



Good Practice Guide on the Control of Noise from Pubs and Clubs

March 2003

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1. INTRODUCTION

- 1.1 In 1994, the Noise Council¹ surveyed members of its founding bodies and identified that there was demand for guidance on how to assess and control noise associated with pubs, clubs and similar premises. In 1996, the Institute of Acoustics set up a working party consisting of Environmental Health Officers, Acoustic Consultants and, for a time, members of the pub, club and entertainment industries, to look into these issues. The current membership of the working party comprises individuals who have significant technical knowledge and experience in noise issues associated with the entertainment and leisure industry, both from the enforcement and compliance perspectives. The working party membership is given in Appendix A. This Good Practice Guide is the result of their work to date.

¹ *The Noise Council is no longer in existence. However, codes of practice that were developed under its direction are still in regular use.*

2. SCOPE

- 2.1 This document provides guidance for the assessment and control of noise affecting noise-sensitive properties, from the public and private use of public houses, clubs, hotels, discothèques, restaurants, cafés, community or village halls and other similar premises. The main noise sources considered are music; singing; public address (PA) systems; children's play areas; beer gardens; people in general; car parks and access roads; deliveries; collections; materials handling; plant and machinery; and skittle alleys. Noise arising from live sporting events held at such premises is not covered by this document.
- 2.2 The purpose of this Guide is to assist local authority officers and venue management and their staff in the prevention of noise disturbance and in the investigation and resolution of noise complaints. It is also intended to assist with the planning and licensing of proposed or existing premises.
- 2.3 The original intention was to include objective noise criteria in this document, or in a separate but related document, that could have been used to assess and control noise from all the main sources of noise that can be present at pubs, clubs and similar premises. However, it has not been possible to subject the new criteria that have been developed and proposed by the working party to a satisfactory validation process. It is hoped that future research will lead to the publication of criteria that have been fully validated in terms of human response and have been subject to trials which confirm their practicability in terms of measurement, enforcement and use within the planning process. Until such criteria are developed, it is recommended that local authorities and others should devise and apply policies having regard to this Guide and taking into account local circumstances and existing licensing and planning policies.
- 2.4 Music, singing and speech, both amplified and non-amplified, are common sources of noise disturbance arising from the premises listed in 2.1 above. As far as these sources are concerned, the purpose of developing the objective noise criteria mentioned in 2.3, should be to attempt to ensure that:
- for premises where entertainment takes place on a regular basis, music and associated sources should not be audible inside noise-sensitive property at any time. In the absence of the objective criteria mentioned in 2.3, what is 'regular' should be determined on a local basis to reflect local expectations and should be incorporated by local authorities in their planning and enforcement policies (see section 4); and
 - for premises where entertainment takes place less frequently, music and associated sources should not be audible inside noise-sensitive property between 23:00 and 07:00 hours. For other times, appropriate criteria need to be developed which balance the rights of those seeking and providing entertainment, with those who may be disturbed by the noise.

For the purposes of this document, noise may be considered not audible or inaudible when it is at a low enough level such that it is not recognisable as emanating from the source in question and it does not alter the perception of the ambient noise environment that would prevail in the absence of the source in question. A more simplistic explanation of the term 'inaudible' is given in Appendix B.

- 2.5 The determination of "nuisance" is not within the scope of this Guide, however, the Guide may be useful in forming a view on the likelihood that a "nuisance" has occurred, is occurring or could occur.
- 2.6 The Guide should not be used to determine or enforce noise standards for occasional music events of the type covered by the Code of Practice on Environmental Noise Control at Concerts [1].

3. SOURCES OF DISTURBANCE

General

3.1 The main sources of noise that can cause disturbance from pubs, clubs and similar premises are:

- music, singing and speech, both amplified and non-amplified, originating from inside buildings;
- music, singing and speech, both amplified and non-amplified, originating from outside buildings;
- activities within gardens and play areas;
- rowdy behaviour;
- use of car parks and access roads;
- delivery/collection/storage activities;
- plant and machinery; and
- skittle alleys.

Music, Singing and Speech Originating from Inside Buildings (Entertainment Noise)

3.2 Noise from these sources is a common cause of complaints, the majority of which arise because music and associated noise is audible in nearby or adjoining noise-sensitive property, gardens and amenity areas.

