APPENDIX 11.2
LEGISLATION, POLICY AND GUIDANCE

LEGISLATION

CONTROL OF POLLUTION ACT 1974

Sections 60 and 61 of the COPA give local authorities special powers for controlling noise arising from construction and demolition works, regardless of whether a statutory nuisance has been caused or is likely to be caused. These powers may be exercised either before works start (Section 61) or after they have started (Section 60). Section 61 is a prior consent process whereby approval is sought for the completion of construction works following prescribed methods, whilst Section 60 affords Local Authorities means of control of construction noise where a Section 61 has not previously been agreed.

ENVIRONMENTAL PROTECTION ACT 1990

Section 79 of the EPA presents a number of matters which may be statutory nuisances, including noise. Under the provisions of the EPA, the Local Authority is required to inspect its area periodically to detect any nuisance and, where a valid complaint of a statutory nuisance is made by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint.

Section 80 of the EPA (Summary proceedings for statutory nuisances) provides Local Authorities with powers to serve an abatement notice requiring the abatement of a nuisance or requiring works to be executed to prevent their occurrence.

NATIONAL PLANNING POLICY

Noise Policy Statement for England (NPSE)

The NPSE was published on 15 March 2010. It sets out the long-term vision for government noise policy, to promote good health and a good quality of life through the management of noise.

The policy ensures that noise issues are considered at the right-time during the development of policy and decision making, and not in isolation. It highlights the underlying principles on noise management already found in existing legislation and guidance. The NPSE should apply to all forms of noise, including environmental noise. It sets out the long-term vision of Government noise policy as follows:

"Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

This long-term vision is supported by the following aims:

"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."

To assist in the understanding of the terms "significant adverse" and "adverse", the NPSE acknowledges that there are two concepts being applied to noise impacts, for example, by the World Health Organisation. They are:

- • NOEL - No Observed Effect Level - This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise; and
- • LOAEL - Lowest Observed Adverse Effect Level - This is the level above which adverse effects on health and quality of life can be detected.

The NPSE introduces a third concept:

- • SOAEL - Significant Observed Adverse Effect Level - This is the level above which significant adverse effects on health and quality of life occur.

However, the NPSE goes on to state that:

"It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available."

National Planning Policy Framework (NPPF)

The revised NPPF 2021 sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework within locally prepared plans for housing and other development can be produced. The NPPF must be taken into account in the preparation of local development plans and is a material consideration in planning decisions.

Paragraph 174 (e) of the NPPF advises that, with respect to noise, 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…"

Paragraph 185 of the NPPF advises that, "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:

- *a) 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 quality of life…".*

Planning Practice Guidance, published in March 2014 and revised in July 2019, advises on how planning can manage potential noise impacts in new development. The guidance states that noise needs to be considered when…

"new developments would be sensitive to the prevailing acoustic environment." Although noise can override other planning concerns, "neither the NPSE[1] nor the NPPF expects noise to be considered in isolation from the economic, social and other environmental dimensions of the proposed development. "

When making decisions, local planning authorities should take account of the acoustic environment and in doing so consider:

- • Whether or not a significant adverse effect is 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 the Explanatory Note of the NPSE this would include identifying whether the overall effect of the noise exposure would be above or below the significant observed adverse effect level. The guidance points to the Explanatory Note for Noise Policy Statement for England 2010 for further information.

GUIDANCE

Planning Practice Guidance (PRACG)

Last updated on 22 July 2019, this web-based resource was issued for use by the Department for Communities and Local Government (DCLG). The purpose of the guidance is to complement the NPPF and provide advice on how to deliver its policies

The section on noise was published on 06 March 2014, but was last updated 22 July 2019. The guidance includes a table which summarises "the noise exposure hierarchy based on the likely average response of those affected" and which offers "examples of outcomes" relevant to the NOEL, LOAEL and SOAEL effect levels described in the NPSE. The term Unacceptable Adverse Effect (UAE) level is introduced which equates to noise perceived as "present and very disruptive". It is stated that UAEs should be prevented.

