

YG-DCO-043-5.3.14F

# Yorkshire Green Energy Enablement (GREEN) Project

**Volume 5**

**Document 5.3.14F ES Chapter 14 Appendix 14F - National Grid Policy Statement PS(T)134 (2021)**

**Final Issue A  
November 2022**

**Planning Inspectorate Reference: EN020024**

**Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)**

**nationalgrid**

## **OPERATIONAL AUDIBLE NOISE POLICY FOR OVERHEAD LINES (NEW BUILD, RECONDUCTORING, DIVERSION AND UPGRATING)**

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### **PURPOSE AND SCOPE**

Overhead transmission lines can produce audible noise in operation. This can include both wet and dry noise from conductors, corona noise from fixtures and fittings and wind induced noise from all components. This policy relates specifically to noise from overhead line conductors operated at 275kV and 400kV. Technical Specification and Type Registration processes reduce the potential for audible noise to occur from all types of fixtures and fittings, consequently noise from these components is not covered by this policy.

As a socially and environmentally responsible business, National Grid is committed to the protection and enhancement of the environment and communities in which we operate. The purpose of this policy is to minimise the impact of noise pollution from our overhead lines on noise sensitive receptors (NSRs).

Protection of the environment is a legal requirement, however there are currently no fixed noise limits laid down by UK law. Government noise policy requires that significant adverse impacts on health and quality of life are avoided and adverse impacts on health and quality of life are mitigated and minimised.

This policy establishes operational noise criteria in relation to the installation of new overhead lines and the reconductoring, diversion and uprating of existing overhead lines. These noise criteria have been formed taking account of the policy context outlined in Appendix C.

This policy is relevant to all projects which require Section 37 (S37) Consent under the Electricity Act 1989, and schemes developed using the exemptions covered under the Overhead Line Exemption Regulations 2009 (as amended) and also to Nationally Significant Infrastructure Projects (NSIP) developed under the Planning Act 2008. It is also relevant to projects that do not require consent.

This Policy is to be applied to all overhead line new build, reconductoring, diversion and uprating projects operated at 275kV or 400kV where there is potential for an increase in noise impact<sup>1</sup>. The policy is not to be applied retrospectively. The noise impact of existing overhead lines shall be assessed outside of the requirements of this policy, and on an individual case-by-case basis. This policy does not cover occupational or construction noise.

TGN(E)322<sup>2</sup> Explains how practically to implement this policy.

<sup>1</sup> Reconductoring projects under permitted development where noise impacts would reduce as a result of the new design do not require assessment under this policy.

<sup>2</sup> Operational audible noise assessment process for overhead lines (new build, reconductoring, diversion and uprating).

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## **PART 1 – POLICY**

### **1. STATEMENT OF POLICY**

The noise impact of overhead line new build, reconductoring, diversion and uprating projects shall be assessed on a site-by-site, case-by-case basis by the Environmental Engineering Team's noise specialists.

#### **1.1 Plant and equipment to which this policy applies**

This policy applies to environmental noise due to the operation of new overhead lines, reconductoring, diversion and uprating projects at 275kV and 400kV where there is potential for an increase in noise impact. It is applicable to all projects whether or not a S37 consent or overhead line exemption for that equipment is required and for Nationally Significant Infrastructure Projects (NSIP) developed under the Planning Act 2008.

#### **1.2 Requesting a noise assessment**

The request for a noise assessment shall be initiated by the Investment Team Leader, Project Engineer or Consents Officer at Stage 4.2 of TP500 or when selecting a project option. To initiate the noise assessment process, the requester shall complete the form in Appendix B and forward this to the Environmental Engineering Team at .Box.NE.OperationalNoiseEnqui

The Environmental Engineering Team shall provide advice on the potential noise impact and the need for any noise mitigation in line with section 1.3 of this policy.

The noise assessment requester shall inform the Environmental Engineering Team of any proposed changes to the overhead line design, which may impact on noise. Such changes may include, a change of conductor, conductor bundle, conductor spacing, tower type, tower location, routing or voltage. The Environmental Engineering Team shall advise on the impact of any design changes and the need for further noise assessment. Where further assessment is deemed necessary, the Environmental Engineering Team will re-assess the potential noise impact and the need for any noise mitigation.

#### **1.3 Operational Noise Criteria**

Predicted noise levels from the overhead line shall be assessed as part of a three-tier approach. The process is explained in the Flow Diagram in Appendix A. Quoted noise levels are free-field and to be predicted at the relevant façade of a receptor.