3.3 Some of the reasons why disturbance arises from these sources are given below:

- music and associated noise levels can be very high inside pubs, clubs and similar premises;
- music and associated noise usually occurs from mid-evening until either late evening or early morning when residents in adjacent properties may be attempting to go to sleep or are sleeping;
- music and associated noise levels generally increase as an event progresses, whilst ambient noise levels fall, particularly into the evening and night. This can make the noise more noticeable and hence increase the likelihood of complaint;
- music sources frequently contain a significant low frequency (bass) component that is less well attenuated by building structures than the

higher frequency components. This can result in disturbing bass beat effects in or at nearby noise-sensitive properties, particularly if they are structurally attached;

- noise problems associated with these sources can be exacerbated in the summer when windows and doors may be open for ventilation purposes, or when residents are outside, enjoying their gardens or amenity areas; and
- noise problems can also occur when music events are held in acoustically weak structures e.g. conservatories and some village halls.

3.4 Noise disturbance can also arise from televised sports events, which are often relayed at high volume and can be accompanied by patrons cheering, shouting and singing.

Music, Singing and Speech Originating from Outside Buildings (Entertainment Noise)

3.5 The levels of noise from these sources can often be high because there is no building envelope to attenuate the sound. Examples of this are use of beer gardens; receptions and parties held in marquees; and barbecues and parties held in the open.

Use of Gardens and Play Areas

3.6 Noise disturbance may arise from adults and children using gardens or dedicated permanent play areas both inside and outside buildings. In addition, disturbance can arise from temporary play areas where transportable play equipment is often sited. If pumps and generators are associated with the operation of this equipment, these can also cause disturbance.

Rowdy Behaviour

3.7 People congregating at and around pubs, clubs and similar venues, can lead to raised voices and shouting. Rowdy behaviour of this nature is most likely to occur around the end of entertainment events, or at closing time.

3.8 Rowdy behaviour inside premises can also result in noise disturbance, particularly if noise-sensitive properties are structurally attached to a source building (e.g. flats above a pub or club).

Use of Car Parks and Access Roads

3.9 Noise disturbance arising from these areas may be associated with the type of rowdy behaviour discussed in 3.7 and 3.8. However, it often includes noise from the use of in-car entertainment systems, car horns, the slamming of car doors, the activation of car alarms, the screeching of tyres, excessive engine revving, prolonged idling and other similar activities. Noise levels produced from vehicle movements can also cause disturbance. These levels can be

significantly affected by the surface of car parks or access roads; e.g. driving on gravel surfaces is likely to produce higher noise levels than driving on tarmac.

- 3.10 The arrival and departure of taxis and minibuses can cause problems similar to those described in 3.9. Some events of this nature may occur well after the end of an entertainment event, or as staff leave premises after closing time.

Delivery/Collection/Storage Activities

- 3.11 Visits from commercial vehicles may result in noise disturbance particularly when they occur in the early morning for delivery or collection purposes.
- 3.12 The handling of gas cylinders, kegs and bottles, particularly in outside storage areas, may also cause noise disturbance, especially in the late evening, at night and in the early hours of the morning. The use of bottle banks may also cause disturbance at these times.

Plant and Machinery

- 3.13 Ventilation units, air conditioning systems, chiller-units and beer pumps are present in most pubs and clubs. Such items, which often include external units, may operate day and night and switch on and off as demand varies, which can make the noise more noticeable. Impulsive noise may also be associated with this switching process.
- 3.14 Where noise-sensitive properties are structurally attached to commercial premises that contain plant and machinery, disturbance may also arise due to structure-borne noise and/or vibration.

Skittle Alleys

- 3.15 Skittle alleys are a common feature in pubs and social clubs in certain parts of the country. Often they are used for social events, as well as for competitive matches. In addition to noise from enthusiastic participants, the use of such a facility can result in significant noise from the following:
- balls rolling along the alley;
 - balls striking the pins;
 - balls and pins striking the side walls, back walls and floor at the end of the alley, often referred to as 'the pit'; and
 - balls rolling along the return chute.
- 3.16 Problems of noise disturbance are most common when a skittle alley is close to or structurally attached to noise-sensitive property. Some of the above sources cause a low frequency rumbling noise that is often poorly attenuated by the source and receiving building structures.