These outcomes are in descriptive form and there is still no numerical definition of the NOEL, LOAEL and SOAEL (or UAE), or detailed advice regarding methodologies for their determination. There is also no reference to the further research that is identified as necessary in the NPSE. There is reference to a number of other information sources, including British Standards, and it is confirmed that 'Some of these documents contain numerical criteria.' (albeit not that seek to define to the NOEL, LOAEL or SOAEL), and it is then advised that 'These values are not to be regarded as fixed thresholds and as outcomes that have to be achieved in every circumstance'

The noise exposure hierarchy table is duplicated below in **Table 11-1.1.**

Table 11-1.1: Noise exposure hierarchy based on the likely average response

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level (NOEL)			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour or 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 (LOAEL)			
Present and	Noise can be heard and causes small changes	Observed Adverse	Mitigate and reduce to a

Response	Examples of outcomes	Increasing effect level	Action
intrusive	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.	Effect	minimum
Significant Observed Adverse Effect Level			
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,	Unacceptable Adverse Effect	Prevent

Response	Examples of outcomes	Increasing effect level	Action
	significant, medically definable harm, e.g. auditory and non-auditory.		

BS 5228-1:2009+A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 1: Noise

BS 5228-1 sets out techniques to predict and assess the likely noise effects from construction works, based on detailed information on the type and number of plant being used, their location, and the length of time they are in operation. The noise prediction method is used to establish likely noise levels in terms of the $L_{Aeq,T}$ over the core working day. This Standard also documents a database of information, comprising previously measured sound power levels for a variety of different construction plant undertaking various common activities.

Three example methods are presented for determining the significance of construction noise impacts. In summary, these methods adopt either a series of fixed noise level limits, are concerned with ambient noise level changes as a result of the construction operations or a combination of the two.

With respect to absolute fixed noise limits, BS 5228-1 discusses those included within Committee on the problem of noise – Final Report. These limits are presented according to the nature of the surrounding environment, for a 12-hour working day. The presented limits are:

- 70 dB(A) Leq in rural, suburban and urban areas away from main road traffic and industrial noise; and
- 75 dB(A) Leq in urban areas near main roads and heavy industrial areas.

The above noise level limits are applicable at the façade of the receptor in question (i.e. not free-field).

The Standard goes on to provide methods for determining the significance of construction noise levels by considering the change in the ambient noise level that would arise as a result of the construction operations. Two example assessment methods are presented, these are the 'ABC method' as summarised within **Table 11-1.2** and the '5 dB(A) change' method under that table.

Table 11-1.2: Example threshold of potential significane effect at dwellings – ABC Method

Assessment category and threshold value period	Threshold value, $L_{Aeq,T}$ (dB)		
	Category A[A]	Category B[B]	Category C[C]
Night-time (23:00 – 07:00)	45	50	55
Evening and weekends[D]	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75
NOTE 1: A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level. NOTE 2: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3dB due to site noise. NOTE 3: Applied to residential receptors only.			
[A]Category A: threshold values to use when ambient levels (when rounded to the nearest 5dB) are less than these values. [B]Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values. [C]Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values. [D]19.00-23.00 weekdays, 13.00-23.00 Saturdays and 07.00-23.00 Sundays			

With respect to the '5 dB(A) change' method, the guidance states:

"Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB LAeq,T, from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect."

BS 5228-2:2009+A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 2: Vibration

This Standard provides recommendations for basic methods of vibration control relating to construction and open sites. The legislative background to vibration control is described and guidance is provided concerning methods of measuring vibration and assessing its effects on the environment.

