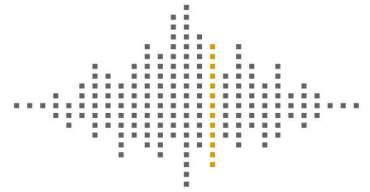


SHARPS REDMORE

ACOUSTIC CONSULTANTS ▪ Established 1990



Report 1a

Noise Assessment

Penistone Station Car Park

Prepared by

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This report has been prepared with all reasonable skill, care and diligence commensurate with an acoustic consultancy practice under the terms and brief agreed with our client at that time. Sharps Redmore provides no duty or responsibility to any third party who relies upon its content, recommendations or conclusions. The contents of this report should be reviewed by other disciplines to confirm that it is appropriate for their design responsibilities..

1.0 Introduction

- 1.1 Sharps Redmore have been appointed by Barnsley Metropolitan Borough Council (BMBC) to undertake a noise assessment in relation to a new car park at Penistone train station. The location of the new car park is off Lairds Way to the east of the existing rail tracks.
- 1.2 The site location plan is shown in Figure 1.1 below.

Figure 1.1: Site Location Plan



- 1.3 The assessment methodology and criteria are presented in Section 2. Baseline noise surveys have been undertaken to establish existing noise levels at the site with the details of the surveys presented in Section 3. The key findings of the assessment are presented in Section 4 with conclusions in Section 5.
- 1.4 A guide to the acoustic terminology used within this report is included in Appendix A.

2.0 Assessment Methodology and Criteria

2.1 The National Planning Policy Framework (NPPF)¹, August 2026, sets out the Government's planning policies for England and these policies articulate the Government's vision of sustainable development. In respect of noise, Section 17, Policy "P3: Living conditions and pollution" on page 79, states:

- "1. Development proposals should be appropriate for their location, taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and natural environment, whether these effects are on or off-site; and whether this is as a result of the development itself or the product of preexisting conditions in the vicinity. In assessing potential effects of pollution, consideration should be given to the potential sensitivity of the site, and its intended occupiers and users, as well as that of the environment and population in the surrounding area (including where certain groups could be particularly vulnerable to its effects, such as children and older people).*
- 2. Within this context development proposals should:*
 - a. Provide healthy living conditions for occupiers and users in terms of ... avoiding exposure to levels of ... noise ... which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions.*
 - b. Not give rise to, or contribute to ... unacceptable levels of ... noise ... on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree.*
 - d. Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason)."*

2.2 In addition, Policy P4: Impact of development on existing activities states:

- 3. Existing businesses, community facilities, public services and defence and security activities should not have unreasonable restrictions placed on their current or permitted operation as a result of development being approved after they were established. This means that development proposals should be capable of being integrated effectively with existing business, community and public service activities and infrastructure in their vicinity (including, but not limited to, uses such as pubs, music venues, places of worship, sports clubs, blue light services, defence, electricity network infrastructure and industrial and waste sites.*
- 4. Where the operation of an existing activity could have a significant adverse effect on a proposed new development in its vicinity, development proposals should:*

¹ National Planning Policy Framework, Ministry of Housing, Communities and Local Government, August 2026

a) *Identify the nature of the potential impacts, informed where necessary by early discussions between the applicant (i.e. the 'agent of change') and those existing uses which could be affected by the proposal to inform the scope for mitigation; and*

b) *Be able to demonstrate that suitable mitigation can be provided before first occupation of the development, if it is to be acceptable. Planning conditions or obligations should be used to secure agreed mitigation measures.*

2.3 In summary the primary aim of the NPPF is the avoidance of unacceptable or significant adverse impacts and where adverse impacts occur to mitigate and reduce these to provide acceptable living conditions. This does not mean that adverse effects cannot occur.

2.4 Guidance on the interpretation of the policy aims contained within the NPPF is contained within National Planning Policy Guidance (NPPG)². The NPPG introduces the concept of a noise exposure hierarchy based on likely average response. The guidance contained in the NPPG is summarised in Table 2.1:

Table 2.1: Noise Exposure Hierarchy

Response	Examples of Outcomes	Increasing Effect Level	Action
No Observed Effect Level			
Not noticeable	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, 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 small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			

² Planning Practice Guidance: Noise, Ministry of Housing, Communities and Local Government, July 2019

Response	Examples of Outcomes	Increasing Effect Level	Action
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, 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
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

2.5 The NPPF and NPPG reinforce the March 2010 DEFRA publication, “Noise Policy Statement for England”³ (NPSE), which states three policy aims, as follows:

2.6 *“Through the effective management and control of 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.”