4. RESPONSIBILITIES OF LOCAL AUTHORITIES

- 4.1 As with other sources of noise, local authorities should adopt and implement clear planning and enforcement policies. These policies should address the investigation of complaints, land use planning and licensing matters where noise may be an issue. Groups of authorities within areas or regions may wish to collaborate to develop joint policies and the aims of such policies should be to ensure that:
- practices and procedures in relation to noise control are clearly stated;
 - assessment and enforcement activities relating to noise are carried out by staff who are appropriately equipped, qualified and trained; and
 - information is available for residents and local businesses that explains the reasons for the policies.
- 4.2 A quality control system should be put in place to provide for consistent and effective application of the policies referred to in 4.1.
- 4.3 The Chartered Institute of Environmental Health (CIEH) has published Guidance on the Creation and Maintenance of Effective Noise Management Policies and Practices for Local Authorities and their Officers [2].

5 RESPONSIBILITIES OF BUSINESSES

- 5.1 Appropriate planning and good management can minimise the potential for noise disturbance and complaint, thereby reducing the likelihood of neighbour conflict and avoiding enforcement action and licensing problems. Those having management responsibility for a business have a statutory duty to prevent excessive noise and failure to do so can lead to prosecution. Therefore, implementing pro-active procedures for noise control should be an essential part of the day to day business management. It will generally be beneficial to hold discussions with the local environmental health services on these matters, particularly in relation to enforcement policies. In the case of proposals for new premises, such discussions should be held at the earliest opportunity.
- 5.2 Noise control procedures will vary depending on the size of the business and the nature of existing or potential problems. However, the following general issues should always be addressed:
- the establishment of procedures to assess the potential for noise disturbance arising from business operations. Assessments to establish whether or not a noise is disturbing may vary from a simple listening test to a comprehensive acoustic survey carried out by a competent person (see 6.12);
 - the establishment of monitoring systems to check on compliance with noise control procedures, with particular noise control measures and restrictions and/or conditions attached to any planning consent or entertainment licence;
 - the establishment of procedures and methods for recording and responding to any noise complaints; and
 - the provision of appropriate training to employees.
- 5.3 The results of noise assessments should be recorded and retained by those having management control of the business. For businesses having multiple outlets, it may be appropriate for a central team of competent staff to carry out such assessments and for the records to be kept at the offices that have corporate control for noise matters. However, local management should hold copies of this information for everyday use.
- 5.4 The noise assessments referred to in 5.2 and 5.3 should be carried out regularly (e.g. once a year and prior to a license application) and also under the following circumstances:
- if some of the noise sources at any premises have not been assessed;
 - prior to and immediately after the introduction of a new entertainment activity at any premises;

- when considering alterations to any premises and again after completion of these alterations;
- before and after the introduction of new plant or machinery;
- before and after extending operating hours; and
- following the receipt of a noise complaint.

5.5 The noise control measures identified in Chapter 7 should be considered when developing or reviewing noise policies and practices following the implementation of any of the recommendations described in 5.2, 5.3 and/or 5.4. However, before implementing any new noise control measures, it would normally be prudent to discuss the proposals with the local authority.

5.6 In addition to the concerns associated with off-site noise-sensitive properties, a noise assessment within the premises may be necessary as a result of duties imposed by the Noise at Work Regulations 1989 [3]. However, it should be noted that such an assessment would not provide sufficient information for an assessment of potential noise disturbance at nearby noise-sensitive premises. There are situations, however, where compliance with these Regulations will result in a reduction in music levels that will, consequently, reduce noise levels at nearby noise-sensitive properties.

6 GENERAL MEASUREMENT ADVICE

Introduction

6.1 Noise measurements may be required to:

- assess the nature and severity of a noise disturbance;
- set noise limits to prevent noise disturbance;
- determine acceptable noise levels for planning and/or licensing purposes;
- check compliance with noise limits set by planning and licensing conditions;
- record reference sound levels at a venue following action to limit the output of a venue's sound system; and/or
- gather information for a prosecution.

6.2 The type of noise measurements required will depend on the type of noise source, the characteristics of the noise and local policies.

