



## Appendix 10.1

### Legislation, Policy and Guidance

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# Appendix 10.1

## Legislation, Policy & Guidance

### Environmental Protection Act 1990

Under Part III of the UK Government Environmental Protection Act 1990, local authorities have a duty to investigate noise complaints in relation to premises (including land and buildings) and vehicles, machinery or equipment. The act does not apply to road traffic noise but is applicable to construction activities.

If a local authority's Environmental Health Officer is satisfied that a complaint amounts to a statutory nuisance, the authority must serve an abatement notice on the person responsible or, in certain cases, the owner or occupier of the property.

### Control of Pollution Act 1974

Under Section 60 of the UK Government Control of Pollution Act 1974 (CoPA) the local authority can serve a notice specifying how construction works should be carried out, including working hours and noise/vibration limits. Breaching the terms of the notice is an offence.

Section 61 of the CoPA can be used by contractors completing construction works to apply in advance to the local authority for 'prior consent'. Section 61 prior consent acts as a defence against a Section 60 notice. The application must detail how noise and vibration is to be managed on-site based on the principles of Best Practicable Means (BPM).

### National Planning Policy Framework (NPPF)

The Government updated the National Planning Policy Framework (NPPF) on 7th February 2025 and its associated National Planning Practice Guidance (NPPG) on 14th February 2024. Together, the NPPF and NPPG set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments.

The NPPG adds further context to the NPPF and it is intended that the two documents should be read together.

Noise needs to be considered when development may create additional noise, or would be sensitive to the prevailing acoustic environment (including any anticipated changes to that environment from activities that are permitted but not yet commenced). When preparing plans, or taking decisions about new development, there may also be opportunities to make improvements to the acoustic environment. Good acoustic design needs to be considered early in the planning process to ensure that the most appropriate and cost-effective solutions are identified from the outset.

Plan-making and decision making need to take account of the acoustic environment and in doing so consider:

- 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 the Explanatory note of the noise policy statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.

The Observed Effect Levels are as follows:

- Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
- Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
- No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.

Table 10.1 summarises the noise exposure hierarchy, based on the likely average response.

**Table 10.1 Noise Exposure Hierarchy**

| Perception                                       | Examples of Outcomes                                                                                                                                                                                                                                                                                                                                                                                        | Increasing Effect Level    | Action                           |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------|
| <b>No Observed Effect Level</b>                  |                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                  |
| Not present                                      | No Effect                                                                                                                                                                                                                                                                                                                                                                                                   | No Observed Effect         | No specific measures required    |
| <b>No Observed Adverse Effect Level</b>          |                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                  |
| Present & 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 Observed Adverse Effect | No specific measures required    |
| <b>Lowest Observed Adverse Effect Level</b>      |                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                  |
| Present & Intrusive                              | Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life. | Observed Adverse Effect    | Mitigate and reduce to a minimum |
| <b>Significant Observed Adverse Effect Level</b> |                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                                  |

| Perception                | Examples of Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Increasing Effect Level            | Action  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------|
| Present & disruptive      | The noise causes a material change in behaviour and/or attitude, 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. | <b>Significant Observed Effect</b> | Avoid   |
| Present & very disruptive | Extensive and regular changes in behaviour and/or an 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                                                                                                                                                                               | <b>Unacceptable Adverse Effect</b> | Prevent |

The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation.

These factors 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 a new noise making source, how the noise from it relates to the existing sound environment;
- 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 contains 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), and
- the local arrangement of buildings, surfaces and green infrastructure, and the extent to which it reflects or absorbs noise.

More specific factors to consider when relevant include:

- the cumulative impacts of more than one source of noise;
- whether any 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 (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on 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 the overall noise

level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur;

- Noise Action Plans (where these exist), and, in particular the Important Areas identified through the process associated with the Environmental Noise Directive and corresponding regulations should be taken into account. Defra's website has information on Noise Action Plans and Important Areas. Local authority environmental health departments will also be able to provide information about Important Areas;
- the effect of noise on wildlife. Noise can adversely affect wildlife and ecosystems. Particular consideration needs to be given to the potential effects of noisy development on international, national and locally designated sites of importance for biodiversity;
- where 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; and
- some commercial developments including restaurants, hot food takeaways, 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.

## Draft SADC Local Plan

Preparation of a Local Plan is a statutory requirement for the Council. The Local Plan sets out the planning policies and proposals for the future development of the City and District of St Albans.

