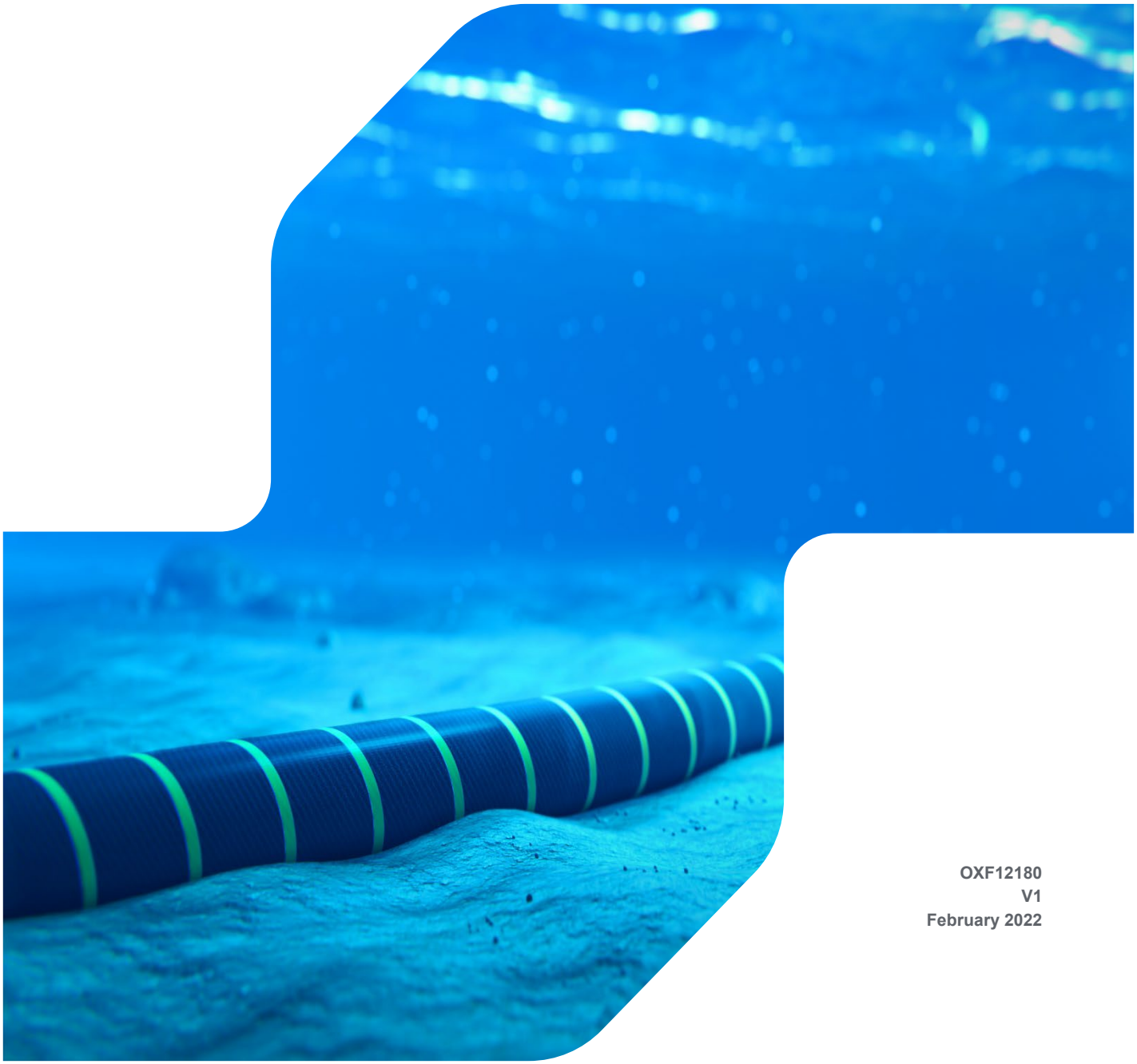
XLCC CABLE FACTORY - HUNTERSTON

Appendix 11.1 – Noise Planning Policy, Legislation, Standards and Guidance



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APPENDIX 11.1 – NOISE PLANNING POLICY, LEGISLATION, STANDARDS AND GUIDANCE