Instrumentation

6.3 It is recommended that noise measurements are made using a sound level meter which complies with the type 1 requirements defined in British Standards EN 60804 [4] and 60651 [5].

6.4 Notice should be taken of the lower measuring limit of the instrumentation. For example, many sound level meters currently available are incapable of measuring below 20 dB(A), although the indicated range may suggest otherwise.

Calibration of Instrumentation

6.5 Calibration and verification procedures should conform to those given in British Standard 4142 [6].

Measurement Periods

6.6 Measurement periods should be chosen to ensure that the recorded noise levels are representative of the noise source or background noise being assessed.

Measurement Positions and Locations

- 6.7 Measurements may be made indoors or outdoors, according to individual circumstances and local policies. However, where business premises are structurally attached to noise-sensitive premises, and noise is passing through a party wall or floor, indoor measurements are essential.
- 6.8 Outdoor measurements have the advantage that it may not be necessary to disturb residents to gain access. However, such measurements are not necessarily representative of the noise that will arise inside the dwelling and indoor measurements provide a better representation of what is heard by residents.
- 6.9 The following guidance is provided to assist in defining outdoor measurement locations at noise-sensitive premises:
- free-field (non-façade) measurements - at least 3.5 m from any significant reflecting surface, other than the ground, and at least 1.2 m above the ground; and
 - façade measurements - 1 m from the façade of the building in question. At ground floor level – 1.2 to 1.5 m above the ground. At higher floor levels – outside the centre of a window.
- 6.10 Where indoor measurements are required, the following guidance should be followed:
- measurements should normally be carried out in the worst affected, or potentially affected, habitable room, preferably with the residents absent;
 - measurements may be made with the windows to the habitable room either closed, or open sufficiently for normal ventilation purposes. Normally, the condition under which most disturbance is arising, or could arise, should be selected;
 - the height of the measuring microphone should be between 1.2 and 1.5 m above the floor;
 - the microphone should not be less than 1.5 m from any window or door, unless room dimensions make this impossible. In such cases, the maximum practicable distance should be adopted;
 - the microphone should not be less than 1 m from any reflecting surface unless room dimensions make this impossible. In such cases, the maximum practicable distance should be adopted;
 - noise levels can vary significantly within a room, therefore, the most appropriate measurement position may be where the complainant experiences the disturbance, e.g. near a bed, or by a desk; and

- it should be ensured that intermittent noise sources e.g. traffic and the operation of appliances such as heating boilers, air-conditioners and refrigerators, do not interfere with the measurements.

Meteorological Conditions

- 6.11 The advice given on "Precautions against interference" and "Weather conditions" contained in BS 4142 [6] should generally be complied with, particularly for outdoor measurements.

Personnel

- 6.12 Competent persons should take the noise measurements and carry out the assessment. Guidance on what constitutes appropriate training for competency can be obtained from the Institute of Acoustics or the Association of Noise Consultants (see Appendix C). Both bodies will provide a list of their members upon request.

7 CONTROL MEASURES

General

- 7.1 Where noise could affect the occupants of neighbouring properties, consideration should be given to noise control issues prior to applying for planning consent, or a licence that permits entertainment, or before introducing any material changes to buildings or operations. Such consideration is financially prudent, as it could reduce the likelihood of failed planning or licence applications and/or costly remedial measures, in the event of justified complaints from local residents.
- 7.2 In order to minimise the risk of noise problems arising, extreme caution should be exercised in permitting developments that result in pubs, clubs and other similar premises being structurally attached to noise-sensitive properties. Such development should not be permitted without it being clearly demonstrated that acceptable noise levels can be achieved and maintained at, and in, the noise-sensitive properties. When demonstrating acceptability, a conservative approach should be adopted in the calculations, which, in turn, must be based on realistic source noise levels.
- 7.3 At the design stage of new premises, or the refurbishment of existing premises, consideration should be given to the site layout, with a view to preventing noise disturbance. In particular, attention should be paid to the location of entrances and exits, windows, car parks, access roads, gardens and play areas, and commercial delivery and collection areas. The use of existing acoustic screening, potential screening provided by the proposed buildings and/or the erection of purpose built noise barriers should also be considered. Advice on the use of screening and some of the more technical source-specific noise control measures should be sought from a competent person (see 6.12). It would also be prudent to seek the views of the local authority at the design stage.
- 7.4 It is generally inadvisable to hold regular outdoor events on premises that are close to noise-sensitive properties. However, if such events are planned, advice should normally be sought from a competent person. This advice should be discussed with the local authority well in advance of an event to agree any noise control measures that may be necessary.