Policy HW1 – Air & Noise Pollution states then following with regards to noise:

*'Development proposals, including those for new residential dwellings, schools, nurseries and care homes and other uses which are noise and pollution sensitive, or in areas which may exceed national legislative air quality pollution limits, must carry out suitable assessments for noise / air pollution.*

*Proposals which are found to be affected by noise or air pollution must demonstrate suitable mitigation, including as required:*

- a) Maintaining distances between road and other sources of noise and air pollution (including odour pollution) and people;*
- b) Using green infrastructure, in particular trees, where this can create a barrier or maintain separation between sources of pollution and receptors;*
- c) Appropriate means of filtration, ventilation and soundproofing on affected buildings;*
- d) Effective control of dust and emissions from construction, operation and demolition;*
- e) Use of optimal layout and orientation to promote avoidance of elevated pollution without mitigation which will reduce the level of mitigation where necessary; and*
- f) Air quality and / or noise assessments at the earliest stage of development.'*

## BS4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

This standard describes methods for rating and assessing sound of an industrial or commercial nature which includes:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from processes or premises, such as that from forklift trucks, or that from train or ship movements on or around an industrial or commercial Site.

The procedure detailed in the standard compares the measured or predicted noise level 'the specific noise level' from any of the above detailed noise sources with the background sound level at a residential dwelling. The measured background sound level at a receptor should be reliable and should not necessarily ascertain a lowest measured background sound level, but rather to quantify what is 'typical.'

The specific noise level also acknowledges the following reference time intervals depending upon whether the noise source operates during daytime or night-time periods:

- Daytime (07:00 - 23:00): 1 hour; and
- Night-time (23:00 - 07:00): 15 minutes.

There are a number of 'penalties' which can be attributed to the specific sound level, either subjectively or objectively, depending upon the 'acoustic features' of the sound level under investigation as follows. These penalties vary in their weighting depending upon the severity of the acoustic feature, as follows (with regards to the subject method):

### Tonality

- +2dB: where the tonality is just perceptible;
- +4dB: where the tonality is clearly perceptible; and
- +6dB: where the tonality is highly perceptible.

### Impulsivity

- +3dB: where the impulsivity is just perceptible;
- +6dB: where the impulsivity is clearly perceptible; and

- +9dB: where the impulsivity is highly perceptible.

#### Intermittency

- +3dB: where the intermittency is readily distinctive against the acoustic environment.

Where the assessment is carried out using the objective method, the tonality penalty is either 0dB or 6dB and the impulsivity penalty can range from 0dB up to 9dB in increments of 1dB, depending on the level of impulsivity identified.

In addition to the above acoustic features, there is a penalty for 'other sound characteristics' of +3dB where a sound exhibits characteristics that are neither tonal nor impulsive, though is readily distinctive against the acoustic environment.

BS4142 goes on to state that the rating level is equal to the specific sound level if there are no such features present or expected to be present.

Assessment of the rating level relative to the background noise level can yield the following commentary:

- Typically, the greater this difference (between the rating level and the background sound level), the greater the magnitude of impact;
- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; and
- 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. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

Whilst the amended 2019 Standard does make various references to it not being intended to assess noise impacts at indoor locations, section 1.1 does state 'The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident'. Example 6 in the Standard states 'In addition to the rating/background sound level comparison shown in Table A.6, the primary concern is the potential for disturbance of residents who could be sleeping with open bedroom windows. Other guidance, such as BS 8233, might also be applicable in this instance'.

With the above in mind, and for a clear need to ensure that any potential commercial or industrial noise impacts at the building façade do not give rise to internal noise level which causes sleep disturbance in bedrooms, this Assessment will ensure that the predicted rating level (specific sound level including any character corrections) does not exceed 30dB in bedrooms.

## BS8233:2014 'Guidance on sound insulation and noise reduction for buildings'

### Noise Criteria Limits

The scope of this standard is the provision of recommendations for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations, which are primarily intended to guide the design of new buildings or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise climate.

The standard suggests suitable internal noise levels within different types of buildings, including dwellings, as shown in Table 10.2.