Introduction

1.1 The assessment methodology is based on current national and local planning policy, guidance and British Standards (BSs), which are listed below:

National Planning Policy

- The National Planning Framework (NPF) for Scotland (Scottish Government, 2014a);
- Draft Fourth National Planning Framework (NPF4) (Scottish Government, 2021);
- Scottish Planning Policy (SPP) (Scottish Government, 2014b);
- Planning Advice Note Planning and Noise (PAN 1) (Scottish Government, 2011); and
- Technical Advice Note: Assessment of Noise (TAN 11) (Scottish Government, 2011).

Local Planning Policy

- The North Ayrshire Local Development Plan 2 (North Ayrshire, 2019); and
- The Hunterston Parc Development Framework (2021).

Legislation

- Part III of the Control of Pollution Act 1974 (CoPA); and
- The Environmental Protection Act 1990 (EPA).

Standards

- British Standard (BS) 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' Part 1: Noise and Part 2: Vibration; and
- BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'.

Guidance

- World Health Organisation Guidelines for Community Noise (WHO GCN) (Berglund et al., 1999).

National Planning Policy

The National Planning Framework (NPF) for Scotland (Scottish Government, 2014a)

1.2 Scotland's third National Planning Framework (NPF) is the overarching planning strategy for Scotland bringing together our plans and strategies in economic development, regeneration, energy, environment, climate change, transport and digital infrastructure to provide a coherent vision of how Scotland should evolve over the next 20 to 30 years. This document is strategic and does not provide any technical detail in relation to noise.

Draft Fourth National Planning Framework (NPF4) (Scottish Government, 2021)

1.3 Scotland's draft fourth National Planning Framework (NPF4) which details our long term plan for what Scotland could be in 2045, was laid in Parliament on 10 November 2021. Following consultation and review this will replace the current NPF. This document is strategic and does not provide any technical detail in relation to noise.

Scottish Planning Policy (SPP) (Scottish Government, 2014b)

1.4 The purpose of the SPP is to set out national planning policies to enable plan making, planning decisions and development design. Paragraph 252 of the SPP states that:

"Applications should be supported, where necessary, by sufficient information to demonstrate:

Operational arrangements (including noise, light, access, waste and odour) are satisfactory and sufficient mitigation plans are in place;"

1.5 This document is strategic and does not provide any technical detail in relation to noise.

Planning Advice Note, PAN 1/2011 (Planning and Noise)

1.6 PAN 1 is the Scottish Government's primary, overarching, national noise guidance. It provides general advice on the role of the planning system to prevent and limit the adverse effect of noise. It promotes a pragmatic approach to the location of new noise generating and noise sensitive development to ensure that quality of life is not unreasonably affected and that new development continues to support sustainable economic growth. It refers to the Environmental Noise Regulations in Scotland (2006) for the identification of areas where management of noise is required. Advice on noise impact assessment methods is provided in the associated Technical Advice Note (TAN 11).

Technical Advice Note, Assessment of Noise, TAN 11

1.7 TAN 11 is the Scottish Government's guidance on noise impact assessment. It provides guidance to noise professionals in both the public and private sector in the preparation and evaluation of noise impact assessments. Advice on the role of the statutory planning system in helping to prevent and limit the adverse effects of noise is set out in Planning Advice Note (PAN) 1/2011 Planning and Noise.

1.8 The note provides descriptions for the sensitivity of receptors, categorised into three levels of 'High', 'Medium' and 'Low'. These are provided in Table 2.1 of the guidance, as provided in Table A11.1 below.

Table A11.1: Levels of Sensitivity Associated with Various Examples of NSRs

Sensitivity	Description	Examples of NSR
High	Receptors where people or operations are particularly susceptible to noise and vibration	Residential, including private gardens where appropriate. Quiet outdoor areas used for recreation Conference facilities Theatres/Auditoria/Studios Schools during the daytime Hospitals/residential care homes Places of worship
Medium	Receptors moderately sensitive to noise and vibration, where it may cause some distraction or disturbance	Offices Bars/Cafes/Restaurants where external noise may be intrusive.