Guidance criteria are suggested for the assessment of the significance of vibration effects; such criteria are provided in terms of Peak Particle Velocities (PPV) and are concerned with both human and structural responses to vibration. Those applicable to human perception and disturbance are presented within **Table 11-1.3**

Table 11-1.3: Guidance criteria for the assessment of significance of vibration for human perception and disturbance

Vibration level [A], [B], [C] (PPV)	**Effect**
0.14 mms^{-1}	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mms^{-1}	Vibration might be just perceptible in residential environments.
1.0 mms^{-1}	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10 mms^{-1}	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.
[A] The magnitudes of the values presented apply to a measurement position that is representative of the point of entry into the recipient. [B] A transfer function (which relates an external level to an internal level) needs to be applied if only external measurements are available. [C] Single or infrequent occurrences of these levels do not necessarily correspond to the stated effect in every case. The values are provided to give an initial indication of potential effects, and where these values are routinely measured or expected then an assessment in accordance with BS6472-1 or BS6472-2, and/or other available guidance, might be appropriate to determine whether the time varying exposure is likely to give rise to any degree of adverse comment.	

The Standard goes on to present guidance criteria applicable to the vibration response limits of buildings in terms of the component PPV. These are presented within **Table 11-1.4**. It should be noted that the values presented are applicable to cosmetic damage only. It is stated within BS 5228-2 that minor damage is possible at vibration magnitudes which are greater than twice those given in the table.

Table 11-1.4: Guidance criteria for the assessment of significance of transient vibration for cosmetic building damage

Type of Building	**Peak component particle velocity in frequency range of predominant pulse**	
	4Hz to 16Hz	**15Hz and above**
Reinforced or framed structures. Industrial and heavy commercial buildings.	50mm/s at Hz and above	50mm/s at Hz and above
Unreinforced or light framed structures. Residential or light commercial buildings.	15mm/s at 4Hz increasing to 20mm/s at 15Hz	20mm/s at 15Hz increasing to 50mm/s at 40Hz and above
NOTE 1: Values referred to are at the base of the building. NOTE 2: At frequencies below 4Hz, a maximum displacement of 0.6mm (zero to peak) is not to be exceeded.		

BS 4142:2014+A1:2019: Methods For Rating and Assessing Industrial and Commercial Sound

BS 4142 describes methods for assessing sound of an industrial and/or commercial nature, including sound from fixed installations (such as mechanical and electrical plant).

It provides a method of determining the 'rating level' for sources of industrial or commercial sound for the purposes of investigating noise impact, assessing sound from new, modified, or additional sources of sound, and assessing sound affecting new residential premises.

BS 4142 uses several terms to define the various parameters / indicators used in assessments, including:

- Specific sound – the commercial / industrial noise source under consideration;
- Residual sound – the sound level at the noise-sensitive receivers in the absence of the specific sound;
- Ambient sound – the sound level at the noise-sensitive receivers in the presence of the specific sound (i.e. ambient = residual + specific);
- Background sound level – the sound pressure level which is exceeded by the residual sound for 90% of the measurement period; and,
- Rating level – the specific sound, corrected for acoustically distinguishing characteristics.

BS 4142 states it is normally possible to carry out a subjective assessment of characteristics, based on the following correction guidelines:

- Tonality: +2 dB for a 'just perceptible' tone, +4 dB for a 'clearly perceptible' tone, and rising to +6 dB for a 'highly perceptible' tones;
- Impulsivity (rapidity of change and overall change in level): +3 dB for 'just perceptible' impulsivity, +6 dB for 'clearly perceptible' impulsivity, rising to + 9dB for 'highly perceptible' impulsivity; and,
- Intermittency: if the on/off-time of the specific sound is readily distinctive at the noise-sensitive receivers, + 3dB.

Typically, the greater the difference between the background and rating level, the greater the magnitude of impact, although BS 4142 emphasises that this is highly context-specific.

BS 4142 states that an initial estimate of the impact can be obtained by subtracting the background sound level from the rating level, and that:

- Typically, the greater the difference the greater the magnitude of the impact;
- A difference of around +10 dB or more is likely to be indicative of significant adverse impact, depending on context;
- A difference of around +5 dB or more is likely to be indicative of adverse impact, depending on context;

The lower the rating level relative to the background sound level, the less likely it is that the specific sound will have an adverse impact, depending on context. Where the rating level does not exceed the background sound level, this in an indication that the specific sound will have a low impact, depending on context.

