



ENVIRONMENTAL STATEMENT
VOLUME 2
APPENDIX 8.1 – LEGISLATION, POLICY,
GUIDANCE AND GLOSSARY

Appendix 8.1 - Legislation, Policy and Guidance and glossary.

Legislative Framework

In England there are two legislative instruments which are relevant to noise and vibration associated with the Proposed Developments: the Environmental Protection Act 1990 (EPA) and the Control of Pollution Act (1974) (CoPA).

Environmental Protection Act (1990)

The Environmental Protection Act (EPA) provides powers to control noise where a statutory noise nuisance exists. Section 80 of the EPA states that where a statutory nuisance exists, or is likely to occur or reoccur, then the responsible Local Authority shall serve a notice requiring the abatement of the nuisance or prohibiting its occurrence or reoccurrence, as well as requiring any such steps as may be necessary to abate the nuisance including a specification of the timescales in which to take such action. Section 82 of the EPA provides an individual that is subject to a statutory nuisance with the right to make representations to the courts and for the courts to take such action as may be appropriate against the originator of that nuisance such that the nuisance is abated.

Control of Pollution Act (1974)

The Control of Pollution Act (CoPA) requires that 'Best Practicable Means' (as defined in section 72 of CoPA) are adopted to control construction noise on any given site. The CoPA makes reference to British Standard 5228 as best practicable means.

Sections 60 and 61 of the CoPA provide the main legislation regarding noise and vibration from demolition and construction sites. If noise complaints are received, a Section 60 notice may be issued by the Local Authority, with instructions to cease work until specific conditions to reduce noise have been adopted.

Section 61 of the CoPA provides a means for applying for prior consent to carry out noise generating activities during construction. Once prior consent has been agreed under Section 61, a Section 60 notice cannot be served, provided the agreed conditions are complied with.

Planning Policy

Noise Policy Statement for England

Noise Policy Statement for England (NPSE) advises that noise impacts should be assessed on the basis of adverse and significant adverse effect but does not provide any specific guidance on assessment methods or noise limits.

The NPSE introduces the concepts summarised in Table A8.1 that can be applied when considering the significance of noise impacts, which it is stated are applied by the World Health Organization.

Table A8.1 - Observed Effect Levels

Effect Level	Description
No Observed Effect Level (NOEL)	This is the noise level below which no effect can be detected. In simple terms, below this level of noise, there is no detectable effect on health and quality of life due to the noise being assessed.
Lowest Observed Adverse Effect Level (LOAEL)	This is the level of noise above which adverse effects on health and quality of life can be detected.
Significant Observed Adverse Effect Level (SOAEL)	This is the level of noise above which significant adverse effects on health and quality of life occur.

The document advises that it is not possible to have 'a single objective noise based measure.... that is applicable to all sources of noise in all situations'. It further advises that the sound level at which an adverse effect occurs is likely to be different for different noise sources, for different receptors at different times.

National Planning Policy Framework

Planning Policy Framework (NPPF, 2019) sets out the Government's planning policies and how these are expected to be applied. In relation to noise and vibration, NPPF section 15 paragraph 170 states:

'Planning policies and decisions should contribute to and enhance the natural and local environment by: [...] preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability'

Whilst paragraph 180 states:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development; In doing so they should:

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development - and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason [...]*

Planning Practice Guidance (2014, updated 2019)

Online Planning Practice Guidance (PPG) has been published to provide greater details in relation to the relevance of noise to the planning process following the introduction of the NPPF and NPSE.

This guidance states, under the heading 'How to Determine the Noise Impact', that the following should be considered by local authorities:

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.

In line with NPSE, this includes identifying where noise exposure is above or below the significant observed adverse effect level and the lowest observed adverse effect level for a given situation, during both construction and operation of the Proposed Development.

Further guidance on each of the various observed effect levels set out in the NPSE is provided in the table detailed in the section headed 'How to Recognise when Noise could be a concern?' which is reproduced below in Table A8.2.

Table A8.2 - Observed Effects levels guidance (PPG)

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 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; closing windows for some of the time because of the noise. Potential for non-awakening 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 Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. 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 Level	Avoid
Noticeable and disruptive	Extensive and regular changes in behaviour and/or 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

It is important to note that no specific noise parameters are defined in the text or target noise levels provided.