Sensitivity	Description	Examples of NSR
		Sports grounds when spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf, bowls)
Low	Receptors where distraction or disturbance from noise and vibration is minimal	Buildings not occupied during working hours Factories and working environments with existing high noise levels Sports grounds when spectator noise is a normal part of the event Night Clubs

1.9 The quantitative assessment of the noise impact from a noise generating development will be based on the change in the noise climate before and after the new source of noise is introduced. For noise sensitive development the assessment is based upon comparing an absolute noise level with an appropriate noise target. The magnitude of the noise impact is then categorised as provided in Table 2.2 of the guidance, as provided in Table A11.2 below.

Table A11.2: Classification of Magnitude on Noise Impacts

Descriptions for Magnitude of Impact	Generic Criteria of Descriptor
Major	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse). Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial).
Moderate	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (Adverse). Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial).
Minor	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (Adverse) Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse) Very minor benefit to or positive addition of one or more characteristics, features or elements (Beneficial).
No Change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

1.10 In addition to the quantitative assessment of the magnitude of impact, TAN 11 requires that a secondary qualitative assessment of the magnitude of impact is undertaken. The purpose of this is to ensure that the primary assessment has been comprehensively carried out and has addressed all contextual factors that may affect the amenity of the associated NSR under consideration.

1.11 The qualitative assessment is based on perception and how noticeable the noise impact is in affecting the amenity value of the NSR.

1.12 The aim of the qualitative assessment is to provide additional information which may support the outcome under the quantitative assessment or indicate that the classification of the magnitude of the noise impact needs to be modified.

1.13 To assist in this process, it is important to understand the extent to which the noise impact affects the amenities associated with the noise sensitive receptor under consideration. For example, in the case of residential properties, the associated amenities would include qualities which are conducive to:

- undisturbed sleep;
- ability to relax;
- ability to concentrate i.e. reading-listening to radio/TV;
- able to converse;
- use of outdoor facilities – garden etc

1.14 An example of this process for residential properties is provided in Table 2.5 of TAN 11 and replicated in Table A11.3 below.

Table A11.3: Example of Assigning Descriptors for Qualitative Impacts from Noise on Residential Properties

Perception	Criteria of Descriptor for Residential Dwellings	Descriptor for Qualitative Impact
Noticeable (Very disruptive)	Significant 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.	Major
Noticeable (Disruptive)	Causes an important change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion. 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 character of the area.	Moderate
Noticeable (Mildly intrusive)	Noise can be heard and may cause small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows more often. Potential for non-awakening sleep disturbance. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.	Minor
Just Noticeable (Non intrusive)	Noise can be heard, but does not cause any change in behaviour or attitude, e.g. increasing volume of television; speaking more loudly; closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.	Negligible
Not noticeable	None	No Impact

1.15 The significance of effects are determined using the matrix provided in Table 2.6 of the guidance for the following descriptions for the overall significance, as provided in Table A11.4 below:

- Very Large: These effects represent key factors in the decision-making process. They are generally, but not exclusively, associated with impacts where mitigation is not practical or would be ineffective.
- Large: These effects are likely to be important considerations but where mitigation may be effectively employed such that resultant adverse effects are likely to have a moderate or slight significance.
- Moderate: These effects, if adverse, while important, are not likely to be key decision making issues.
- Slight: These effects may be raised but are unlikely to be of importance in the decision making process.
- Neutral: No effect, not significant, noise need not be considered as a determining factor in the decision making process.

