BS4142 2014 Consultation
Institute Of Acoustics Response

Introduction

The IOA is the leading professional body in the United Kingdom concerned with acoustics, noise and vibration and is active in research, educational, environmental and industrial organisations. Members of the IOA are active in the development of UK, European and International Standards. We have 3,000 members, many of whom are engaged in assessing environmental noise and will have practical experience of using BS4142.

The IOA also gives support to the development of legislation and policy in the various disciplines in the field of acoustics and its response to the consultation document is based on this role. The comments presented here are the consensus view of the committee of our Environmental Noise Group, which is formed by members who specialise in environmental noise issues as acoustic consultants, local authority officers and academics. The committee held a workshop to consider the draft standard on 3 April 2014 which was attended by 70 members. The conclusions reached through debate at that workshop form the basis of this response.

The IOA, however, represents a wide range of members and disciplines in acoustics and many members will respond in their own right representing a wide range of interests and experience in the use of the standard. In preparing this response the IOA recognises and acknowledges that many of the drafting panel involved in the preparation of the latest consultation draft of BS4142 are IOA members who will have generously contributed to the drafting process on the basis of their own particular areas of expertise.

1 General

In general some of the additional detail in the standard is welcomed e.g. clarification of its scope and the reinforcement of use of the typical background, because it will help ensure practitioners carry out thorough noise investigations that yield sensible results. However, in a some areas we feel that the standard has become too prescriptive e.g. reproducing rather than referencing the advice of other standards, and some of the areas of good practice that have been described may not be relevant in all cases and would be better included in the annexes. The IOA is concerned that if full compliance with the revised standard becomes too onerous (and therefore more costly to achieve) there is a risk that it will be used less, and that this might ultimately lower the quality of noise assessments. In addition, the IOA believes that any increased costs of compliance need to be justifiable in terms of achieving improved outcomes from the application of the standard.

The underlying principle of BS4142 involves comparing the rating level of the noise under consideration to the background noise level and is largely based on accumulated experience, rather than research. It provides a broad brush and relatively straightforward assessment of the likelihood of complaint. In contrast, the new methods proposed to assess tonal and impulsive characteristics are based on research and are more precise and relatively complex. This produces a mismatch between the underlying principles of the standard and the methods promoted for appraising acoustic character. The IOA would therefore question whether the current combination of simplicity and complexity in the consultation draft of the standard results in an appropriately balanced overall approach.

The draft standard makes a distinction between sound and noise, it is unclear whether this is warranted or of any particular use in the application of the standard. Our members had mixed views on this. However, it is possible to imply from the draft that a sound cannot be a noise until it is rated adversely using the standard, which seems incorrect. The wording should be clarified in the final version.

2 Scope

The scope of the standard is to be broadened to explicitly include the situation where a new noise source is planned, and the standard clarifies that it is considered relevant to:

- investigating complaints from existing noise;
- assessing a new noise source affecting existing receptors; and
- assessing new receptors brought to an existing noise source.

This is different to the scope of the current standard and whilst much of the standard's guidance on measuring and quantifying noise can be common to existing and proposed noise source situations, the legal and policy background to the two is quite different. The IOA considers that the guidance on assessing and interpreting noise levels in these two situations (existing vs proposed noise source) should be separated more clearly. For example, measurement of tonality and impulsiveness of an existing noise source is generally achievable in accordance with the draft standard. However, when planning a new industrial noise source it is rarely possible to predict tonality or impulsiveness to the degree expected by the requirements of the draft standard. Furthermore, applying a worst case scenario by giving a 16 dB cumulative rating penalty to a predicted level would very often result in an unnecessarily restrictive outcome for new development.

The IOA agrees that clearly defining the scope of the standard is important. Disagreements over the scope and possible misapplication of the standard have been a known problem for many years. There are many different combinations of noise emitters and noise receivers, and a standard aiming to specify too many of these should be avoided. The statements on exclusions are welcomed, but should be qualified with reasons for their exclusion so that they can be considered further and applied sensibly in each particular case. For example, there are parts of minerals workings (i.e. fixed plant such as substations etc) that can perfectly well be assessed within this standard; and the standard has been accepted by planning inquiries and the courts for some of the non-industrial noises listed. The reason for excluding mineral extraction and wind turbines is assumed to be because there is specific planning guidance that applies, and this should be referred to. Other exclusions should be similarly clarified.

The draft standard uses the phrases “significant” and “significant adverse impact” in a number of places. These phrases are used in legislation and policy and the statements may therefore have wider implications. The use of these terms should be carefully reviewed.

The draft standard explicitly provides policy advice elsewhere e.g. in the examples it comments on whether development should go ahead. These are judgements for decision makers within planning authorities, not a British Standard. The IOA strongly advises that the standard should avoid giving policy advice.