Under the heading 'What factors influence whether noise could be a Concern?', the subjective nature of noise is discussed. It is stated that there is no simple relationship between noise levels and the impact on those affected. This depends on how various factors combine in particular situations, these include:

- *'the source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day - this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;*
- *for non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;*
- *the spectral content of the noise (i.e. whether or not the noise contained particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features). The local topology and topography should also be taken into account along with the existing and, where appropriate, the planned character of the area.*

More specific factors to consider when relevant:

- *consideration should also be given to whether adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time. In both cases a suitable alternative means of ventilation can be found in the Building Regulations.*
- *In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in noise may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur.*
- *If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.*
- *Some commercial developments including fast food restaurants, night clubs and public houses can have particular impacts, not least because activities are often at their peak in the evening and late at night. Local planning authorities will wish to bear in mind not only the noise that is generated within the premises but also the noise that may be made by customers in the vicinity.'*

Cherwell Local Plan 2011-2031

Policy SLE1 (Employment Development) states in particular that new proposal will be supported unless activities can be carried out "without undue detriment to residential amenity".

Policy SLE2 (Securing Dynamic Town Centres) requires an impact assessment to be undertaken for some proposed uses.

Policy ESD15 (The Character of the Built and Historic Environment) requires consideration of "the amenity of both existing and future development".

Saved Policy ENV1 states that development likely to cause materially detrimental levels of noise, vibration or other types of environmental pollution will not normally be permitted.

Guidance

British Standard (BS) 5228:2009+A1:2014

British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 1: noise' (BS 5228-1) provides guidance on a range of considerations relating to construction noise including the legislative framework, general control measures, example methods for estimating construction noise levels and example criteria which may be considered when assessing the significance of any impacts.

Similarly, BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Part 2: vibration' (BS 5228-2) provides general guidance on legislation, prediction, control and assessment criteria for construction vibration. These standards have been adopted as the relevant method to predict and assess the impacts of construction noise and vibration.

British Standard (BS) 4142:2014 (amended 2019)

Current Government advice to Local Planning Authorities in both England and Wales makes reference to BS 4142 as being the appropriate guidance for assessing commercial operations and fixed building services plant noise. This British Standard provides an objective method for rating the likelihood of complaint from industrial and commercial operations. It also describes means of determining noise levels from fixed plant installations and determining the background noise levels that prevail on a site.

The assessment of impacts is based on the subtraction of the measured background noise level from the rating level determined. The rating level is the source noise level (either measured or predicted) corrected for tone or character (if necessary). The difference is compared to the following criteria to evaluate the impact:

- a difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- a difference of around +5 dB indicates is likely to be an indication of an adverse impact, depending on the context; and
- where the rating level does not exceed the background noise level, this is an indication of the specific sound source having a low impact, depending on the context.

This method is only applicable for external noise levels.

World Health Organization Guidelines (2000, 2009 and 2018)

The World Health Organization (WHO) has published a series of guidelines that relate to acceptable levels of noise from a health perspective. These are detailed in two separate documents, and the WHO "Night Noise Guidelines for Europe", 2009. The 2000 WHO "Guidelines for Community Noise" set out the following criteria in Table A8.3 that should be achieved in order to avoid sleep disturbance in dwellings as well as guidance on noise levels experienced in outdoor living areas (e.g. gardens).

Table A8.3 - WHO 2000 guideline values

Specific Environment	Health Effect	Guideline values
Dwelling, inside bedrooms.	Sleep disturbance, night-time.	30 dB LAeq, 8hr, 45 dB LAmax, fast
Dwelling, external noise level, windows open.	Sleep disturbance, night-time.	45 dB LAeq, 8hr, 60 dB LAmax, fast
Outdoor living area.	Serious annoyance, daytime and evening.	55 dB LAeq, 16hr
	Moderate annoyance, daytime and evening.	50 dB LAeq, 16hr

The WHO 'Night Noise Guidelines for Europe' provide further criteria that relate external noise levels at dwellings to specific health impacts. These criteria were produced with the intention of supplementing the criteria that were given in the 'Guidelines for Community Noise'. The 'Night Noise Guidelines' are, however, set in terms of the L_{night}, outside, which is the average night time noise level experienced outside the building over a year. It therefore does not take into account mitigation measures that may be designed into the building envelope and requires knowledge of the noise levels experienced at the development site over the course of a full year. As such, the L_{night}, outside measurement descriptor is more suitable for general strategic studies and not appropriate for assessing the acceptability of noise affecting the proposed new development and will therefore not be considered further in this assessment.