**Table 10.2 BS8233:2014 Internal Target Noise Levels**

| Criterion                                                                                                                                     | Typical Situation | Design $L_{Aeq,T}$ (dB) |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------|
| Suitable resting / sleeping conditions                                                                                                        | Living Room       | 35                      |
|                                                                                                                                               | Bedroom*          | 30                      |
| *For a Reasonable standard in bedrooms at night, individual noise events (measured with fast time weighting) should not exceed 45dB $L_{max}$ |                   |                         |

BS8233 goes on to recommend noise levels for gardens as follows:

*"It is desirable that the external noise level does not exceed 50dB  $L_{Aeq,T}$ , with an upper guideline value of 55dB  $L_{Aeq,T}$  which would be acceptable in noisier environments. However, it is also recognised 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 might be warranted".*

BS8233 goes on to say:

*"In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited".*

With regards to external noise within balcony areas, BS8233: 2014 provides the following advice:

*"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"*

## **Ventilation Requirements**

Where a partially open window cannot be relied upon to provide an adequate level of facade sound insulation performance, it is necessary to consider alternative ventilation for habitable rooms. Section 8.4.5.4 within BS8233 states:

*“The Building Regulations’ supporting documents on ventilation [48, 49, 50] recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant’s choice.*

*Alternatively, acoustic ventilation units (see 7.7.2 below) are available for insertion in external walls. These can provide sound reduction comparable with double glazed windows. However, ducted systems with intakes on the quiet side of the building might be required in very noisy situations, or where appearance rules out through-the-wall fans.”*

Section 7.7.2 states:

*“NOTE 5 If relying on closed windows to meet the guide values, there needs to be an appropriate alternative ventilation that does not compromise the façade insulation or the resulting noise level.”*

## **Artificial Grass Pitch Acoustics – Design Guidance Note**

The Design Guidance Note Artificial Grass Pitch (AGP) Acoustics, released in August 2015, provides details of acoustic implications associated with such facilities and follows on from an acoustic research programme involving detailed analysis of relevant noise guidance documents and site testing in a range of locations. It proposes appropriate noise criteria and assessment methods and outlines practical measures that can be applied to reduce noise in particular sensitive areas. There is no previous guidance or assessment methodology specifically relating to noise from AGPs and this guidance considers the issues from first principles.

With no specific noise criteria for an AGP, the following documents are considered the most relevant and the most commonly applied for the assessment of AGP noise:

- World Health Organisation ‘Guidelines for Community Noise’; and
- IOA / IEMA Working Party Consultation Draft 2002.

The World Health Organisation’s (WHO) Document provides guidance for outdoor living areas stating that to avoid ‘moderate annoyance’ during the daytime and evening the noise level should not exceed 50dB LAeq,16hr. However, for an AGP, a 16-hour assessment period may not truly reflect the noise impact as it takes into account time of use and non-use. It is suggested that an appropriate assessment time period is for one 1-hour as this is typically the time period for a community sports session on an AGP.

In some circumstances, an alternative assessment methodology may be appropriate such as where there are changes to an existing natural turf or AGP pitch. The IOA / IEMA Working Party Consultation Draft 2002 categorises the significance of a change in noise level. A ‘slight’ impact

is considered for an increase of less than 3dB which is generally accepted as being the minimum perceptible change to a human ear. The noise levels are to be measured using the LAeq parameter over the same time period, T (taken as being 1-hour).

Table 10.3 summarises the noise level criteria relative to the development scenario.

**Table 10.3 AGP Noise Level Criteria**

| Noise Criteria by Scenario                                 |                                                                                          |
|------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Proposed Noise-Sensitive Development Close to Existing AGP | Proposed AGP Close to Existing Noise-Sensitive Development                               |
| 50dB LAeq,1hr                                              | Test 1: Existing LAeq,1hr + AGP LAeq,1hr ≤ 3dB and;<br>Test 2: AGP Noise ≤ 50dB LAeq,1hr |

The Design Guidance Note goes on to state that a typical free-field noise level of 58dB LAeq,1hr at a distance of 10m from the side-line halfway marking (equivalent to 50m from the centre of the pitch) has been determined as being representative of the noise level from an AGP.

## Design Manual for Roads & Bridges

DMRB LA111 ‘Noise and Vibration’ describes methodology and guidance for the assessment road traffic noise in the UK. Guidance best reflects EIA methodology as applied to highways projects and assessment of noise impacts due to road traffic. It includes a method of the classification of magnitude of impact, assessment of and determination of significance.

DMRB LA111 provides guidance for comparisons that should be made to assess the impact of changes in road traffic noise. The traffic noise change is based on noise levels associated with Do Minimum (that is, without the proposed scheme) and Do-something (that is, with the proposed scheme) and for the opening year and a design year that is usually 15 years later but can be a shorter interval where appropriate.

## Calculation of Road Traffic Noise

The Calculation of Road Traffic Noise (CRTN) provides procedures for predicting noise levels for a given flow of road traffic at sensitive receptors. These methodologies are used in the determination of entitlement under the Noise Insulation Regulations and for traffic noise change assessments undertaken in accordance with the DMRB assessment methodology.