Table A11.4: Levels of Sensitivity Associated with Various Examples of NSRs

Magnitude of Impact	Sensitivity of Receptor		
	Low	Medium	High
Major	Slight/Moderate	Moderate/Large	Large/Very Large
Moderate	Slight	Moderate	Moderate/Large
Minor	Neutral/Slight	Slight	Slight/Moderate
Negligible	Neutral/Slight	Neutral/Slight	Slight
No change	Neutral	Neutral	Neutral

Local Planning Policy

The North Ayrshire Local Development Plan 2 (North Ayrshire, 2019)

1.16 The North Ayrshire Local Development Plan 2 was adopted in November 2019. It sets out how Ayrshire Council aims to guide development and investment in the area over the next 20 years. There are no specific policies contained therein that relate to noise from the proposed development. However, noise is mentioned is Strategic Policy 2: Placemaking:

"The proposal respects the amenity of existing and future users in terms of noise, privacy, sunlight/daylight, smells, vibrations, glare, traffic generation, and parking. The proposal sufficiently investigates and responds to any issues of ground instability".

The Hunterston Parc Development Framework (2021)

1.17 The Hunterston Parc Development Framework provides the overarching strategy for the development of the Hunterston Parc site. The document states the following with respect to residential amenity:

"Residential amenity will be considered at each planning application as it is a material consideration. However, we would expect that any applications on site would minimise their impact in potential areas such as noise, dust, odour and traffic by providing relevant mitigation should it be deemed to be required through planning assessment".

In view of the many factors to be considered, an evaluation of all noise levels and all frequency factors will be made on a site-specific basis and appropriate limits set; conditions will only be set where the applicant can demonstrate that they will meet them."

Legislation

Control of Pollution Act (CoPA) 1974

1.18 Part III of the CoPA is specifically concerned with pollution. With regards to noise, it covers construction sites; noise in the street; noise abatement zones; codes of practice and best practicable means (BPM).

1.19 Section 60, Part III of the CoPA refers to the control of noise on construction sites. It provides legislation by which local authorities can control noise from construction sites to prevent noise disturbance occurring. In addition, it recommends that guidance provided by British Standard (BS) 5228 be implemented to ensure compliance with Section 60.

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

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

1.22 Section 71, Part III of the CoPA refers to the preparation and approval of codes of practice for minimising noise.

1.23 Section 72, Part III of the CoPA refers to BPM, which is defined as:

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

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

Environmental Protection Act (EPA) 1990

1.25 The EPA deals with statutory nuisance, including noise.

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

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

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

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

Standards

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

1.30 BS 5228 is a two-part standard which comprises:

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

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

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

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

1.33 BS 5228-2:2009+A1:2014 covers basic information and recommendations for basic methods of vibration control relating to construction and open sites where work activities/operations generate significant vibration levels. It includes sections on community relations; vibration and persons on site; neighbourhood nuisance; project supervision; control of vibration and measurement. BS 5228-2:2009+A1:2014 refers to BS ISO 4866:2010 'Mechanical vibration and shock - Vibration of fixed structures - Guidelines for the measurement of vibrations and evaluation of their effects on structures'; BS 7385-2:1993 'Evaluation and measurement for vibration in buildings - Part 2: Guide for damage levels from groundborne vibration'; BS 6472-1:2008 'Guide to evaluation of human exposure to vibration in buildings - Part 1: Vibration sources other than blasting' and BS 6472-2:2008 'Guide to evaluation of human exposure to vibration in buildings - Part 2: Blast-induced vibration' for further advice on the significance of vibration.

British Standard 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'

1.34 The foreword to BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound' provides the following introduction for the assessment of human response to sound:

"Response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as well as local attitudes to the source of the sound and the character of the neighbourhood."

1.35 The note to paragraph 8.5 of BS 4142:2014+A1:2019 is relevant to the assessment of the proposed development, and states:

"Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it ought to be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation."

1.36 BS 4142:2014+A1:2019 primarily provides a numerical method by which to determine the significance of sound of an industrial nature (i.e. the 'specific sound' from the proposed development) at residential noise sensitive receptors. The specific sound level may then be

corrected for the character of the sound (e.g. perceptibility of tones and/or impulses), if appropriate, and it is then termed the 'rating level', whether or not a rating penalty is applied. The 'residual sound' is defined as the ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

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

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

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

"Tonality

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

Impulsivity

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

Other sound characteristics

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

Intermittency

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

1.40 BS 4142:2014+A1:2019 requires that the background sound levels adopted for the assessment be representative for the period being assessed. The Standard recommends that the background sound level should be derived from continuous measurements of normally not less than 15-minute intervals, which can be contiguous or disaggregated. However, the Standard states that there is no 'single' background sound level that can be derived from such measurements. It is particularly difficult to determine what is 'representative' of the night-time period is because it can be subject to a wide variation in background sound level between the shoulder night periods. The accompanying note to paragraph 8.1.4 states that:

"A representative level should account for the range of background sounds levels and ought not automatically to be assumed to be either the minimum or modal value."

