. Planning Policy Wales

The Government's planning policies for Wales are contained in Planning Policy Wales (Edition 11, February 2021). The policy provides overarching requirements for developments to adequately control noise pollution, to provide appropriate soundscapes and to incorporate good acoustic design.

The policy is supplemented by the Noise and Soundscape Action Plan 2018-2023, which provides more detailed guidance on planning for a new development, but does not set out specific assessment methods or criteria. The guidance in this document has been used to inform a qualitative assessment of the effect the proposed development could have on the local soundscape.

2.1.2. Technical Advice Note (Wales) 11 – Noise

Technical Advice Note (Wales) 11 (TAN11) has been referenced in determining the suitability of the Site for residential development. TAN11 sets out the Welsh Assembly Government's policies on noise-related planning issues. It sets out the overarching policy context for the management of noise within the planning system, in terms of how both noise-generating developments and noise-sensitive developments should be considered.

TAN11 gives guidance to local authorities in Wales guidance on the use of their planning powers to minimise the adverse impact of noise. Specifically, TAN11:

- outlines the considerations to be taken into account when determining planning applications for both noise-sensitive developments and for those activities which will generate noise;
- sets out noise exposure categories for residential development, encourages their use and recommends appropriate levels for exposure to different sources of noise; and
- advises on the use of planning conditions to minimise the impact of noise.

The four noise exposure category bands set out in TAN11 (or NECs) are designed to assist local planning authorities in evaluating applications for residential development in noisy areas. Table 1 summarises the noise levels that correspond to each NEC band for mixed noise sources, which are the most relevant to this development.

TABLE 1: NOISE LEVELS CORRESPONDING TO NECs FOR NEW DWELLINGS – $L_{Aeq,T}$ dB

Time Period	Noise Exposure Category (NEC) – Road Traffic/Mixed Sources			
	A	B	C	D
07:00-23:00	<55	55 – 63	63 – 72	>72
23:00-07:00	<45	45 – 57	57 – 66	>66
N.B. Additionally, during night-time (2300 – 0700), sites where individual noise events exceed 82 dB L_{Amax} (slow time weighting) more than twice in any hour during this period should be treated as being in NEC C, regardless of the $L_{Aeq,8h}$ (except where the $L_{Aeq,8h}$ already puts the site in NEC D).				

The relevant planning advice to the local authority with respect to each NEC is presented in Table 2.

TABLE 2: PLANNING ADVICE CORRESPONDING TO NECs FOR NEW DWELLINGS

NEC	Advice to Local Planning Authority
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

In addition to the above, TAN11 also states that during the night, (23:00 to 07:00 hours):

“Sites where individual noise events regularly exceed 82dB L_{Amax} (S time weighting) several times in any hour should be treated as being in NEC C, regardless of the $L_{Aeq,8hr}$ (except where the $L_{Aeq,8hr}$ already puts the site into NEC D).”

The advice within TAN 11 is useful as a planning tool; however, it is quite blunt, so reference is primarily made within this report to British Standards, which offer a greater degree of objective analysis.

2.2. British Standards

2.2.1. BS8233:2014

BS 8233:2014 draws on the results of research and experience to provide information on achieving internal acoustic environments appropriate to their functions. The guideline values provided are in terms of an average (L_{Aeq}) level.

The standard advises that, for steady external noise sources, it is desirable for internal ambient noise levels to not exceed the guidance values, as detailed below in Table 3.

TABLE 3: BS8233:2014 AMBIENT NOISE LEVELS

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room	40 dB $L_{Aeq,16hour}$	-
Sleeping	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$
Cooking/Bathing	Kitchen/Bathroom	45 dB $L_{Aeq,16hour}$	-

BS8233:2014 goes on to suggest that where development is considered necessary or desirable, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions will still be achieved.

With regard to maximum noise levels, the standard identifies that regular individual noise events (such as passing trains or scheduled aircraft etc) can cause sleep disturbance. The standard does not provide a guideline design target, but simply goes on to suggest that a guideline value may be set in terms of SEL or $L_{Amax,F}$, depending upon the character and number of events per night. It goes on to suggest that more sporadic noise events could require separate values.

In respect of external noise levels, the guidance in BS8233:2014 suggests that *“it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments”*.

BS8233:2014 provides a much more detailed narrative on noise levels in external amenity areas and acknowledges that it may not always be necessary or feasible to ensure that noise levels remain within these guideline values.