Similarly, the WHO has recently published in 2018 new general guideline values, which are informed from a review of research on health and are designed to inform policy on noise, at the population and strategic level. Guidelines are provided in terms of L_{night}, (as referenced above) and L_{den} (day-evening-night average level) for

a number of sources such as road, railway or aircraft noise. For the same reasons as above, these guidelines will not be referenced in the present assessment.

British Standard (BS) 8233: 2014

BS 8233: 2014 provides guidance for the control of noise in and around buildings and suggests appropriate criteria and limits for different situations. The criteria and limits are primarily intended to guide the design of new or refurbished buildings undergoing a change of use.

For living, resting and sleeping conditions in bedrooms (such as those of a hotel), the standard would recommend internal noise levels not exceeding 35 dB $L_{Aeq,16hours}$ for day-time periods and 30 dB $L_{Aeq,8hours}$ for night-time periods (23:00 to 07:00). To avoid sleep disturbance at night, regular individual noise events (for example, schedule aircraft or passing trains) should also be considered. Table A8.3 above suggests a criteria of 45 dB $L_{Amax,fast}$ for regularly occurring events.

BS 8233 cites external noise design criteria for amenity spaces ("such as gardens and patios") similar to those of Table A8.3: a desirable level of 50 dB L_{Aeq} with an upper guideline value of 55 dB L_{Aeq} for noisier environments. It however recognises that "*these guideline values are not achievable in all circumstances*" and that in noisier areas, a compromise should be reached between noise impact and amenity use, and "*development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.*"

Calculation of Road Traffic Noise (CRTN, 1988)

In England and Wales, the standard method for predicting road traffic noise levels is given in the Calculation of Road Traffic Noise 1988 (CRTN). This methodology utilises a number of input parameters (e.g. road traffic flow, composition, speed, gradient road, road surface, distance of receptor from road etc.) to enable predictions of noise levels due to road traffic to be produced. This method enables the calculation of average levels over a period of either 18 hours or 1 hour. Predictions are produced in terms of L_{A10} , as this is considered the measurement descriptor that best describes road traffic noise.

Design Manual for Roads and Bridges (DMRB, 2011)

The Design Manual for Roads and Bridges (DMRB) was originally published by the Department of Transport in 1993 and sets out procedures for undertaking the design of road schemes. Volume 11, Section 3, Part 7 sets out a methodology for assessing the impacts of noise and vibration. This methodology can be applied to the assessment of new road schemes or schemes that result in changes in traffic flows on existing road links. The most recent revision of this section of the Design Manual for Roads and Bridges was published in November 2011 with a Design Manual Road Bridges Interim Advice Note (DMRB IAN) published in 2015. The DMRB IAN provides noise speed bands that are to be used when predicting road traffic noise for motorways and urban/rural roads. It is therefore this version of the guidance that is referred to in this assessment.

Professional Practice Guidance on Planning and Noise (ProPG, 2017)

ProPG Planning & Noise is a recently published document aimed at providing practitioners guidance on a recommended approach to the management of noise in the context of the planning system. The document was published jointly by the three professional bodies in the acoustics industry: Acoustics and Noise Consultants (ANC); the Institute of Acoustics (IOA); and the Chartered Institute of Environmental Health (CIEH).

Whilst the guide is focussed on new residential development being affected by transport noise, the principle of the guidance is considered helpful to this assessment. Its primary goal is to assist in the delivery of sustainable development by promoting good health and wellbeing through the effective management of noise. It seeks to do this by encouraging good acoustic design processes in and around proposed new residential development, having particular regard to national policy on planning and noise.

ProPG highlights the importance of considering noise as an early part of development design, with the aim to avoid mitigation that appears to be a last resort and could have consequential non-acoustic effects.