Noise from Music, Singing and Speech Originating from Inside Buildings (Entertainment Noise)

- 7.5 At the design stage for new premises, when planning the refurbishment of existing premises, or when noise disturbance is occurring from existing premises, the following measures should be considered:
- the determination of an appropriate level of sound insulation based on realistic source and reception levels;

- the construction of cavity masonry walls, or the addition of sound insulating, independent wall linings to enhance the containment and attenuation of sound;
- the provision of lobbies with automatic door-closers for building entrances and exits. Where possible, the distance between the inner and outer doors should be sufficient to ensure that one door set is normally closed as people pass through the lobby. It will also be necessary to ensure that wheelchair access is not hindered;
- the provision of well sealed acoustic doors on emergency exits;
- the provision of sound insulated windows;
- the provision of mechanical ventilation or air conditioning systems that will enable windows and doors to be kept closed, hence reducing noise breakout. However, such plant can also create noise or allow internal noise to breakout through ducting or apertures in the structure, and will often need acoustic treatment (see 7.18 to 7.20);
- the installation of visual or audible alarms to alert staff that doors or windows that should be kept closed, are open. Alternatively, a manual checking system may be adopted;
- the control of music noise at source, either by reducing the overall sound level of the music, or by reducing the sound level at individual frequencies which are causing, or have the potential to cause, disturbance;
- the playing of more calming types of music towards the end of an event (this may also help reduce the potential for rowdy behaviour see 7.10 and 7.11);
- the use of an approval system for DJs and other performers;
- the installation of sound level regulatory devices (noise limiters), connected to all permanent music and public address equipment and all available mains power sockets within the area around a stage, within a performance area, or near to a control desk. However, in very noise-sensitive situations, it may be found that such devices have to be set so low that music events are not viable; and
- alterations to the number, location and mounting of loudspeakers so that internal music levels can be kept as low as possible and the transmission of structure-borne noise is minimised.

Noise from Music, Singing and Speech Originating from Outside Buildings (Entertainment Noise)

- 7.6 In addition to the advice given in 7.5, the following noise control measures should be considered:
- directing loudspeakers away from the most noise-sensitive buildings;
 - locating stages as far away as possible from, and facing away from, noise-sensitive properties; and
 - using screening provided by existing non-sensitive buildings, barriers and topographical features and the erection of purpose built screening.
- 7.7 When planning an outdoor event, it should be remembered that wind speed and direction significantly affect the propagation of sound over distance. Generally, this results in higher noise levels than expected downwind of an event. Other meteorological factors may also need to be taken into account (e.g. the possibility of temperature inversions occurring during an event which can also result in higher noise levels than expected in all directions).

Use of Gardens and Play Areas

- 7.8 Careful consideration should always be given to the siting of gardens and play areas, intended for the use of patrons, in order to minimise the risk of disturbance to neighbours. The use of gardens and external play areas from which noise disturbance has arisen, or may arise, should not commence before the start of normal trading hours and should normally cease at dusk or at 21:00 hours, whichever is the earlier.
- 7.9 Consequently, where there are nearby noise-sensitive premises, the use of lighting in garden and external play areas late into the evening can be undesirable, unless required for health and safety or security reasons. The provision of such lighting may encourage patrons to congregate in these areas and cause noise disturbance at this more sensitive time.

Rowdy Behaviour

- 7.10 This problem normally arises at the end of an event, as closing time approaches and just afterwards. Posting notices close to the exit doors and in car parks, requesting patrons to leave and disperse quietly, may improve the situation. Relaying a similar message through a PA system, where this is practicable, will reinforce such requests. Potential problems from rowdy behaviour should be taken into account when considering the acceptability of proposed locations and the design of new premises.
- 7.11 In situations where noise-sensitive premises overlook the main entrance/exit, the use of alternative entrance/exit routes, possibly onto a rear or side street,

or a car park, may also help to minimise disturbance. Door staff can also assist in minimising disturbance by actively managing entrances and exits.