In respect of gardens and patios, BS8233:2014 states;

“...it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable.”

BS8233: 2014 goes on to state, for 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”.

In respect of balconies, roof gardens and terraces, BS8233:2014 states; *“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 55 dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space”.*

It is clear from the narrative of BS8233:2014, that proposed development within noisy environments should be designed to ensure that the recommended internal design standards are achieved, and that noise levels in external amenity areas are designed to effectively control and reduce noise levels, although it acknowledges that in certain circumstance meeting the external design recommendations may not be feasible, or necessary, especially where the provision of such spaces is desirable for other technical, planning or policy reasons.

3. SITE DESCRIPTION

3.1. Site and Surrounding Area

The site lies in an elevated location to the south side of Church Street, Briton Ferry, within a parcel of land formed by the Docks Estate Road in the south, railway line to the east and Church Road to the north. The area is primarily residential in nature, transitioning to commercial at approximately 100m to the south of the site.

To the south of the site is the A48 Briton Ferry Bridge, which sits at a substantially elevated location above the site and benefits from solid parapet walls on either side. To the south of the A48 corridor is the Docks Estate, which includes a variety of commercial activities, primarily related to materials recycling.

The sound environment at the site is primarily influenced by road traffic noise, comprising vehicles travelling on the local road network and over the A48 bridge. It was noted that vehicle speeds on the A48 were limited to 50mph and that the proximity of the A48/A474 roundabout ensured that flow speeds were suppressed, thus reducing noise generation.

The main line railway running to the west of the site carries the Hitachi bi-mode Class 800 express trains that replaced the Class 43 Inter-City 125 diesel-electric HSTs in recent years. The new units are more aerodynamic, much quieter and pass the site at moderate speeds, as a result of the nature of the track. Consequently, noise arising from train pass-by events is much less intrusive and significant than may be expected for a location such as this, as a result of low-noise technology and a much shallower rate of attack.

It was also noted that no audible phenomena were attributed to activities within the Docks Estate, with the sound environment being entirely governed by anonymous, transport sources and at a level that was not considered intrusive.

The application area is shown on Figure 1.

3.2. Development Overview

The application proposes to locate a single traveller pitch on the site, including a static mobile home, a utility room, dayroom, hardstanding and landscaping.

The static home, utility room, hardstanding and perimeter fencing have already been constructed and are occupied by the Applicant's family. This comprises the retrospective element, with the dayroom, which is yet to be constructed, comprising the non-retrospective element.

The static home is designed and oriented such that all habitable room windows are located on the west and north facades, so do not directly overlook the railway line or major road corridors. The close board timber fence along the eastern boundary extends to the height of the eaves of the static home, such that the tops of all windows are below the height of the top of the fence. All other fencing extends to a height of circa 1.8m.

The Development layout can be seen in Figure 2.