This initial estimate of impact can then be modified to take account of context, including reference to factors such as:

- The absolute level of the sound;
- The character and level of the residual sound compared to the character and level of the specific sound;
- The sensitivity of the receptor and whether dwellings or other premises used for residuals purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:
- Façade insulation on treatment;
- Ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
- Acoustic screening.

Noise Advisory Council – A Guide to Measurement and Prediction of the Equivalent Continuous Sound Level L_{EQ} (NAC)

measurement and prediction of Leq noise levels from a number of different sources. Section 2.5 of the document details a method for calculating the Leq noise level from the combined effect of a number of events (e.g. HGV pass-bys) with their own single event noise exposure level (L_{AX}, also commonly referenced as the SEL).

The calculation is used in conjunction with Fig 4.1.4 of the document, duplicated in the diagram below, to determine the L_{AX} (SEL) at a distance of 10m from the nearside kerb edge, for heavy and light vehicles travelling at different speeds.

Design Manual for Roads and Bridges (DMRB) LA 111 'Noise and vibration'

This document sets out procedures for undertaking the environmental assessment of new road schemes, including the assessment of noise impacts from road traffic. In undertaking a DMRB assessment, the calculation of traffic noise levels uses the methodology contained within the CRTN document as described below.

Although the DMRB strictly applies to new road schemes, the principles can also be applied to the assessment of noise from road traffic in general. The Proposed Development has the potential to affect road traffic noise levels along existing roads, hence the need for this assessment.

The DMRB categorises operational road traffic noise into magnitude of change bands. The short and long term classification scales are provided in the tables below.

Table 11-1.5: Magnitude of change – short term

Short term magnitude	Short term noise change (dB $L_{A10,18h}$ or L_{night})
Major	Greater than or equal to 5.0
Moderate	3.0 to 4.9
Minor	1.0 to 2.9
Negligible	Less than 1.0

Table 11-1.6 Magnitude of change – long term

Long term magnitude	Long term noise change (dB $L_{A10,18h}$ or L_{night})
Major	Greater than or equal to 10.0
Moderate	5.0 to 9.9

Long term magnitude	Long term noise change (dB $L_{A10,18h}$ or L_{night})
Minor	3.0 to 4.9
Negligible	Less than 3.0

The significance of effect depends upon a number of factors, including the magnitude of change, the sensitivity of the receptor, the absolute noise level and the acoustic context.

Calculation of Road Traffic Noise (CRTN) Memorandum 1988

Published by the Department of Transport and the Welsh Office in 1988, CRTN sets out standard procedures for calculating noise levels from road traffic. The calculation methods use a number of input variables, including traffic flow volume, average vehicle speed, percentage of heavy duty vehicles (HDVs), type of road surface, site geometry and the presence of noise barriers or acoustically absorbent ground. CRTN predicts the $L_{A10,18hr}$ or $L_{A10,1hr}$ noise level for any receptor point at a given distance, up to 300m, from the road.

CRTN also documents procedures for the measurement of road traffic noise. Three methods of road traffic noise measurement are described, the first entitled 'The Measurement Method', for direct measurement of the $L_{A10,18hr}$ noise level, the second entitled the 'Shortened Measurement Procedure', for measurement of the $L_{A10,3hr}$ noise level from which the $L_{A10,18hr}$ level can be derived and the third entitled 'Comparative Measurements' which is a procedure to establish noise levels from a single road traffic route at various points, provided that the route remains the dominant source. CRTN states that if the Shortened Measurement Procedure is followed, a correction of -1dB can be applied to the determined $L_{A10,3hr}$ noise level to approximate the $L_{A10,18hr}$ noise level.