3 Tonal and Impulsive Corrections

The further detail on tonality and impulsive corrections in section 9.2 and Annex D and E is generally welcomed for complex measurement and enforcement situations, but could be problematic in more typical everyday situations, as well as in the planning context.

The proposal that when both characteristics are present the two should both be taken into account and added linearly would lead to some large penalties. The IOA suggests that this procedure should be refined.

Additionally the combination of the proposed positive correction for infrequent impulsive noise (maximum approximately 9 dBA) allied to a potentially much greater negative on-time correction for short duration (approximately -36 dBA to – 29 dBA for a sound of 250 ms to 1 sec duration at night, substantially more in the day) gives rise to concerns that this could possibly lead to under-estimates of the likelihood of complaint about very infrequent but loud impulsive sounds of short duration e.g. sub-station switch gear, and bangs and thumps from loading bay activities etc. The IOA proposes that the standard should make it clear that the assessment of very infrequent short duration noise events is outside of its scope and other methods should be used in those cases.

4 Applicability of Standard to Situations with Very Low Noise Levels

We are not clear why it is proposed to change the meaning of “very low” noise levels in Note 1 in the Scope of the standard. The threshold has been reduced by 5 dB. The only good reason to do this would be if it was felt that there is new evidence to indicate that lower noise levels indoors now affect more people than before. We are not aware of any such new research and feel the current thresholds are sufficient to ensure no undue impacts arise indoors at night. The IOA feels the thresholds should not be lowered in the absence of substantive evidence.

5 Measurement Methods

The proposal to carry out an assessment proportionate to the scale of the likely effect is welcomed. However, as it stands there is concern that any assessment could be judged against the entire requirements of the standard and if these are taken literally, the standard could be dis-proportionately onerous to satisfy in full. This could lead to legal challenge and inappropriate outcomes. If possible, clearer guidance on the “proportionate assessment” required in certain typical situations should be provided. For example, if a noise is constant or so loud and close by that it is unaffected by weather, long term monitoring or an assessment of meteorology should not be necessary.

In general the more detailed measurement requirements will cost more, both in terms of monitoring / analysis time and equipment. For some investigations, the weather monitoring equipment required to fully comply with the standard will prove very expensive (possibly, thousands of pounds) which would be a disproportionate cost for small projects and projects with no real prospect of causing noise disturbance or where meteorology is unlikely to have a substantial effect on the outcome. If the primary concern is the risk of wind induced noise across the microphone at the monitoring position then it should be permissible to use other sources of wind speed data provided they are shown to be reliable and applicable.

In addition, it is not clear how many sound level meters meet the proposed requirement to measure impulse noise rise times. The IOA has concerns over the practicability and cost implications of this requirement.

The clarification in 8.1 that the background sound level should be "typical", rather than the lowest measurable, and the advice on how to derive this value is welcomed in the context of the assessment of an existing situation. However, the standard currently seeks to be used in many different contexts and, for example, in a planning situation with the introduction of a new noise source then a more cautious approach to the assessment of background sound might be more appropriate.

It is proposed to change the night time reference period from 5 minutes to 15 minutes, which would make the standard less stringent for the assessment of night-time noise of limited durations. Since 1980, IOA members have considerable experience of using the 5 minute reference period, and see no need for this change.

6 New Need for Context

The clarification that the standard can be used to assess complaints about noise but is not intended to be a methodology for assessing noise nuisance is welcomed.

The requirement to consider context after quantification is welcomed. The fact that good judgement on the context of a noise level can be used to adjust the numerical outcome is welcomed.

The IOA would like the inclusion of the term "soundscape" in the standard to be reviewed; and, if retained, for it to be carefully reworded to give clearer advice as to its intended meaning, purpose and use. The ISO standard that is referred to is still in draft.

The IOA would suggest that a noise assessment carried out when planning a new development is effectively a different context to a noise assessment being carried out in an already existing situation. For example, predictions and measurements have different uncertainties, mitigation options may be quite different etc. Once again (as discussed under Scope above), we see the assessment of planning and existing situations as being quite different, requiring different guidance. One option, that was suggested at our consultation meeting, might be for the standard to be divided into different sections to address each situation.

7 Uncertainty

An issue that raised a lot of debate in our workshop is the new requirement in the draft standard to calculate and report uncertainty; and how it should be communicated and used in the context of decision making. The advice on minimising

and managing uncertainty is broadly welcomed. But concerns were raised regarding how uncertainty is to be used. The IOA would prefer that the standard advises that uncertainty should be identified, quantified and minimised as far as is reasonably practicable, but we are not convinced that uncertainty should be added to the rating level difference as part of the assessment itself. The IOA considers that uncertainty remains a risk which can be dealt with via the normal planning and permitting enforcement processes, should the consequences merit.