FIGURE 1: APPLICATION SITE

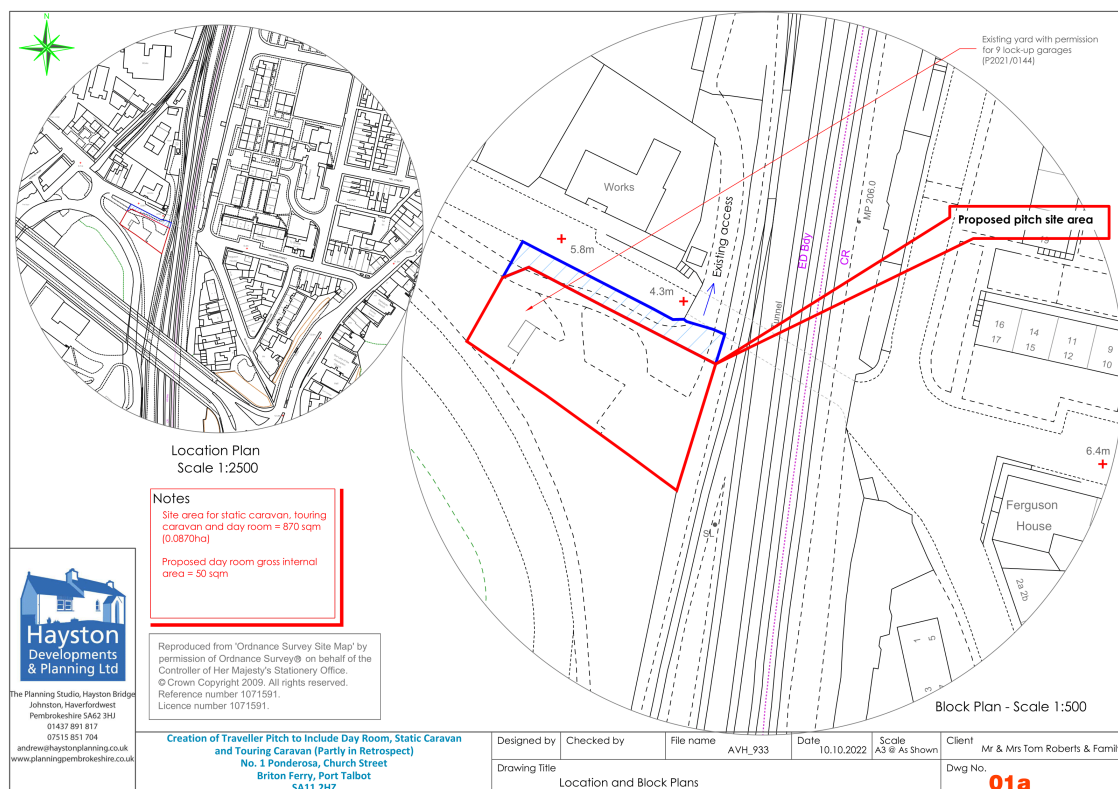
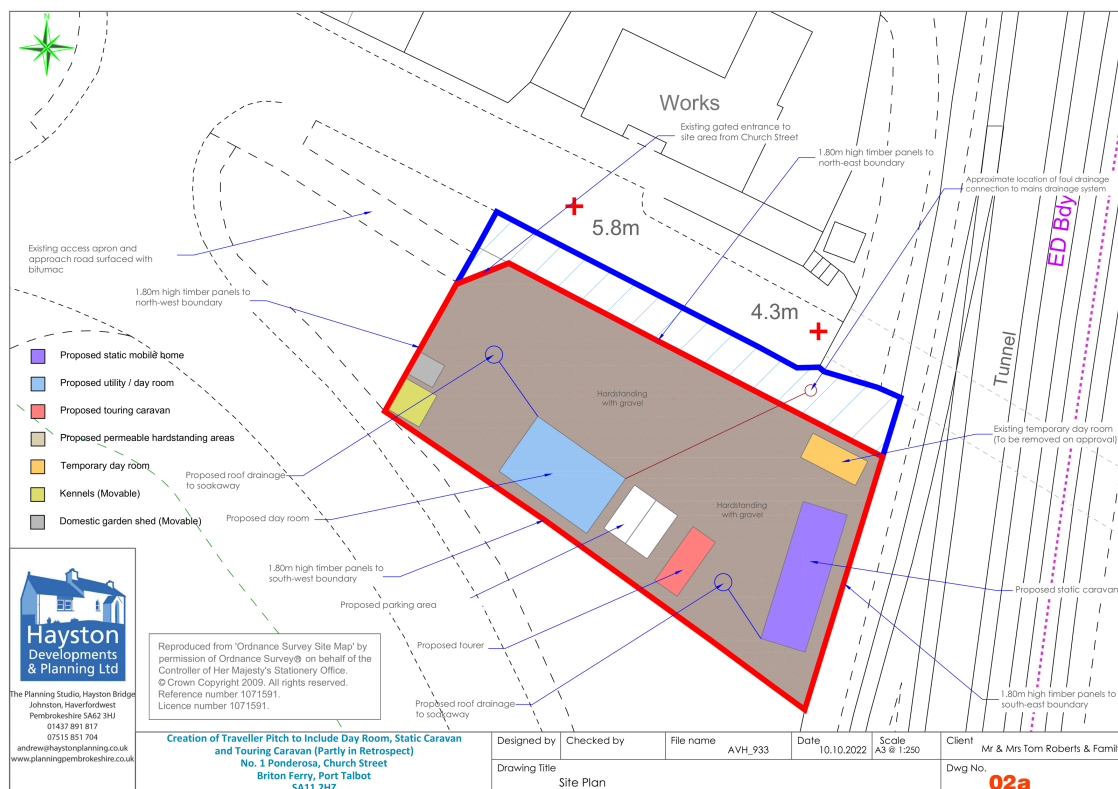


FIGURE 2: DEVELOPMENT LAYOUT



4. MEASUREMENT METHODOLOGY

4.1. General

The prevailing noise conditions in the area have been determined by a partially attended environmental noise survey, undertaken between Tuesday 31st January and Wednesday 1st February 2023.

