Appendix 15.1

Legislation and Guidance

Newlands Farm

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Contents

POLICY

1.1 Control of Pollution Act (CoPA)

1.1.1 Part III of the Control of Pollution Act 1974 (CoPA) is specifically concerned with pollution. With regard to noise, it covers: construction sites; noise in the street; noise abatement zones; codes of practice; and best practicable means (BPM).

1.1.2 Section 60 of the CoPA refers to the control of noise on construction sites. It enables local authorities to control noise from construction sites to prevent noise disturbance occurring. The Control of Noise (Code of Practice for Construction and Open Sites) (Scotland) Order 2002 approved British Standard (BS) 5228-1:1997, superseded by BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014 for the purpose of giving guidance on appropriate methods for minimising noise from construction and open sites in exercise of the powers conferred on the Secretary of State by sections 71(1)(b), (2) and (3) of the CoPA. It is acknowledged within Appendix 1 of the Assessment of noise: technical advice note BS 5228-1:1997 is outdated and the newest version of BS 5228 is to be used.

1.1.3 The CoPA enables the local authority, in whose area work is going to be undertaken, or is being undertaken, to serve a notice imposing requirements as to the way in which construction works are to be carried out. This notice can specify the plant or machinery that is or is not to be used, the hours during which the construction work can be carried out, the level of noise and vibration that can be emitted from the premises in question or at any specified point on these premises or that can be emitted during specified hours.

1.1.4 Section 61 of the CoPA refers to prior consent for work on construction sites. It provides a method by which a contractor can apply for consent to undertake construction works in advance. If consent is given, and the stated method and hours of work are complied with, then the local authority cannot take action under Section 60.

1.1.5 Section 71 of the CoPA refers to the preparation and approval of codes of practice for minimising noise.

1.1.6 Section 72 of the CoPA refers to Best Practicable Means (BPM), which is defined as:

"reasonably practicable, having regards among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications'. Whilst 'Means' includes 'the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and acoustic structure."

1.1.7 If BPM is applied, then it can provide a defence against prosecution by the local authority.

1.2 Environmental Protection Act 1990, Part III (EPA)

1.2.1 The Environmental Protection Act 1990 (EPA) deals with statutory nuisance, including noise.

1.2.2 Section 79 of the EPA, 'Statutory nuisances and inspections therefor', places a duty on local authorities to regularly inspect their areas to detect whether a statutory nuisance exists. This section also considers and defines the concept of BPM which originates from Section 72, Part III of the CoPA.

1.2.3 Where the local authority is satisfied that a statutory nuisance does exist, or is likely to occur or recur, it must serve an abatement notice. Section 80, Part III of the EPA, 'Summary proceedings for statutory nuisances', provides local authorities with the power to serve an abatement notice requiring the abatement of the nuisance or prohibiting or restricting its occurrence or recurrence; and/or carrying out such works or other action necessary to abate the nuisance.

1.2.4 Section 82 of the EPA, 'Summary proceedings by persons aggrieved by statutory nuisances', allows a Magistrates' court to act on a complaint made by any person on the grounds that he is aggrieved by a statutory nuisance, such as noise.

1.2.5 The procedures for appeals against abatement notices are detailed in the Statutory Nuisance (Appeals) Regulations 1995.

1.3 National Planning Policy Framework

1.3.1 The National Planning Policy Framework (NPPF), December 2024, sets out the Government's planning policies for England and how these are expected to be applied. The emphasis of the Framework is to allow development to proceed where it can be demonstrated to be sustainable. In relation to noise, Paragraph 187, 198 and 200 of the Framework states:

- Paragraph 187:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[…] e) 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…"

- Paragraph 198:

"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 the quality of life65 [See Explanatory Note to the Noise Policy Statement for England];

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason"

- Paragraph 200:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed. "

1.4 Noise Policy Statement for England (NPSE)

1.4.1 The Noise Policy Statement for England (NPSE) published in March 2010 by Defra, aims to provide clarity regarding current policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner and in a timely fashion.

1.4.2 Paragraph 1.6 of the NPSE sets out the long-term vision and aims of Government noise policy:

"Noise Policy Vision

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

"Noise Policy 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."

1.4.3 The aims require that all reasonable steps should be taken to avoid, mitigate and minimise adverse effects on health and quality of life whilst also taking into account the guiding principles of sustainable development, which include social, economic, environmental and health considerations.

1.4.4 With regard to the terms 'significant adverse' and 'adverse' included in the 'Noise Policy Aims', these are explained further in the 'Explanatory Note' as relating to established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation which 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 human health and quality of life due to noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected."