Use of Car Parks and Access Roads

- 7.12 At the planning stage, access roads and car parks should be kept as far away as possible from noise-sensitive premises. If natural screening exists, its potential for minimising noise disturbance should be maximised. In addition, the screening provided by nearby existing and proposed non noise-sensitive buildings, should also be considered. In some instances, it may also be appropriate to consider the provision of purpose built screening.
- 7.13 Noise from car parks and access roads normally only becomes an issue when patrons are leaving a venue during the later part of the evening or at night. The provision of closed circuit television (CCTV) systems in these areas can provide an effective and safe method of monitoring activities during these periods, and thus allow rapid control or prevention of incidents that may cause noise disturbance. If problems arise, the possibility of closing some car parking areas in the evening and at night should be considered, along with measures such as the provision of additional purpose built screening and the use of traffic calming techniques. It should be noted that speed humps can increase noise and groundborne vibration levels, particularly from large commercial vehicles.
- 7.14 A specific taxi operator could be nominated for staff use. The company's telephone number could also be advertised to customers at the venue. Steps should be taken to ensure that any such operator, and all drivers, are aware that they should arrive and depart as quietly as possible, should not sound vehicle horns as a signal of their arrival or leave engines idling unnecessarily. In addition, staff should be required to leave as quietly as possible, particularly at night and early in the morning.

Delivery/Collection/Storage Activities

- 7.15 Steps should be taken at the planning stage to minimise the potential for noise disturbance from deliveries and collections. Particular attention should be paid to the siting of loading, unloading and/or storage areas and the need to minimise vehicle manoeuvring, especially reversing.
- 7.16 If there are frequent commercial deliveries, and/or collections that are resulting in noise disturbance, the management of premises should discuss the following issues with their suppliers and implement those that are necessary and appropriate:
- restricting such activities, for example, to the normal working day;
 - attempting to limit the number and/or frequency of deliveries and collections;

- using alternative loading and unloading areas;
- using alternative delivery/collection vehicles; and
- using alternative methods of delivery/collection/loading/unloading.

7.17 Where premises are close to noise-sensitive properties, the handling of beer kegs, bottles and other similar items should be avoided in the late evening, at night and during the early morning, particularly outside buildings. Similar steps may also be necessary to restrict the use of bottle banks at these times.

Noise from Plant and Machinery

7.18 Where possible, plant and machinery should be positioned in such a way that the building structure provides as much screening as possible for nearby noise-sensitive properties. Alternatively, or additionally, control measures such as acoustic enclosures, acoustic louvres, silencers, or additional acoustic screening may be necessary.

7.19 Where plant and machinery are in, or on, premises that are structurally attached to noise-sensitive property, e.g. a flat above a pub or club, this equipment may need to be installed on anti-vibration mounts to minimise the transmission of structure-borne noise.

7.20 Regular maintenance should be carried out on all plant and machinery to ensure that noise disturbance from such sources is kept to a minimum.

Skittle Alleys

7.21 Where possible, skittle alleys should be sited away from nearby noise sensitive premises to minimise the risk of noise disturbance.

7.22 Where a skittle alley is structurally attached to noise-sensitive premises, additional noise control measures are likely to be necessary. These may include the mounting on isolating material of the alley surface, alley gutters, side walls/back walls/floor of the pit area and the return ball chute. Alternatively, it may be practical to line the side, back walls and floor of the pit with resilient material to reduce impact noise. A common practice is to line the side and back wall of the pit with flattened tyre treads and the floor of the pit with rubber matting. As well as helping to control impact noise, this can also reduce wear and tear on the balls and pins. The use of rubber balls instead of the traditional cherry wood balls is also an option to consider.

7.23 Some of the points bulleted in 7.5, that can reduce the breakout of sound from source premises, or increase the attenuation provided by source premises, may also be applicable to control noise arising from the use of skittle alleys.