2.7 Taking an overview of national policy aims and guidance it is clear that when considering the impact of noise that the fact can be heard and causes impact, is not reason to refuse an application as consideration should also be given to the significance of the impact and the mitigation measures available.

2.8 The NSPE also states “...the application of the NPSE should enable noise to be considered alongside other relevant issues and not to be considered in isolation. In the past, the wider benefits of a particular policy, development or other activity may not have been given adequate weight when assessing the noise implications”.

Standards and guidance

2.9 It is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source may be determined by several methods, such as:

³ Noise Policy Statement for England, Department for Environment, Food and Rural Affairs, March 2010

- i) The effect may be determined by reference to guideline noise values, such as those contained in the World Health Organisation (WHO) “Guidelines for Community Noise”⁴.
- ii) Another method the impact may be determined by is considering the change in noise level that would result from the proposal, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road.
- iii) Alternatively, BS 4142:2014+A1:2019⁵ presents a method to determine the significance of sound impact from sources of industrial and/or commercial nature. The sources that the standard is intended to assess are sound from industrial and manufacturing processes, sound from fixed plant installations, sound from loading and unloading of goods at industrial and/or commercial premises and the sound from mobile plant and vehicles, such as forklift, train or ship movements. It is not considered that this standard is applicable to the assessment of noise from a proposed car park.

Guidelines for Community Noise

- 2.10 The WHO “Community Noise Guidelines” (CNG) 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 or physiological 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 are significant (the SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim, depending on context.
- 2.11 In 2018 the WHO published the “Environmental Noise Guidelines for the European Region” (ENGER). The latest WHO Environmental Noise Guidelines (page 28) explain that “The current environmental noise guidelines for the European Region supersede the CNG from 1999. Nevertheless, the GDG (Guideline Development Group) recommends that all CNG indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid”. Hence the CNG remain relevant to this assessment.
- 2.12 The WHO ENGER brings together the latest research on the effects of specific types of noise on health in relation to transportation noise sources (road, rail and aircraft noise exposure), wind turbines and leisure noise. Hence in direct relation to the specific proposal that this noise assessment considers, the new WHO ENGER are not of material consideration.
- 2.13 The relevant World Health Organisation (CNG) noise values are summarised in the following table:

⁴ World Health Organisation (1999), “Guidelines for Community Noise”

⁵ BS 4142:2014+A1:2019, Methods for rating and assessing industrial and commercial sound

Table 2.2: WHO CNG values

Document	Level	Guidance
World Health Organisation “Guidelines for Community Noise 1999”	$L_{AeqT} = 55 \text{ dB}$	Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	$L_{AeqT} = 50 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	$L_{AeqT} = 35 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	$L_{AeqT} = 45 \text{ dB}$	Sleep disturbance, windows open at night. (external level).
	$L_{AeqT} = 30 \text{ dB}$	Sleep disturbance, night-time (indoors)
	$L_{Amax} = 60 \text{ dB}$	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
	$L_{Amax} = 45 \text{ dB}$	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)

Changes in noise level

- 2.14 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dBA are equivalent to a doubling of loudness. This guidance has been accepted by inspectors, at inquiry, to encompass changes in noise levels in the index L_{AeqT} in respect to road traffic noise.
- 2.15 Table 2.3 below shows the response to changes in noise (known as a semantic scale); this table has been developed from general consensus opinion of acousticians.