1.4.5 Defra has then extended these concepts for the purpose of the NPSE to introduce the concept of:

"SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur."

1.4.6 The accompanying explanation states:

"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."

1.5 Planning Practice Guidance on Noise

1.5.1 The National Planning Practice Guidance – Noise (NPPG) reiterates general guidance on noise policy and assessment methods provided in the NPPF, NPSE, relevant guidance and British Standards, and contains examples of acoustic environments commensurate with various effect levels. A summary of the guidance from the NPSE and NPPG is set out in Table 3-1 below.

Table Error! No text of specified style in document.**-1: Summary of Guidance from NPSE and NPPG**

Perception	Example Of Outcomes	Increasing Effect Level	Action
Not present	No effect	No observed effect	
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 perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
	Lowest Observed Adverse Effect Level (LOAEL)		
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
	SOAEL		
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, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

1.6 LOCAL PLANNING GUIDANCE

1.6.1 The Wokingham Borough Core Strategy (Adopted 29 January 2010) sets out the vision for how the Borough will develop in the period to 2026, and how the council aims to protect and enhance the good quality of life enjoyed in the borough. In relation to noise and the nature of the development, Development Policy CP1 and CP3 apply.

1.6.2 Development Policy CP1 states:

"CP1 – Sustainable development

Planning permission will be granted for development proposals that:

1) Maintain or enhance the high quality of the environment;

2) Minimise the emission of pollutants into the wider environment;

3) Limit any adverse effects on water quality (including ground water);

4) Ensure the provision of adequate drainage;

5) Minimise the consumption and use of resources and provide for recycling;

6) Incorporate facilities for recycling of water and waste to help reduce per capita water consumption;

7) Avoid areas of best and most versatile agricultural land;

8) Avoid areas where pollution (including noise) may impact upon the amenity of future occupiers;

9) Avoid increasing (and where possible reduce) risks of or from all forms of flooding (including from groundwater);

10) Provide attractive, functional, accessible, safe, secure and adaptable schemes;

11) Demonstrate how they support opportunities for reducing the need to travel, particularly by private car in line with CP6; and

12) Contribute towards the goal of reaching zero-carbon developments41 as soon as possible by:

a) Including appropriate on-site renewable energy features; and

b) Minimising energy and water consumption by measures including the use of appropriate layout and orientation, building form, design and construction, and design to take account of microclimate so as to minimise carbon dioxide emissions through giving careful consideration to how all aspects of development form."

1.6.3 Development Policy CP3 states:

"CP3 - General Principles for development Planning permission will be granted for proposals that:

a) Are of an appropriate scale of activity, mass, layout, built form, height, materials and character to the area together with a high quality of design without detriment to the amenities of adjoining land users including open spaces or occupiers and their quality of life;

b) Provide a functional, accessible, safe, secure and adaptable scheme;

c) Have no detrimental impact upon important ecological, heritage, landscape (including river valleys) or geological features or water courses.

d) Maintain or enhance the ability of the site to support fauna and flora including protected species;

e) Use the full potential of the site and contribute to the support for suitable complementary facilities and uses;

f) Contribute to a sense of place in the buildings and spaces themselves and in the way they integrate with their surroundings (especially existing dwellings) including the use of appropriate landscaping;

g) Provide for a framework of open space in secure community use achieving at least 4.65 ha/1,000 population provision together with recreational/sporting facilities in addition to private amenity space;

h) Contribute towards the provision of an appropriate sustainable network of community facilities;

i) Do not lead to a net loss of dwellings and other residential accommodation or land; and

j) Do not lead to a loss of community or recreational facilities/land or infrastructure unless suitable alternative provision is available.

Development proposals will be required to demonstrate how they have responded to the above criteria through the submission of Design and Access Statements, clear and informative plans, elevations and street scenes and where required Masterplans, Development Briefs, Concept Statements and Design Codes"

GUIDANCE

1.7 British Standard 4142:2014+A1:2019

1.7.1 BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' (BS 4142) describes a method for rating and assessing sound of an industrial and/or commercial nature. The standard is applicable to the determination of the rating level of industrial or commercial sound as well as the ambient, background and residual sound levels for the purposes of investigating complaints, assessing sound from proposed new, modified or additional sources or assessing sound at proposed new dwellings. The determination of whether a noise amounts to a nuisance is beyond the scope of the standard, as is rating and assessment of indoor noise levels. The standard compares the "rating level" of the noise (i.e. the specific noise level from the site under investigation adjusted using penalties for acoustic character such as tonality or impulsiveness) with the pre-existing background noise level.