## BS5228-1:2009+A1:2014

This British Standard sets out techniques required 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 LAeq,T over the core working day.

This British Standard also documents a database of information, comprising previously measured sound power levels for a variety of different construction plant undertaking various common activities.

Example criteria are presented for the assessment of the significance of noise effects. Such criteria may be concerned with fixed noise limits and/or ambient noise level changes. With respect to fixed noise limits, BS 5228-1 presents the following noise limits which are taken as an average over a 10-hour working day:

- 70.0dB(A) in rural, suburban and urban areas away from main road traffic and industrial noise; and
- 75.0dB(A) in urban areas near main roads and heavy industrial areas.

## BS 5228-2: 2009+A1:2014

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 10.4.

**Table 10.4 PPV Criteria - Human Exposure**

| Vibration Level (ppV) | Effect                                                                                                                                                                                          |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.14mm/s              | Vibration might just be perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration. |
| 0.3mm/s               | Vibration might be just perceptible in residential environments                                                                                                                                 |
| 1.0mm/s               | 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.                   |
| 10mm/s                | Vibration is likely to be intolerable for any more than a very brief exposure to this level.                                                                                                    |

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 10.5

**Table 10.5: Guidance Criteria - Buildings**

| Type of Building                                                             | Peak Component Particle Velocity in Frequency Range of Predominant Pulse |                         |
|------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------|
|                                                                              | 4Hz to 15Hz                                                              | 15Hz and above          |
| Reinforced or framed structures<br>Industrial and heavy commercial buildings | 50mm/s at 4Hz and above                                                  | 50mm/s at 4Hz and above |

|                                                                                                         |                                            |                                                       |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------|
| Unreinforced or light framed structures<br>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 base of the building                                                  |                                            |                                                       |
| Note 2: At frequencies below 4Hz, a maximum displacement of 0.6mm (zero to peak) is not to be exceeded. |                                            |                                                       |

It should be noted that the values presented within Table 10.5 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. It can be seen that the guide values for building damage are an order of magnitude higher than for human disturbance.

### BB93: Acoustic Design of Schools - Performance Standards

BB93 is not intended to be used in assessing noise impacts upon nurseries that are not part of primary schools, nevertheless in the absence of any guidance for stand-alone nurseries, the noise criteria levels presented within the document are considered appropriate to use for such an assessment.

The overall objective of the performance standards, detailed in Table 6 below, is to provide acoustic conditions in schools that (a) facilitate clear communication of speech between teacher and student, and between students, and (b) do not interfere with study activities.

The indoor ambient noise level includes noise contributions from:

- External sources outside the school premises (including, but not limited to, noise from road, rail and air traffic, industrial and commercial premises); and
- Building services (e.g. ventilation system, plant, etc). If a room is naturally ventilated, the ventilators or windows should be assumed to be open as required to provide adequate ventilation. If a room is mechanically ventilated, the plant should be assumed to be running at its maximum operating duty.

The indoor ambient noise level excludes noise contributions from:

- Teaching activities within the school premises, including noise from staff, students and equipment within the building or in the playground. Noise transmitted from adjacent spaces is addressed by the airborne and impact sound insulation requirements;
- Equipment used in the space (e.g. machine tools, CNC machines, dust and fume extract equipment, compressors, computers, overhead projectors, fume cupboards). However, these noise sources should be considered in the design process; and
- Rain noise.

BB93 also includes recommendations for outdoor spaces such as playgrounds or external teaching areas. While not as strict as indoor standards, the guidelines suggest that outdoor noise levels should not interfere with teaching and learning when external spaces are used for educational purposes.