Table 2.3: Change in noise level

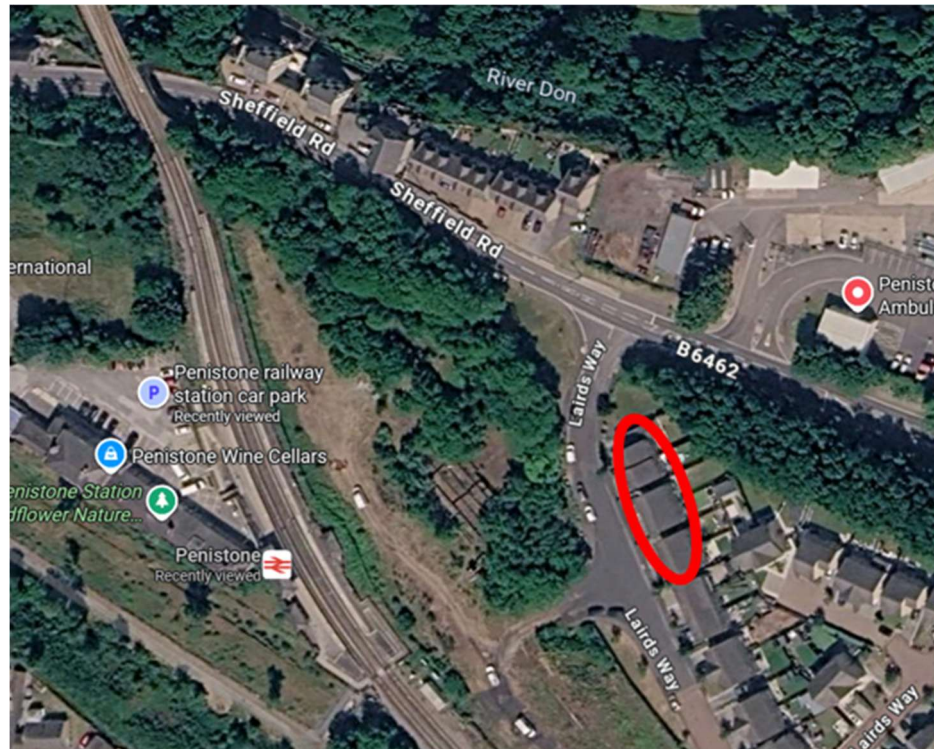
Change in noise level L_{AeqT} dB	Response	Impact
<3	Imperceptible	None
3 – 5	Perceptible	Slight/moderate
6 – 10	Up to a doubling	Moderate/significant
11 – 15	More than a doubling	Substantial
>15	-	Severe

3.0 Baseline Conditions and Noise Survey

Description of the Site and Noise Sensitive Receptors

- 3.1 The site is located off Lairds Way to the east of the train lines at Penistone Station with Sheffield Road to the north. The closest residential receptors are located on the opposite side of the site to Lairds Way. Dwellings are located on the northern side of Sheffield Road at a similar distance from the car park. However, as Sheffield Road is a well trafficked route, receptors on Lairds Way have been assessed to present a worst case. The location of identified sensitive residential receptors are denoted by the red ellipse in Figure 3.1 below.

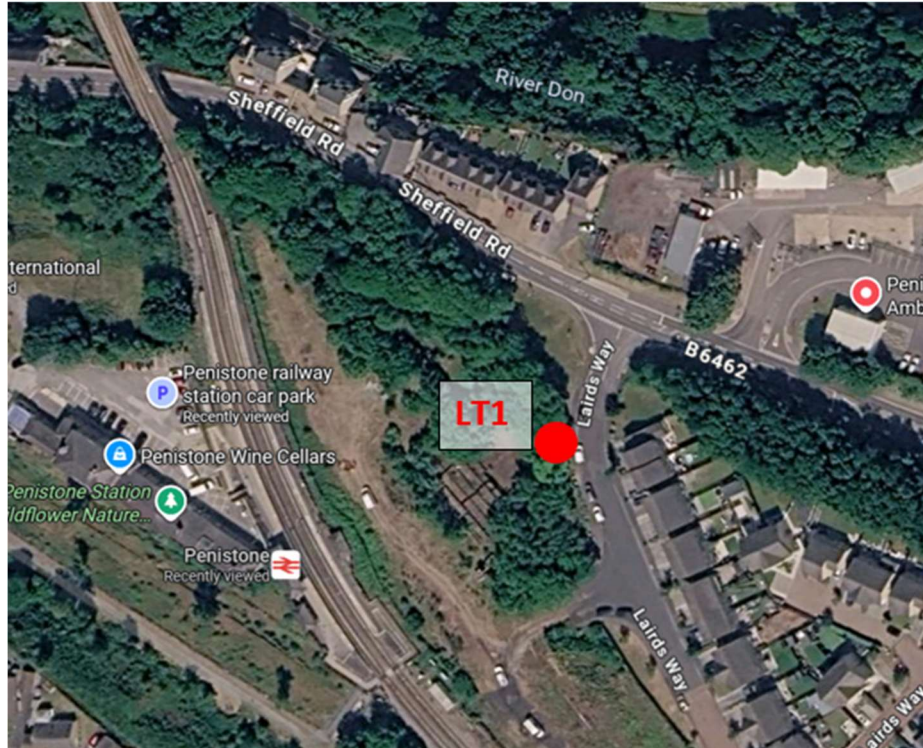
Figure 3.1: Existing Noise Sensitive Receptor Location Plan