1.7.2 The specific sound levels should be determined separately in terms of the $L_{Aeq,T}$ index over a period of T = 1 hour during the daytime and T = 15 minutes during the night-time. For the purposes of the standard, daytime is typically between 07:00 and 23:00 hours and night-time is typically between 23:00 and 07:00 hours.

1.7.3 BS 4142:2014+A1:2019 requires that the background sound levels adopted for the assessment be representative for the period being assessed. The standard recommends that the background sound level should be derived from continuous measurements of normally not less than 15-minute intervals, which can be contiguous or disaggregated. However, the standard states that there is no 'single' background sound level that can be derived from such measurements.

1.7.4 BS 4142:2014+A1:2019 states that measurement locations should be outdoors, where the microphone is at least 3.5 m from any reflecting surfaces other than the ground and, unless there is a specific reason to use an alternative height, at a height of between 1.2 m and 1.5 m above ground level. However, where it is necessary to make measurements above ground floor level, the measurement position, height and distance from reflecting surfaces should be reported, and ideally measurements should be made at a position 1 m from the façade of the relevant floor if it is not practical to make the measurements at least 3.5 m from the facade.

1.7.5 With regard to the rating correction, paragraph 9.2 of BS 4142:2014+A1:2019 states:

"Consider the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention."

1.7.6 The commentary to paragraph 9.2 of BS 4142:2014+A1:2019 suggests the following subjective methods for the determination of the rating penalty for tonal, impulsive and/or intermittent specific sounds:

"Tonality

For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a rating penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

Impulsivity

A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible.

NOTE 2 If characteristics likely to affect perception and response are present in the specific sound, within the same reference period, then the applicable corrections ought normally to be added arithmetically. However, if any single feature is dominant to the exclusion of the others then it might be appropriate to apply a reduced or even zero correction for the minor characteristics.

Intermittency

When the specific sound has identifiable on/off conditions, the specific sound level should be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. … If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied.

Other sound characteristics

Where the specific sound features characteristics that are neither tonal nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied."

1.7.7 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level of the specific sound. In the context of the standard, adverse impacts include, but are not limited to, annoyance and sleep disturbance. Typically, the greater this difference, the greater is the magnitude of 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 is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

1.7.8 The significance of the effect of the noise should be determined on the basis of the initial estimate of impact significance from the BS 4142 assessment and after having considered the context of the sound. It is necessary to consider all pertinent factors, including: the absolute level of sound; the character and level of the residual sound compared to the character and level of the specific sound; and the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as: facade insulation 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.

1.8 ProPG: Planning and Noise

1.8.1 The ProPG provides practitioners with guidance on a recommended approach to the management of noise within the planning system in England for new residential development. The guidance has been produced by the ANC, IOA and Chartered Institute of Environmental Health (CIEH) and is expected to be widely adopted by planning authorities as best practice when considering noise affecting new residential development.

1.8.2 This ProPG advocates a systematic, proportionate, risk based, two stage, approach, namely:

- Stage 1: an initial noise risk assessment of the proposed development site; and
- Stage 2: a systematic consideration of four key elements.

1.8.3 The four key elements to be undertaken in parallel during Stage 2 are listed below, with further details in the following sections:

- Element 1: Good Acoustic Design Process;
- Element 2: Internal Noise Level Guidelines;
- Element 3: External Amenity Area Noise Assessment; and
- Element 4: Other Relevant Issues.

1.8.4 The approach is underpinned by the preparation and delivery of an ADS. An ADS for a site assessed as high risk should be more detailed than for a site assessed as low risk. An ADS should not be necessary for a site assessed as negligible risk.

1.8.5 Figure 1 of ProPG summarises the 'Stage 1 Initial Site Noise Risk Assessment', which is based on indicative noise levels derived from current guidance and experience. This is provided in Table 8-1 below for reference.

Table Error! No text of specified style in document.**-2: ProPG Stage 1 Initial Site Noise Risk Assessment**

NOISE RISK ASSESSMENT	POTENTIAL EFFECT WITHOUT NOISE MITIGATION	PRE-PLANNING APPLICATION ADVICE
Indicative Daytime Noise Levels $L_{Aeq,16hr}$ / Indicative Night-time Noise Levels $L_{Aeq,8hr}$ High 70 dB / 60 dB Medium 65 dB / 55 dB 60 dB / 50 dB Low 55 dB / 45 dB 50 dB / 40 dB Negligible	Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice. As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development. At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
	No adverse effect	These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.

Figure 1 Notes:

a. Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.

b. Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".

c. $L_{Aeq,16hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.

d. An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,F}$ > 60 dB means the site should not be regarded as negligible risk.