The three-tier approach comprises the following steps, which are designed to screen out of further assessment receptors where there would be no adverse impact:

**Tier 1:** A primary screening step based on 'worst-case' wet noise effects and the pre-determined assessment criteria in Table 1.

**Tier 2:** An assessment step based on combined wet noise and dry noise effects and recalculated assessment criteria.

**Tier 3:** A further assessment step following the principles of BS 4142:2014 for both wet and dry noise.

### Tier 1 Assessment

Predicted wet noise levels which fall into the 'No Adverse Impact' category in Table 1 are acceptable. Receptors falling into this category are screened out of further assessment and no further action or assessment is necessary.

A Tier 2 Assessment shall be carried out where predicted wet noise levels exceed the 'No Adverse Impact' Category in Table 1.

**Table 1: Tier 1 Noise Impact Criteria (Wet Noise)**

Use	No Adverse Impact	Further Assessment Necessary
	Screened out	Tier 2 Assessment required
Vulnerable subgroups	< 29dBA	≥ 29dBA
Residential	< 34dBA	≥ 34dBA
Schools and Hotels	< 39dBA	≥ 39dBA

### Tier 2 Assessment

The impact of dry and wet noise shall be assessed in combination.

New noise impact criteria shall be calculated (as a combined figure for dry and wet noise) using the data in Table 2 and taking account of the percentage duration of wet and dry noise based on UK wet weather data. Predicted combined wet and dry noise levels shall be assessed against the newly created noise impact criteria.

**Table 2: Dry and Wet Noise Levels for determination of combined noise criteria**

Use	Weather condition	No Adverse Impact	Adverse Impact	Significant Adverse Impact
		Acceptable - No Action Necessary	Mitigate and Minimise <sup>3</sup>	Unacceptable - Avoid
Vulnerable subgroups	Wet	< 29dBA	29 to 39dBA	> 39dBA
	Dry	< 32dBA	32 to 42dBA	> 42dBA
Residential	Wet	< 34dBA	34 to 44dBA	> 44dBA
	Dry	< 37dBA	37 to 47dBA	> 47dBA
Schools & Hotels	Wet	< 39dBA	39 to 49dBA	> 49dBA
	Dry	< 42dBA	42 to 52dBA	> 52dBA

<sup>3</sup> e.g. move towers, re-route, use a different a conductor for specific spans. The Environmental Engineering Team can advise.

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Predicted combined wet and dry noise levels which fall into the newly calculated 'No Adverse Impact' category are acceptable. These receptors are screened out and no further action or assessment is necessary.

Where the predicted combined dry and wet noise level falls within the newly calculated 'Adverse Impact' Category, consideration should be given to mitigating and minimising<sup>4</sup> noise from the overhead line. Alternatively, (depending on the practicality, scale and cost of noise mitigation), it may be appropriate to carry out a Tier 3 assessment.

Where the predicted combined dry and wet noise level falls within the newly calculated 'Significant Adverse Impact' Category, a Tier 3 assessment shall be carried out.

### **Tier 3 Assessment**

The impact of Dry and wet noise shall be assessed separately using the principles of BS4142<sup>5</sup>.

#### **Tier 3 Dry Noise Assessment:**

A BS4142 assessment shall be carried out to determine the impact of 'dry noise' at noise sensitive receptors. Impact criteria are defined in Table 3.

A difference in the rating level at a receptor compared to background sound levels of +10dB or more is unacceptable. Design modifications shall be required<sup>6</sup>.

Where the difference in the rating level at a receptor compared to background sound levels is +5dB to +9dB, consideration should be given to mitigating and minimising noise from the overhead line.

Where the difference in the rating level at the receptor compared to background sound levels is 0 to +4dB, the impact may be acceptable depending on the context in which the noise occurs.

A difference in the rating level at a receptor compared to background sound levels of ≤0dB is acceptable.

#### **Tier 3 Wet Noise Assessment:**

An assessment shall be carried out based on the principles of BS4142. The background sound level shall be recalculated to take account of noise due to rainfall using the Miller Curves<sup>7</sup>.

A difference in the rating level at a receptor compared to background sound levels (accounting for noise due to rainfall) of +10dB or more is unacceptable. Design modifications shall be required<sup>8</sup>.

Where the difference in the rating level at a receptor compared to background sound levels (accounting for noise due to rainfall) is +5dB to +9dB, consideration should be given to mitigating and minimising noise from the overhead line.