4.2. Measurement Details

All noise measurements were undertaken by a consultant certified as competent in environmental noise monitoring, and, in accordance with the principles of BS 7445³.

All acoustic measurement equipment used during the noise survey conformed to Type 1 specification of British Standard 61672⁴. A full inventory of this equipment is shown in Table 4 below.

TABLE 4: INVENTORY OF SOUND MEASUREMENT EQUIPMENT

Position	Make, Model & Description	Serial Number	Calibration Certificate Number	Calibration Expiry Date
MP1	Rion NL-52 Sound Level Meter	01043462	1115506	17/08/2023
	Rion NH-25 Preamplifier	43491	1115506	17/08/2023
	Rion UC-59 Microphone	07238	1115506	17/08/2023
	Cirrus CR:515 Acoustic Calibrator	82506	1131626	23/08/2023

The sound measurement equipment used during the survey was field calibrated at the start and end of the measurement period. A calibration laboratory has calibrated the field calibrator used within the twelve months preceding the measurements. A drift of less than 0.2 dB in the field calibration was found to have occurred on the sound level meter.

The weather conditions during the attended survey were conducive to noise measurement, it being dry, with low wind speeds.

The microphone was fitted with a protective windshield for the measurement, which is described in Table 5, with a photograph identifying its location shown in Figure 3.

³ British Standard 7445: 2003: Description and measurement of environmental noise. BSI

⁴ British Standard 61672: 2013: Electroacoustics. Sound level meters. Part 1 Specifications. BSI.

TABLE 5: MEASUREMENT POSITION DESCRIPTION

Measurement Position	Description
MP1	A partially attended, free-field measurement of sound at the south-east corner of the site, at its closest point to the railway line and major roads, at a height of 2.2 metres above local ground level, with an unobstructed line of sight to these sound sources. This position was specifically chosen due to being the most potentially noise-exposed part of the site. The sound environment at this location was influenced by road traffic using the surrounding roads and the A48 route corridor, with contributions arising from passing trains on the adjacent railway line.

FIGURE 3: SOUND MEASUREMENT POSITION



4.3. Summary Results

The summarised results of the environmental noise measurements are presented in Table 6 and Table 7.

TABLE 6: SUMMARY OF NOISE MEASUREMENT RESULTS

Position	Period	Noise Level, dB			
		L _{Aeq,T}	L _{A90}	L _{A10}	L _{Amax}
MP1	Day	56.8	52.2	57.6	74.2
	Night	50.5	42.3	48.9	65.4

TABLE 7: MEASURED SPECTRA

Period	dB(A)	Octave Band (Hz) Sound Level (dB)							
		63	125	250	500	1000	2000	4000	8000
MP1									
L _{eq,T}									
Day	56.8	68.2	59.4	54.3	52.5	54.2	46.6	39.7	34.4
Night	50.5	59.5	48.5	44.8	45.2	47.2	43.6	37.3	33.2
L _{FMax}									
Night	65.4	63.0	52.1	50.3	52.1	53.0	47.3	46.7	65.5

5. NOISE ASSESSMENT

5.1. General

The on-site observations and data presented in Table 6 and Table 7 identify that the noise environment at the site is moderately influenced by transport sources, with an overall categorisation of NEC B, considering the TAN11 guidance.

For sites falling within NEC B, TAN11 states:

- *Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.*

Noise levels at the boundary of the site reach 57 dB(A) by day and 51 dB(A) by night, with night-time L_{AFmax} levels reaching 65 dB(A) at the most noise-exposed part of the site, representative of the roof of the static home.

The boundary fencing will have a mitigative effect on the received noise levels at the dwelling facades and within the external space, despite not being of an acoustic design. Furthermore, the orientation of the static home and proposed day room, will reduce the levels of noise incident upon the fenestrated facades to habitable spaces.

The proposed external areas of the site, which would be considered to have private or communal amenity value will broadly comply with the <55 dB $L_{Aeq,16-hour}$ daytime criterion set out within BS8233:2104, with greater compliance being achieved in the more screened areas of the site, especially taking account of localised screening afforded by the site structures.