Glossary

Terminology	Description
A-weighting	a filter that down-weights low frequency and high frequency sound to better represent the frequency response of the human ear when assessing the likely effects of noise on humans
acoustic character	one or more distinctive features of a sound (e.g. tones, whines, whistles, impulses) that set it apart from the background noise against which it is being judged, possibly leading to greater subjective effects than the level of the sound alone might suggest
acoustic screening	the presence of a solid barrier (natural landform or manmade) between a source of sound and a receiver that interrupts the direct line of sight between the two, thus reducing the sound level at the receiver compared to that in the absence of the barrier
ambient noise	All-encompassing noise associated with a given environment, usually a composite of sounds from many sources both far and near, often with no particular sound being dominant
annoyance	a feeling of displeasure in this case evoked by noise
attenuation	the reduction in level of a sound between the source and a receiver due to any combination of effects including: distance, atmospheric absorption, acoustic screening, the presence of a building façade, etc.
audible sound	a sound that can be heard above all other ambient sounds
audio frequency	any frequency of a sound wave that lies within the frequency limits of audibility of a healthy human ear, generally accepted as being from 20 Hz to 20,000 Hz
background noise	the noise level rarely fallen below in any given location over any given time period, often classed according to day-time, evening or night-time periods (for the majority of the population of the UK the lower limiting noise level is usually controlled by noise emanating from distant road, rail or air traffic)
dB	abbreviation for 'decibel'
dB(A)	abbreviation for the decibel level of a sound that has been A-weighted
decibel	the unit normally employed to measure the magnitude of sound
directivity	the property of a sound source that causes more sound to be radiated in one direction than another
equivalent continuous sound pressure level	the steady sound level which has the same energy as a time varying sound signal when averaged over the same time interval, T, denoted by $L_{Aeq,T}$
external noise level	the noise level, in decibels, measured outside a building
filter	a device for separating components of an acoustic signal on the basis of their frequencies
frequency	the number of acoustic pressure fluctuations per second occurring about the atmospheric mean pressure (also known as the 'pitch' of a sound)
frequency analysis	the analysis of a sound into its frequency components
ground effects	the modification of sound at a receiver location due to the interaction of the sound wave with the ground along its propagation path from source to receiver
hertz	the unit normally employed to measure the frequency of a sound, equal to cycles per second of acoustic pressure fluctuations about the atmospheric mean pressure
impulsive sound	a sound having all its energy concentrated in a very short time period
instantaneous sound pressure	at a given point in space and at a given instant in time, the difference between the instantaneous pressure and the mean atmospheric pressure
internal noise level	the noise level, in decibels, measured inside a building

Terminology	Description
L _{Aeq}	the abbreviation of the A-weighted equivalent continuous sound pressure level
L _{A10}	the abbreviation of the 10 percentile noise indicator, often used for the measurement of road traffic noise
L _{A90}	the abbreviation of the 90 percentile noise indicator, often used for the measurement of background noise
level	the general term used to describe a sound once it has been converted into decibels
loudness	the attribute of human auditory response in which sound may be ordered on a subjective scale that typically extends from barely audible to painfully loud
masking	the effect whereby an otherwise audible sound is made inaudible by the presence of other sounds
noise	physically: a regular and ordered oscillation of air molecules that travels away from the source of vibration and creates fluctuating positive and negative acoustic pressure above and below atmospheric pressure. Subjectively: sound that evokes a feeling of displeasure in the environment in which it is heard, and is therefore unwelcomed by the receiver
noise emission	the noise emitted by a source of sound
noise immission	the noise to which a receiver is exposed
noise nuisance	an unlawful interference with a person's use or enjoyment of land, or of some right over, or in connection with it
octave band frequency analysis	a frequency analysis using a filter that is an octave wide (the upper limit of the filter's frequency band is exactly twice that of its lower frequency limit)
percentile exceeded sound level	the noise level exceeded for n% of the time over a given time period, T, denoted by L _{An,T}
receiver	a person or property exposed to the noise being considered
residual noise	the ambient noise that remains in the absence of the specific noise whose effects are being assessed
sound	physically: a regular and ordered oscillation of air molecules that travels away from the source of vibration and creates fluctuating positive and negative acoustic pressure above and below atmospheric pressure subjectively: the sensation of hearing excited by the acoustic oscillations described above (see also 'noise')
sound level meter	an instrument for measuring sound pressure level
sound pressure amplitude	the root mean square of the amplitude of the acoustic pressure fluctuations in a sound wave around the atmospheric mean pressure, usually measured in Pascals (Pa)
sound pressure level	a measure of the sound pressure at a point, in decibels
sound power level	the total sound power radiated by a source, in decibels
spectrum	a description of the amplitude of a sound as a function of frequency
third-octave band frequency analysis	a frequency analysis using frequency bands one third of an octave wide
threshold of hearing	the lowest amplitude sound capable of evoking the sensation of hearing in the average healthy human ear (0.00002 Pa)
tone	the concentration of acoustic energy into a very narrow frequency range