Baseline Noise Survey

- 3.2 An environmental noise survey has been undertaken by Sharps Redmore between Wednesday 11th and Friday 13th August 2026. Measurements were taken at a location, as shown in Figure 3.2 overleaf. The location was chosen to be representative of the residential dwellings opposite the site on Lairds Way.
- 3.3 The measurements were carried out in free-field conditions at a height of 1.5m above local ground level. The type 1/class 1 sound level meter was calibrated before and after the survey with no significant drift recorded.
- 3.4 Weather conditions were observed as being suitable for the measurements with conditions being clear and dry with a low predominantly southerly breeze (windspeeds below 5m/s).
- 3.5 The noise climate at the site and surrounding area is predominantly dominated by road traffic noise from Sheffield Road with occasional vehicle movements along Lairds Way.

Figure 3.2: Noise Monitoring Location Plan



3.6 The results of the survey are summarised in Table 3.1 with the data tabulated in Appendix B. At the LT location, the $L_{Aeq,T}$ is the logarithmic average whilst the $L_{A10,T}$ and $L_{A90,T}$ are the arithmetic average. The $L_{A90,T}$ is the modal noise level of the continuous 15 minute measurements over the stated survey period. The highest measured L_{Amax} levels during the reference time periods have been presented.

Table 3.1: Summary of Measured Noise Levels

Period	Location	Date / Time	Duration*	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Day	LT1	10:15 – 23:00 11/08/26	13 hours	50.7	86.3	53.2	36.8
Night	LT1	23:00 – 07:00 11 – 12/08/26	8 hours	42.7	75.2	41.9	30.7
Day	LT1	07:00 – 23:00 12/08/26	16 hours	50.8	84.2	53.8	36.0
Night	LT1	23:00 – 07:00 12 – 13/08/26	8 hours	42.4	70.7	39.4	29.6
Day	LT1	07:00 – 09:45 13/08/26	3 hours	51.2	73.7	55.2	37.3

*Rounded to nearest hour

4.0 Key Findings

- 4.1 An assessment has been undertaken with respect to vehicle movements and activity within the main car parking area within the site.
- 4.2 Assessment has also been undertaken with regard to road traffic noise associated with vehicles entering and exiting the car park including along Lairds Way.

On-site Car Parking Noise

- 4.3 Sharps Redmore has measured noise levels at the boundary of numerous commercial car parks. These surveys have shown that noise levels range from 43 dB to 48 dB $L_{Aeq,1hour}$ at a distance of 10 metres. The baseline noise value of 48 dB $L_{Aeq,1hour}$ is considered a robust (reasonable worst case) baseline maxima to apply to a peak usage and has been used in this case. The peak level, dictated by car door or boot slams, is typically 66 dB L_{Amax} at 10m.
- 4.4 This baseline noise source data is considered to be robust for use in assessing car parking noise as it includes all sources of noise including car movement within the car park, manoeuvring into parking spaces and door slams.
- 4.5 The nearest existing noise sensitive properties on Lairds Way to the car parking area are located approximately 30m to the east. The predicted noise level during peak periods is 33 dB $L_{Aeq,1hour}$ whilst the predicted 'maximum' level is 56 dB L_{Amax} ⁶.
- 4.6 The predicted car parking noise levels are below the existing daytime and night-time ambient noise climate and below the WHO CNG daytime and night-time values. On this basis a significant adverse impact associated with noise from within the site is not predicted.

Assessment of Road Traffic Noise

- 4.7 The normal method of predicting noise from road traffic is to use the methodology in the Calculation of Road Traffic Noise (CRTN) 1988 considering the change in noise level over a 18 hour period (06:00 – 24:00) on a weekday. However, the standard is not applicable, where flow rates are low (below 1000 veh/18-hour).
- 4.8 Therefore in this case, the predicted noise level has been determined using Sound Exposure Level (SEL) measured from cars passing at speeds of around 30km/hr (20mph). The SEL is the L_{Aeq} level normalised to one second, and is the constant level in dBA which lasting for one second has the same amount of acoustic energy as the given A weighted level of a vehicle passing. The use of the unit allows the prediction of the L_{Aeq} level over any period and for a number of events using the following equation:

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

Where:

SEL = Sound equivalent level of car pass by at distance (m)

(n) = Number of events in time period (T)

⁶ $L_{PA} - 20 \log(d/10)$, where L_{PA} is the source noise level and d is distance to the receptor, in this case 30m

(T) = Total sample period in seconds (Day: 0700 -2300 hours / Night: 2300 – 0700 hours)