5.2. Façade Requirements

An assessment for a traveler site, such as this one, differs from that of a traditional residential noise assessment, insofar as the static home achieve a stock level of sound attenuation i.e. a house constructed on site can be built to achieve a specific level of sound reduction, but a static home or caravan achieves what it has been manufactured to achieve and is essentially, an off-the-shelf product. Consequently, an assessment that provides a suite of sound reduction performance measures for glazing, ventilation and wall/roof elements does not suit this particular scenario, as that may not be obtainable on the open market.

Our archive acoustic performance data for various façade types and make-ups identifies that the typical façade construction of a caravan or mobile home provides a composite $R_w + C_{tr}$ of 26 dB, with windows closed and 15 dB with windows partially open for ventilation.

Consequently, façade areas with a daytime $L_{Aeq,16-hour}$ of below 55 dB and a night-time $L_{Aeq,8-hour}$ of below 50 dB, will provide BS8233:2014-compliant internal noise levels with windows partially open for ventilation, taking account of the criteria +5 dB provision for natural ventilation.

Considering that the measured sound levels at the most noise-exposed part of the site only exceed this daytime criterion by 2 dB during the day, it is clear that compliance with these criteria will be experienced throughout the site, as a result of the screening introduced by and carefully considered layout and orientation of the development.

Furthermore, on the basis of the measured sound levels, all areas of the site will provide BS8233:2014-compliant internal noise levels with windows closed, resulting in comfortable levels of compliance for the habitable elements of the scheme.

Consequently, the site is considered to demonstrate good acoustic design and be acoustically suitable for the proposed use in its current and proposed form.

6. CONCLUSION

inacoustic has been commissioned to assess the impact of noise at a traveller site, off at No.1 Ponderosa, Church Street, Briton Ferry, in respect of the site's suitability for residential development.

This technical noise assessment has been produced to provide supporting information to accompany a partially retrospective planning application to Neath Port Talbot County Borough Council and is based upon environmental noise measurements undertaken at the site.

The assessment has identified that no additional acoustic mitigation measures are required to achieve acceptable acoustic criteria for the proposed use of the site, with the site design and typical acoustic performances of the proposed dwellings being sufficient to provide appropriate internal and external levels of acoustic amenity.

In light of the above, which demonstrates that the site meets the requirements of the relevant planning guidance, it is considered that noise does not present a constraint to the granting of planning permission for the Proposed Development.

7. APPENDICES

7.1. Appendix A – Definition of Terms

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20μPa (20x10 ⁻⁶ Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,T}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the "average minimum" noise level and is often used to describe the background noise.
$L_{10,T}$	A noise level index. The noise level exceeded for 10% of the time over the period T. L_{10} can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Facade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast Time Weighting	An averaging time used in sound level meters. Defined in BS 5969.

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0 dB (the threshold of hearing) to over 120 dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

TABLE 8: TYPICAL SOUND LEVELS FOUND IN THE ENVIRONMENT

Sound Level	Location
0dB(A)	Threshold of hearing
20 to 30dB(A)	Quiet bedroom at night
30 to 40dB(A)	Living room during the day
40 to 50dB(A)	Typical office
50 to 60dB(A)	Inside a car
60 to 70dB(A)	Typical high street
70 to 90dB(A)	Inside factory
100 to 110dB(A)	Burglar alarm at 1m away
110 to 130dB(A)	Jet aircraft on take off
140dB(A)	Threshold of Pain

The ear is less sensitive to some frequencies than to others. The A-weighting scale is used to approximate the frequency response of the ear. Levels weighted using this scale are commonly identified by the notation dB(A).

In accordance with logarithmic addition, combining two sources with equal noise levels would result in an increase of 3 dB(A) in the noise level from a single source.

A change of 3 dB(A) is generally regarded as the smallest change in broadband continuous noise which the human ear can detect (although in certain controlled circumstances a change of 1 dB(A) is just perceptible). Therefore, a 2 dB(A) increase would not be normally be perceptible. A 10 dB(A) increase in noise represents a subjective doubling of loudness.

A noise impact on a community is deemed to occur when a new noise is introduced that is out of character with the area, or when a significant increase above the pre-existing ambient noise level occurs.