1.8.2 Stage 2 Element 1: Good Acoustic Design Process

1.8.1 The ProPG states that planning applications for new residential development should include evidence that the following have been properly considered:

- The feasibility of relocating or reducing noise levels from relevant sources.
- Options for planning the site or building layout.
- Orientation of proposed building(s).
- Select construction types and methods for meeting building performance requirements.

- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, 'construction, design and management' (CDM) etc.
- The viability of alternative solutions.
- External amenity area noise.

1.8.3 Stage 2 Element 2: Internal Noise Level Guidelines

1.8.1 The internal noise level guidelines provided under within Figure 2 of ProPG are provided in Table 8-2 below. These are based upon the guidance in British Standard (BS) 8233:2014: 'Guidance on sound insulation and noise reduction for buildings'.

Table Error! No text of specified style in document.-3: ProPG Internal Noise Level Guidelines

Activity	Location	07:00 – 23:00 hrs	23:00 – 07:00 hrs
Resting	Living room	35 dB $L_{Aeq,16r}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16r}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16r}$	30 dB $L_{Aeq,16r}$ 45 dB $L_{Amax,F}$ (Note 4)

"NOTE 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events

1.8.4 Stage 2 Element 3: External Amenity Area Noise Assessment

1.8.1 The ProPG refers to the design ranges in BS 8233:2014 with respect to the assessment of external amenity, as well as guidance in the PPGN. Based on these two documents the following guidance is provided with respect to the assessment of noise in external amenity areas:

"The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$."

1.8.2 The ProPG goes on to acknowledge that:

"These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces."

1.8.3 Further guidance is provided regarding design, stating that the need to provide access to a quiet (or relatively quiet), external amenity space forms part of a good acoustic design process. A 'hierarchy' of alternative options is provided for instances when external noise levels within private external amenity areas would be potentially significant. This ranges from providing access to a relatively quiet private façade, through to a publicly accessible external amenity space (e.g. a public park).

1.8.5 Stage 2 Element 4: Other Relevant Issues

1.8.1 The ProPG states that the following other relevant issues should be considered, where appropriate, including:

- compliance with relevant national and local policy;
- the magnitude and extent of compliance with the ProPG criteria;
- the likely occupants of the development;

- the acoustic design compared to unintended adverse consequences of the acoustic design (such as roadside barriers that remove views or prevent crossing roads etc.); and
- acoustic design against wider planning considerations.

1.8.6 Planning Recommendations

1.8.1 Having followed this approach, it is envisaged that noise practitioners will then have a choice of one of four possible recommendations to present to the decision maker. In simple terms, the choice of recommendations are as follows:

- grant without conditions;
- grant with conditions;
- "avoid" significant adverse effects (corresponding to SOAEL within national planning policy); or
- "prevent" unacceptable adverse effects (corresponding to the UAEL within national planning policy).

1.8.2 Full details of where/when the above recommendations apply are provided in Section 3 of the ProPG.

1.9 British Standard 8233:2014

1.9.1 British Standard 8233:2014 – 'Guidance on sound insulation and noise reduction for buildings' provides guidance for the control of noise in and around buildings. The guidance suggests criteria for suitable sleeping/resting conditions, and proposes noise levels that normally satisfy these criteria for most people.

1.9.2 Suggested internal noise guideline levels as provided within BS 8233 have been replicated in Table Error! No text of specified style in document.-4 below.

Table Error! No text of specified style in document.-4: BS 8233 Internal Noise Level Guidelines

Activity	Location	07:00 – 23:00 hrs	23:00 – 07:00 hrs
Resting	Living room	35 dB $L_{Aeq,16r}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16r}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16r}$	30 dB $L_{Aeq,16r}$ 45 dB $L_{Amax,F}$ (Note 4)

Note 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB $L_{Amax,F}$ more than 10 times a night. However, where it is not reasonably practicable to achieve this guideline then the judgement of acceptability will depend not only on the maximum noise levels but also on factors such as the source, number, distribution, predictability and regularity of noise events

1.9.3 With regard to external areas for amenity space, BS 8233 states the following:

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

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

1.10 British Standard 5228 'Code of practice for noise and vibration control on construction and open sites', Parts 1 and 2, 2009 as amended 2014

1.10.1 British Standard (BS) 5228 is a two-part standard which comprises:

- BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'; and
- BS 5228-2:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'.

1.10.2 The Standard provides guidance, information and procedures on the control of noise and vibration from demolition and construction sites.