REFERENCES

1. Code of Practice on Environmental Noise Control at Concerts, 1995. The Noise Council. ISBN 0900103515. (Available from Chartered Institute of Environmental Health publications, London)
2. Noise Management Guide – Guidance on the Creation and Maintenance of Effective Noise Management Policies and Practice for Local Authorities and their Officers, 1997. Chartered Institute of Environmental Health. ISBN 0900103752.
3. The Noise at Work Regulations 1989. (SI 1989 : 1790). The Stationery Office. ISBN 0110977904.
4. BS EN 60804: 2001 Integrating-averaging sound level meters. British Standards Institution. ISBN 0580371131.
5. BS EN 60651: 1994. IEC 60651: 1979 Specification for sound level meters. British Standards Institution. ISBN 580233863.
6. BS 4142: Method for rating industrial noise affecting mixed residential and industrial areas, 1997. British Standards Institution. ISBN 0580283003.

APPENDIX A
Members of the Institute of Acoustics Working Party

MEMBERS OF THE INSTITUTE OF ACOUSTICS' WORKING PARTY.

John Hinton City of Birmingham Environmental and Consumer
Services Department (Chairman)

Dawn Connor Basingstoke and Deane Borough Council

Alistair Somerville Royal Environmental Health Institute of Scotland, and
City of Edinburgh Council Environmental & Consumer
Services Department

Mike Squires Exeter City Council

Philip Evans RPS Planning, Transport & Environment

Ken Dibble Ken Dibble Acoustics

Peter Hepworth Hepworth Acoustics Limited

Stephen Turner (Casella Stanger) and Colin Grimwood (Building Research
Establishment) also provided advice and comment.

APPENDIX B
Glossary of Terms

GLOSSARY OF TERMS (for a more detailed explanation and a precise definition of these terms refer to standard texts).

Airborne noise	Noise that propagates through the air.
Ambient noise	The totally encompassing noise in a given situation at any given time usually composed of noise from many sources near and far.
Anti-vibration mounts	Mounts used to isolate vibrating or vibration-sensitive equipment from its supporting structure.
Audible	Sound that can be heard or is perceptible to the human ear (see also the explanation of audible in paragraph 2.4 and the explanation of inaudible given below)..
"A" weighting (dB(A))	Frequency dependent corrections, which weight sound to correlate with the sensitivity of the human ear to sounds at different frequencies.
Bass	Sound at the lower end of the audible frequency spectrum.
Calibration	The use of a device that provides a known reference sound level (or levels) and frequency (or frequencies) against which the response of a sound level meter can be verified.
Decibel (dB)	A unit used for many acoustic quantities to indicate the level of sound with respect to a reference value.
Façade measurement	Noise measurements made outside and close to an external wall of a structure (usually 1 metre from the wall).
Free-field measurements	Noise measurements made at a sufficient distance from acoustically reflective surfaces, other than the ground, such that acoustic reflections from these surfaces do not significantly contribute to the measured noise level. Such measurements are also called non-façade measurements
Habitable room	A room used for sleeping or recreation / relaxation / study.
Inaudible	Sound that cannot be heard or is imperceptible to the human ear.
Noise	Unwanted sound (including vibration).

Noise-sensitive property	Residential properties and hospitals, libraries, places of worship, hotels, schools and other similar premises when these are in use.
Nuisance	A legal term that is used to describe noise at a level that is disturbing as perceived by a reasonable person. The meaning of nuisance is refined by precedent in common law.
Structure-borne noise	Noise that propagates within a structure e.g. through building elements.

APPENDIX C
Useful Addresses

USEFUL ADDRESSES

The Institute of Acoustics

Silbury Court

406 Silbury Boulevard

Milton Keynes

MK9 2AF

TEL: +44 (0)300 999 9675

EMAIL: ioa@ioa.org.uk

WEB: www.ioa.org.uk

The Association of Noise Consultants

Airport House

Purley Way

Croydon

CR0 0X2

TEL: 020 8253 4518

WEB: www.association-of-noise-consultants.co.uk

Chartered Institute of Environmental Health

Chadwick Court

15 Hatfields

London

SE1 8DG

TEL: 020 7928 6006

EMAIL: cieh@cieh.org.uk

WEB: www.cieh.org.uk/index.htm

The Royal Environmental Health Institute of Scotland

3 Manor Place

Edinburgh EH3 7DH

Tel: 0131 225 6999 or 0131 225 5444, Fax: 0131 225 3993.

e-mail: rehis@rehis.org.uk

website: <http://www.royal-environment-health.org.uk/>

APPENDIX D
Useful Reference Documents

USEFUL REFERENCE DOCUMENTS

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