1.41 One approach which is commonly adopted is to use the 25th percentile (lower quartile) of the night-time background and ambient sound levels. This method has been adopted in order to characterise the baseline sound environment. This level excludes 75% of the noisier levels and, although it is not the lowest sound level encountered, it is typically lower than that obtained using the average, median or modal values. It therefore represents somewhere in the range of lower sound levels that are likely to be encountered over a defined period and consequently represents a precautionary assessment

1.42 Only data that were measured when the wind speeds are at or less than 5 m/s should be included in the dataset used to derive the baseline noise levels. BS 4142:2014+A1:2019 implies that measurements can be taken in wind speeds up to 5 m/s, i.e. it states 'Exercise caution when making measurements in poor weather conditions such as wind speeds greater than 5 m/s'. It is considered that, by only using data obtained when wind speeds are at or less than 5 m/s, data will be obtained that is valid in this respect in accordance with BS 4142:2014+A1:2019.

1.43 An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level of the specific sound. In the context of the Standard, adverse impacts include, but are not limited to, annoyance and sleep disturbance. Typically, the greater this difference, the greater is the magnitude of the impact:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

1.44 Whilst there is a relationship between the significance of impacts determined by the method contained within BS 4142:2014+A1:2019 and the significance of effects described in the PPG-N, there is not a direct link. It is not appropriate to ascribe numerical rating / background level differences to LOAEL and SOAEL because this fails to consider the context of the sound, which is a key requirement of the Standard.

1.45 The significance of the effect of the noise in question (i.e. whether above or below SOAEL and LOAEL) should be determined on the basis of the initial estimate of impact significance from the BS 4142:2014+A1:2019 assessment with reference to the examples of outcomes described within the PPG-N and after having considered the context of the sound. It is necessary to consider all pertinent factors, including:

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

- acoustic screening.

Guidance

World Health Organisation, Guidelines for Community Noise

1.46 The World Health Organisation (WHO) published guidance on the desirable levels of environmental noise in 2000. In this document, Guidelines for Community Noise (GCN) (WHO, 2000), the authors consider that sleep disturbance criteria should be taken as an internal noise level of 30 dB L_{Aeq} or an external level of 45 dB $L_{Aeq,8hr}$, measured at 1 m from the façade (equivalent to a free-field level of 42 dB L_{Aeq}). It is also suggested that internal instantaneous levels of 45 dB L_{Amax} and external instantaneous levels of 60 dB L_{Amax}, should not be exceeded.

1.47 The criteria for speech intelligibility and moderate annoyance during the daytime and evening should be taken as an internal noise level of 35 dB L_{Aeq}. For external daytime levels, it is considered that:

"To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB L_{Aeq} on balconies, terraces, and outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB L_{Aeq}. Where it is practical and feasible, the lower outdoor sound level should be considered the maximum desirable sound level for new development."

1.48 The major concern in Europe is with respect to noise from transportation systems, and most of the studies on which these guidelines are based relate to this type of noise source. There can be no certainty that the same effects will be observed from noise of an industrial nature, but in the absence of any more detailed information some weight should be attached to the WHO guidance when assessing industrial noise as well.

1.49 The WHO published more recent guidance in the Environmental Noise Guidelines for the European Region in 2018 (WHO, 2018). It provides guidance, primarily for policymakers, on protecting human health from harmful exposure to environmental noise and sets health-based recommendations on the average environmental noise exposure of five relevant sources of environmental noise. Industrial noise was not one of the categories included and, therefore, this guidance is not considered to be directly applicable to this assessment notwithstanding the fact that it is primarily for policymakers and does not apply to general assessments.