1.10.3 There are no set standards for the definition of the significance of construction noise effects, however, for noise, example criteria are provided in BS 5228 1:2009+A1:2014 Annex E and for vibration, example criteria are provided in BS 5228-2:2009+A1:2014 Annex B. The assessment of whether changes in noise levels due to construction activity constitute significant effects will be dependent on the absolute levels of ambient and construction noise, as well as the magnitude, duration, time of occurrence and frequency of the noise change.

1.10.4 BS 5228-1:2009+A1:2014 provides basic information and recommendations for methods of noise control relating to construction and open sites where work activities/operations generate significant noise levels. It includes sections on: community relations; noise and persons on site, neighbourhood nuisance; project supervision; and control of noise. However, annexes include: information on legislative background; noise sources, remedies and their effectiveness (mitigation options); current and historic noise level data on site equipment and site activities; significance of noise effects; calculation procedures estimating noise emissions from sites and noise level monitoring; types of piling; and air overpressure.

1.10.5 BS 5228-2:2009+A1:2014 covers basic information and recommendations for basic methods of vibration control relating to construction and open sites where work activities/operations generate significant vibration levels. It includes sections on: community relations; vibration and persons on site; neighbourhood nuisance; project supervision; control of vibration and measurement.

1.11 Design Manual for Roads and Bridges, LA111 'Noise and Vibration'

1.11.1 The Design Manual for Roads and Bridges (DMRB), LA111 'Noise and Vibration' provides guidance on methods for assessing and reporting the effects of highways noise and vibration from construction, operation and maintenance projects.

1.11.2 In specific regard to the Proposed development, the guidance provides method for assessing the magnitude of traffic noise impact during construction and operation, using predicted change in traffic noise levels, calculated using methods outlined in Calculation of Road Traffic Noise (CRTN) (Department of Transport, 1988). LA111 also provides guidance on the setting of appropriate LOAELs and SOAELs appropriate to daytime and night time road traffic noise levels.

1.11.3 For daytime, the SOAEL is set at 68 dB $L_{A10,18h}$ (façade), which is consistent with the daytime trigger level in The Noise Insulation Regulations 1975. This level has a history of use in UK noise

policy as it has previously been incorporated into planning guidance on the acceptability of sites for new residential developments. It is the external level that corresponds to an internal level with a closed single glazed window, which would meet the internal daytime criteria of 35 dB $L_{Aeq,16h}$ specified in BS 8233 (see Section 1.9) as desirable for resting in living rooms. It is also supported by the guidance in the Professional Practice Guidance: Planning and Noise (see Section 1.8).

1.11.4 The daytime LOAEL is set at 50 dB $L_{Aeq,16h}$ (free-field), based on the guidance provided in the 1999 World Health Organisation (WHO) Guidelines for Community Noise regarding the onset of moderate community annoyance. This is also consistent with the Environmental Noise Guidelines for the European Region published by WHO in 2018 which provides guidelines for specific noise sources including road traffic. These guidelines suggest a recommended 53 dB L_{den} for road traffic noise (note L_{den} correlates approximately to LA10,18h) based on a 10% risk of being Highly Annoyed. The guidelines state they are “not meant to identify effect thresholds”. Instead, they are based on the “smallest relevant risk increase” for various effects, and therefore lie slightly above the LOAEL.

1.11.5 For night-time, the SOAEL is set at 55 dB $L_{night,outside}$ (free field), which corresponds to an internal level with a closed single glazed window, which would be slightly below the night time criteria of 30 dB $L_{Aeq,8h}$ specified in BS 8233 as desirable for sleeping in bedrooms (see section 1.9). It is also supported by the guidance in the Professional Practice Guidance: Planning and Noise (see Section 1.8).

1.11.6 The WHO 2009 Night Noise Guidelines for Europe explicitly identify the night time LOAEL as 40 dB $L_{Aeq,8h}$ (free-field). Levels between 40 and 55 dB are identified in the guidelines as ‘adverse’ but not significant adverse, where health effects are observed among the exposed population. 55 dB is identified in the guidelines as when the risk of cardiovascular disease increases.

1.12 Calculation of Road Traffic Noise 1988

1.12.1 The Calculation of Road Traffic Noise (CRTN) describes the procedures for measuring and calculating noise from road traffic. These procedures are necessary to enable entitlement under The Noise Insulation Regulations to be determined but they also provide guidance appropriate to the calculation of traffic noise for more general applications, for example, environmental appraisal of road schemes, highway design and land use planning. The document can also be used to generate scaling factors for expected increases in road traffic and expected levels of attenuation from barriers.

1.12.2 The index adopted by CRTN to assess traffic noise is $L_{A10,18h}$. This value is determined by taking the highest 10% of noise readings in each of the 18 one-hour periods between 06:00 and 00:00, and then calculating the arithmetic mean.