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<sup>4</sup> e.g. move towers, re-route, use a different a conductor for specific spans. The Environmental Engineering Team can advise.

<sup>5</sup> BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound', British Standards Institution, June 2019

<sup>6</sup> In some cases, design modifications may not be possible and there may be no feasible alternatives. In such cases the reasons for deviating from this policy should be clearly documented.

<sup>7</sup> Miller, L.N., 1978: "Sound Levels of Rain and Wind in the Trees" Noise Control Engineering, Vol. 11, No. 3

<sup>8</sup> In some cases design modifications may not be possible and there may be no feasible alternatives. In such cases the reasons for deviating from this policy should be clearly documented.

Where the difference in the rating level at the receptor compared to background sound levels (accounting for noise due to rainfall) is 0 to +4dB, the impact may be acceptable depending on the context in which the noise occurs.

A difference in the rating level at a receptor compared to background sound levels (accounting for noise due to rainfall) of  $\leq 0$ dB is acceptable.

**Table 3: Tier 3 Noise Impact Criteria<sup>9</sup>**

Assessment Level	Impact	Action
$\geq +10$ dB	Significant Adverse Impact	Unacceptable
+5 to +9dB	Adverse Impact	Mitigate and Minimise
0 to +4dB	Minor Impact	May be acceptable depending on context
$\leq 0$ dB	Low Impact	Acceptable

## 2. Risks

Adherence to this policy will reduce the adverse environmental impact of noise from overhead lines on our neighbours and other noise sensitive receptors. Consequently, the risk of future noise complaints and contact from our regulators and other stakeholders should reduce.

The perception and impact of noise from our overhead lines is subjective. As a result, there cannot be an absolute guarantee that complaints will not be received.

## 3. FORMS AND RECORDS

The 'Index' to Overhead Line Notes spreadsheet shall be completed and each noise report assigned a unique reference number.

<sup>9</sup> Criteria specific to residential receptors. TGN(E)322 offers guidance on impact criteria for different categories of NSR.

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## PART 2 - DEFINITIONS AND DOCUMENT HISTORY

### 4. DEFINITIONS

#### **Assessment Level**

The predicted difference in the rating level compared to the background noise level (with or without noise due to rainfall).

#### **Construction Noise**

Relates specifically to noise generated during construction activities.

#### **Context**

The context in which a sound occurs affects the acceptability of the noise. The context should be considered when carrying out an assessment and making a final recommendation. Factors that should be considered include for example, the absolute level and character of the sound, the duration of rainfall in the area and hence duration of wet noise, the existing background sound level and the sensitivity of the receptor.

#### **Corona noise**

A crackling noise produced when there is an electrical breakdown of the air around the conductor.

#### **Crackle**

Noise caused by corona discharge which sounds like a crackle. Occurs in dry and wet weather conditions.

#### **Dry Noise**

Noise which occurs during dry weather conditions is referred to as 'dry noise' and can be described as a crackle.

Conductor system noise is caused by corona discharge activity. Corona discharge occurs when the conductor surface electric stress exceeds the inception level for corona discharge activity, a level of around 17 to 20 kV/cm. Most transmission line conductors are designed to operate below this threshold, and so usually operate quietly in dry weather conditions.

Small areas of surface contamination on conductors spoiling the otherwise smooth conductor surface are likely to cause a local enhancement of electric stress which may be sufficiently high to initiate localised discharge activity. At each discharge site a limited electrical breakdown of the air occurs. A portion of the energy associated with the corona process is released as acoustic energy which radiates into the air as sound pressure waves. After a prolonged spell of dry weather without heavy rain to wash the conductors, contamination may accumulate sufficiently to result in increased noise. Under these circumstances the noise is referred to as 'dry noise'.

#### **Environmental Noise**

Any noise which potentially has a negative adverse environmental impact.

#### **Free-field**

A region in space where sound may propagate free from any form of obstruction, this is typically assumed to be at least 3m from any reflecting surface.

#### **Hum**

Hum can occur in wet weather conditions and is caused by the oscillation of water droplets in the electric field. Under excitation at 50Hz the water droplets are extended and contracted twice during the full 50Hz cycle, leading to noise with a fundamental frequency at 100Hz. Harmonics may also occur, most commonly 200 Hz, 300 Hz and 400 Hz.

#### **Noise**

Any sound that is undesired by the recipient.