For levels of noise that vary with time, it is necessary to employ a statistical index that allows for this variation. These statistical indices are expressed as the sound level that is exceeded for a percentage of the time period of interest. In the UK, traffic noise is measured as the L_{A10} , the noise level exceeded for 10% of the measurement period. The L_{A90} is the level exceeded for 90% of the time and has been adopted to represent the background noise level in the absence of discrete events. An alternative way of assessing the time varying noise levels is to use the equivalent continuous sound level, L_{Aeq} .

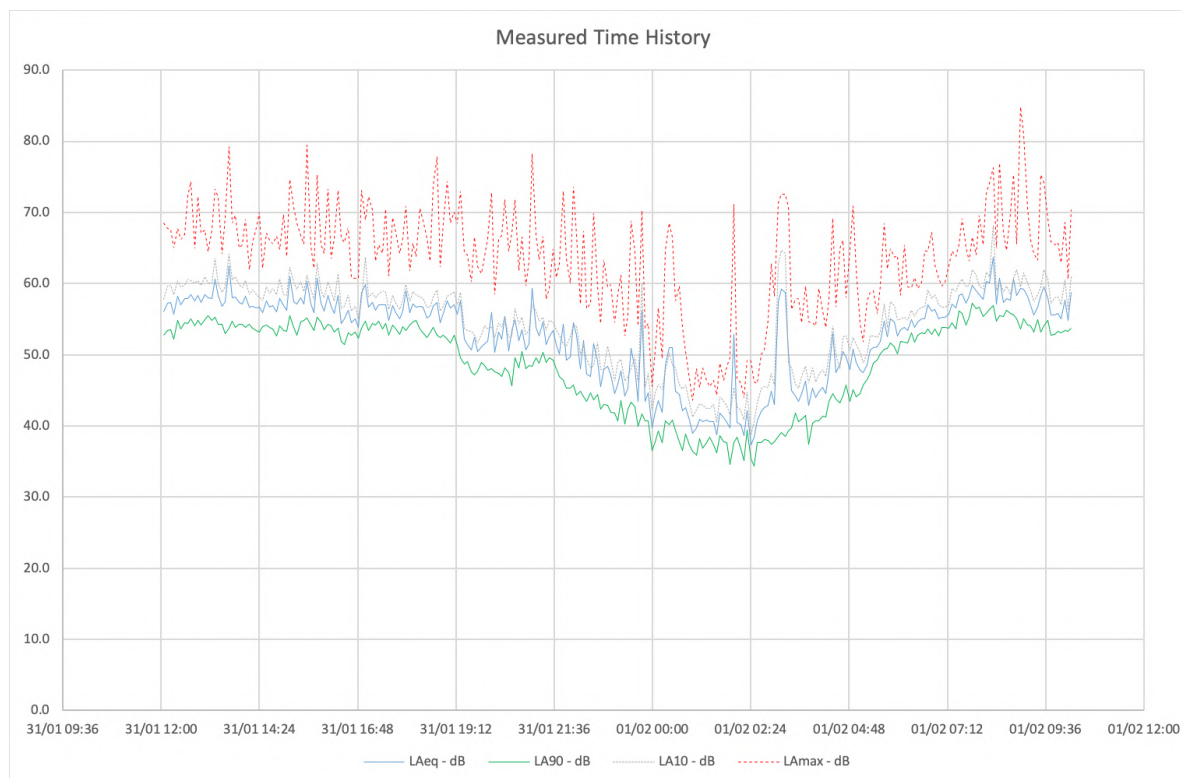
This is a notional steady level that would, over a given period of time, deliver the same sound energy as the actual fluctuating sound.

To put these quantities into context, where a receiver is predominantly affected by continuous flows of road traffic, a doubling or halving of the flows would result in a just perceptible change of 3 dB, while an increase of more than 25%, or a decrease of more than 20%, in traffic flows represent changes of 1 dB in traffic noise levels (assuming no alteration in the mix of traffic or flow speeds).

Note that the time constant and the period of the noise measurement should be specified. For example, BS 4142 specifies background noise measurement periods of 1 hour during the day and 15 minutes during the night. The noise levels are commonly symbolised as $L_{A90,1\text{hour}}$ dB and $L_{A90,15\text{mins}}$ dB. The noise measurement should be recorded using a 'FAST' time response equivalent to 0.125 ms.

7.2. Appendix B – Measurement Results

FIGURE 4: MEASURED TIME HISTORY



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