**Table 10.6: Performance Standards for Indoor Ambient Noise Levels – Upper Limits for Indoor Ambient Noise Level**

| Type of Room                                                                                               | Activity Noise (Source Room) | Noise Tolerance (Receiving Room) | Upper Limit for Indoor Ambient Noise Level, LAeq,30min (dB) |
|------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------|-------------------------------------------------------------|
| Nursery School playrooms                                                                                   | High                         | Low                              | 35 <sup>1</sup>                                             |
| Nursery School quiet rooms                                                                                 | Low                          | Low                              | 35 <sup>1</sup>                                             |
| Primary School: classrooms, class bases, general teaching areas, small group rooms                         | Average                      | Low                              | 35 <sup>1</sup>                                             |
| Secondary School: classrooms, general teaching areas, seminar rooms, tutorial rooms, language laboratories | Average                      | Low                              | 35 <sup>1</sup>                                             |
| <b>Open-plan<sup>2</sup></b>                                                                               |                              |                                  |                                                             |
| Nursery School playrooms                                                                                   | High                         | Low                              | 35 <sup>1</sup>                                             |
| Nursery School quiet rooms                                                                                 | Low                          | Low                              | 35 <sup>1</sup>                                             |
| <b>Music</b>                                                                                               |                              |                                  |                                                             |
| Music classroom                                                                                            | Very High                    | Low                              | 35 <sup>1</sup>                                             |
| Small practice/group room                                                                                  | Very High                    | Low                              | 35 <sup>1</sup>                                             |
| Ensemble room                                                                                              | Very High                    | Very Low                         | 30 <sup>1</sup>                                             |
| Performance/recital room                                                                                   | Very High                    | Very Low                         | 30 <sup>1</sup>                                             |
| Recording studio <sup>3</sup>                                                                              | Very High                    | Very Low                         | 30 <sup>1</sup>                                             |
| Control room for recording                                                                                 | High                         | Low                              | 35 <sup>1</sup>                                             |
| <b>Lecture Rooms</b>                                                                                       |                              |                                  |                                                             |
| Small (fewer than 50 people)                                                                               | Average                      | Low                              | 35 <sup>1</sup>                                             |
| Large (fewer than 50 people)                                                                               | Average                      | Very Low                         | 30 <sup>1</sup>                                             |
| Classrooms designed specifically for use by hearing Impaired students (including speech therapy rooms)     | Average                      | Very Low                         | 30 <sup>1</sup>                                             |
| Study room (individual study, withdrawal, remedial work, teacher preparation)                              | Low                          | Low                              | 35 <sup>1</sup>                                             |
| <b>Libraries</b>                                                                                           |                              |                                  |                                                             |
| Quiet study areas                                                                                          | Low                          | Low                              | 35 <sup>1</sup>                                             |

|                                                                                                                                    |                |          |                 |
|------------------------------------------------------------------------------------------------------------------------------------|----------------|----------|-----------------|
| Resource areas                                                                                                                     | Average        | Medium   | 40              |
| Science laboratories                                                                                                               | Average        | Medium   | 40              |
| Drama studios                                                                                                                      | High           | Very Low | 30 <sup>1</sup> |
| <b>Design and Technology</b>                                                                                                       |                |          |                 |
| Resistant materials, CAD/CAM areas                                                                                                 | High           | High     | 40              |
| Electronics/control, textiles, food, graphics, design/resource areas                                                               | Average        | Medium   | 40              |
| Art rooms                                                                                                                          | Average        | Medium   | 40              |
| Assembly halls <sup>4</sup> , multi-purpose halls <sup>4</sup> (drama, PE, audio/visual presentations, assembly, occasional music) | High           | Low      | 35 <sup>1</sup> |
| Audio-visual, video conference rooms                                                                                               | Average        | Low      | 35 <sup>1</sup> |
| Atria, circulation spaces used by students                                                                                         | Average        | Medium   | 45              |
| Indoor sports hall                                                                                                                 | High           | Medium   | 40              |
| Dance studio                                                                                                                       | High           | Medium   | 40              |
| Gymnasium                                                                                                                          | High           | Medium   | 40              |
| Swimming Pool                                                                                                                      | High           | High     | 50              |
| Interviewing/counselling rooms, medical rooms                                                                                      | Low            | Low      | 35 <sup>1</sup> |
| Dining rooms                                                                                                                       | High           | High     | 45              |
| <b>Ancillary Spaces</b>                                                                                                            |                |          |                 |
| Kitchens                                                                                                                           | High           | High     | 50              |
| Offices, staff rooms                                                                                                               | Average        | Medium   | 40              |
| Corridors, stairwells                                                                                                              | Average – high | High     | 45              |
| Coats and changing areas                                                                                                           | High           | High     | 45              |
| Toilets                                                                                                                            | Average        | High     | 50              |

## NOTES

**1** Research indicates that teaching can be disrupted by individual noisy events such as aircraft flyovers, even where the noise level is below the limits in the above table. For rooms identified above having limits of 35dB or less, the noise level should not regularly exceed 55dB  $L_{A1, 30min}$ .

**2** Acoustic considerations of open-plan areas are complex and are discussed in the BB93 section of Assessment Criteria in Section 2.

**3** Studios require specialised acoustic environments and the noise limits for these will vary with the size, intended use and type of room. In some cases noise limits below 30 dB  $L_{Aeq}$  may be required, and separate limits for different types of noise may be appropriate; specialist advice should be sought.

**4** Halls are often multi-functional spaces (especially in primary schools) used for activities such as dining, PE, drama, music and