**Noise Sensitive Receptors (NSRs)**

Relates to buildings or places where our stakeholders may be exposed to noise from our overhead lines.

Buildings where people sleep are always considered to be sensitive. These are typically domestic residences but may also include, for example, residential nursing homes, hospitals and some schools. The most sensitive or most affected receptor is not always the nearest to a noise source.

Hotels are noise sensitive, but as a commercial operation, where people will spend less time than a permanent dwelling are considered less sensitive than residential properties.

Receptors such as amenity areas, public rights of way, places of worship and commercial premises (such as shops) are less sensitive, but may need to be considered on a case-by-case basis.

**Occupational Noise**

Relates to the protection of human hearing in the workplace.

**Rating Level**

Sound pressure level of the sound source + a penalty for tonality (+3dB penalty for dry noise and +6dB penalty for wet noise).

**Sound**

An auditory sensation produced in the ear and brain by variations in the pressure of air.

**Sound Pressure Level**

Decibel level (dB) at a given location measured to the reference pressure of 20 µPa.

**Vulnerable Subgroups**

Children, the chronically ill and the elderly are more vulnerable to ill health effects associated with noise. Uses such as Pre-schools, hospitals and care homes fall into this category. Additional uses can be included on a case by case basis.

**Wet Noise**

Noise which occurs during wet weather conditions is referred to as 'wet noise' and can be described as a crackle, which is sometimes accompanied by a tonal hum.

The highest noise levels generated by an overhead line generally occur during rainfall. Water droplets may accumulate on the surface of the conductor and initiate multiple corona discharges. The number of droplets, and hence the noise level, will depend primarily on the rate of rainfall. Fog may also give rise to increased noise levels, although these levels are less than those during rain. Noise generated under these circumstances is referred to as 'wet noise'.

**5. AMENDMENTS RECORD**

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
1	February 2021	New document to support Overhead Line developments	Janine Dickinson Engineering Services	Jemma Spencer Environmental Engineering Manager
2	June 2021	Amendments to Table 1 and Tier 2 assessments, insertion of Table 2 and clarification of application to reconductoring projects.	Janine Dickinson Operational Compliance	Jemma Spencer Environmental Engineering Manager



## 6. IMPLEMENTATION

### 6.1. Audience Awareness

<b>Audience</b>	<b>Purpose</b> Compliance (C) / Awareness (A)	<b>Notification Method</b> Memo / letter / fax / email / team brief / other (specify)
Asset Operations	C	Team Brief
Customer Connections	C	Team Brief
New Infrastructure	C	Team Brief
Safety, Risk and Compliance	A	Email

### 6.2. Training Requirements

<b>Training Needs</b> N/A / Informal / Workshop / Formal Course	<b>Training Target Date</b>	<b>Implementation Manager</b>
Informal communication of key policy points to relevant parties – slide to be included in Team Talk presentation pack	30/03/2021	Jemma Spencer

### 6.3. Compliance

Compliance is achieved through publication of this policy document, adherence to this policy document and associated procedures TP500 and TP215.

### 6.4. Policy Review Date

Following a change in legislation.

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## **PART 3 - GUIDANCE NOTES AND APPENDICES**