- 4.9 Based on information provided by BMBC Strategic Transport Service Department, vehicle movements associated with the typical usage of the car park are based on two movements per space per day. Therefore, 202 two way vehicle movements have been used to assess the number of vehicles that would enter and exit the site between 06:00 and 24:00.
- 4.10 In terms of identifying a split between daytime and night-time periods, details have been provided by BMBC of average train boarding and alighting to the station through the week between 06:00 and 24:00 which is during the period when trains stop at the station. Based on this information a trip rate during daytime and night-time periods has been estimated. On a weekday 95% of the vehicle movements are estimated to occur during the daytime period with 5% during the night-time period. On a weekend, the estimated distribution is 98% and 2%. As such to present a reasonable worst case, a total of 199 (98%) two way vehicle movements have been assessed for the daytime period and 11 (5%) two way vehicle movements have been assessed for the night-time period. During the night-time period, the vast majority of trips are expected to occur between 06:00 to 07:00.
- 4.11 Using the above method, predicted noise levels from increased traffic resulting from the development has been determined. The results are shown in Table 4.1 below:

Table 4.1: Predicted Noise Levels Development Traffic – Lairds Way

	Daytime	Night-time
SEL of Vehicle Passing at 10m (dBA)	68	68
Number of events (Day: 16 hour / Night: 8 hour)	199	11
10 log (n) (dBA)	+23.0	+10.3
Time period (seconds)	57,600	28,800
10 log (T) (dBA)	-47.6	-44.6
$L_{Aeq,T}$ at 10m (dB)	43.4	33.8
Distance of property to road (mid-point)	11m	
Distance correction (10 log (10/11) (dBA)	-0.4	
Predicted level $L_{Aeq,T}$ (dB)*	43.0	33.4

* $L_{Aeq,T}$: T = 16 hours for daytime and 8 hours for night-time

- 4.12 To determine the overall noise level SR has added the predicted noise level for each scenario to the existing measured level to determine the existing + development noise level ($L_{Aeq,16hour}$ and $L_{Aeq,8hour}$). Noise is measured in dB and is added logarithmically, therefore two equal sources of sound, if added together will result in an increase of 3dBA i.e. 50 dBA + 50dBA = 53 dBA.

Table 4.2: Predicted Noise Levels – Existing + Development Traffic at Dwellings on Lairds Way

	Daytime (dBA)	Night-time (dBA)
Measured Existing Noise Level $L_{Aeq,T}$	50.8	42.4
Predicted Level $L_{Aeq,T}$	43.0	33.3
Overall Noise Level $L_{Aeq,T}$	51.5	42.9
Change in noise level $L_{Aeq,T}$	0.7	0.5

* $L_{Aeq,T}$: T = 16 hours for daytime and 8 hours for night-time

- 4.13 The change in noise level for both daytime and night-time scenarios is predicted to be less than 1dB. As advised in Table 2.2, this predicted increase of less than 1 dB would be

imperceptible and have a negligible impact on existing residents on Lairds Way. On this basis a significant adverse impact associated with noise from road traffic noise is not predicted.

5.0 Conclusions

- 5.1 Sharps Redmore have been appointed by Barnsley Metropolitan Borough Council to undertake a noise assessment for a proposed car park located off Lairds Way, Penistone to serve Penistone train station.
- 5.2 Assessment has been undertaken with respect to vehicle movements and activity within the main car parking area within the site. This included noise from car movement within the car park, manoeuvring into parking spaces and door slams. Noise levels are predicted to be below the World Health Organisation guideline criteria during both daytime and night-time periods.
- 5.3 In addition, a road traffic noise assessment has also been undertaken associated with vehicles entering and exiting the car park including along Lairds Way. The normal method of predicting noise from road traffic is to consider the change in noise level and this has been undertaken with reference to the guidance provided within the Calculation of Road Traffic Noise (CRTN). The resulting change in noise level is predicted to be negligible.
- 5.4 Based on the assessment undertaken, within the context of nationally recognised standards and planning policy, it is concluded that the effects of identified sources of noise being generated as a result of the proposed development would not give rise to a significant adverse impact.

APPENDIX A

ACOUSTIC TERMINOLOGY

Acoustic Terminology

- A1 Noise, which is sometimes 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:

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

- A9 The Basic Noise Level with regard to the assessment of road traffic noise is a reference noise emission of a particular road link based on calculations using traffic flow, speed and HGV percentage as set out in CRTN.

APPENDIX B

NOISE SURVEY TIME HISTORY GRAPH

LT1: 11th August to 13th August 2026