### **7. REFERENCES**

**This policy refers to and should be read in conjunction with the following documents.**

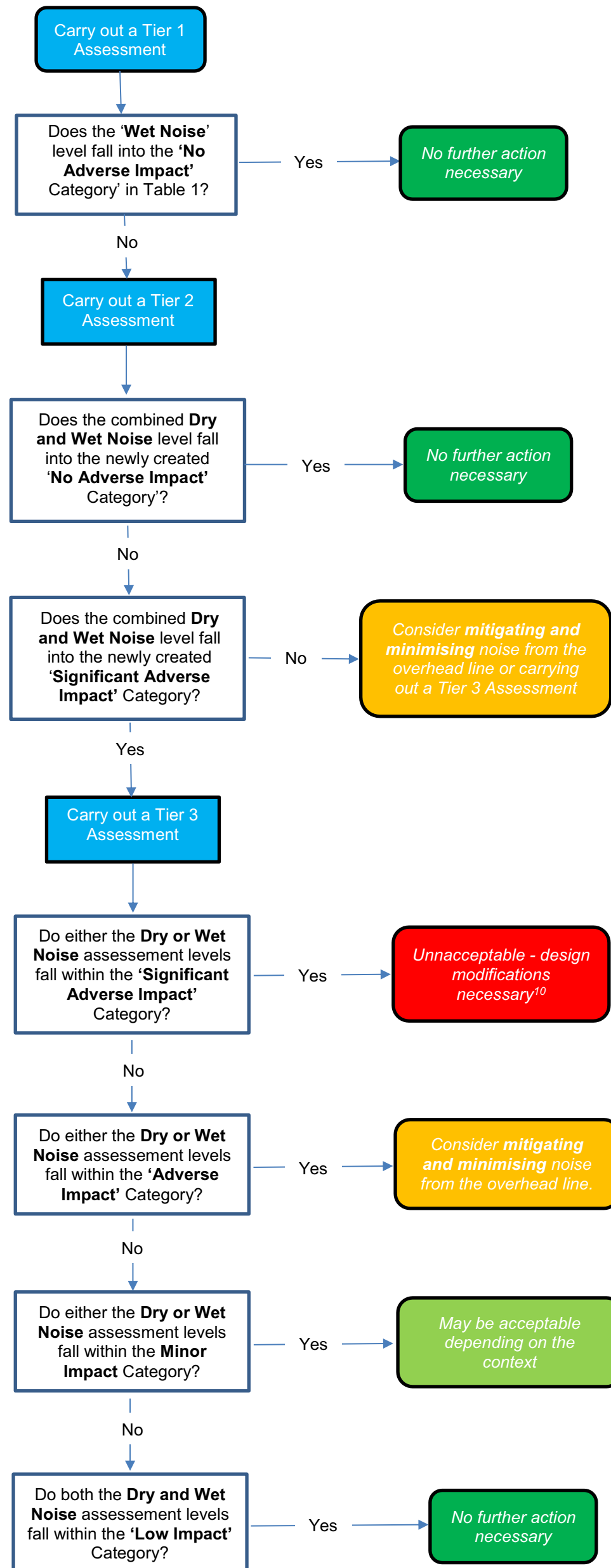
#### **7.1 NATIONAL GRID POLICIES, TRANSMISSION PROCEDURES AND TECHNICAL SPECIFICATIONS**

PS(T) 003	TYPE REGISTRATION
TP188	TRANSMISSION CAPITAL DELIVERY ELECTRICITY – DESIGN MANAGEMENT
TP215	ELECTRICITY INVESTMENT PROCESS – ENVIRONMENTAL COMPLIANCE AND SUSTAINABILITY
TP500	NETWORK DEVELOPMENT PROCESS MAP ENABLING DOCUMENT
TS 2.27	GENERIC DESIGN PRINCIPLES FOR A NEW OVERHEAD LINE
TS 2.4	GENERIC DESIGN PRINCIPLES FOR RE-UTILISATION OF OVERHEAD LINES
TS 3.04.17	INSULATOR SETS FOR OVERHEAD LINES
TS 3.04.35	COMPONENTS FOR OVERHEAD LINES
TS 3.04.37	CONDUCTORS AND CONDUCTOR SYSTEMS FOR OVERHEAD LINES

#### **7.2 NATIONAL GRID TECHNICAL GUIDANCE NOTES**

TGN(E) 259	TYPE REGISTRATION OF OVERHEAD LINES
TGN(E) 322	OPERATIONAL AUDIBLE NOISE ASSESSMENT PROCESS FOR OVERHEAD LINES (NEW BUILD, RECONDUCTORING, DIVERSION AND UPRATING)

**APPENDIX A - OVERHEAD LINE NOISE ASSESSMENT PROCESS**



<sup>10</sup> In some cases, design modifications may not be possible and there may be no feasible alternatives. In such cases the reasons for deviating from this policy should be clearly documented.

**APPENDIX B - INFORMATION REQUIRED FOR AN OVERHEAD LINE NOISE ASSESSMENT**

<b>Overhead Line Noise Assessment Request Form</b>	
<b>Return to: <i>.Box.NE.OperationalNoiseEnqui</i></b>	
<b>Information Required</b>	<b>Comments</b>
<b>General Information</b>	
Investment Number	
Investment Title	
Timesheet/WBS Code (to enable time spent on the investment to be booked appropriately)	
What is the deadline for completion of the noise assessment?	
<b>Scheme Details</b>	
A brief description of the investment with specific reference to the removal, replacement, diversion, uprating or addition of any OHL's or conductors.	
Voltage details – existing (for upratings) and planned	
Tower numbers where the investment involves an existing OHL	
Details of the conductor to be used, conductor bundle (e.g. twin, triple), tower type and conductor spacing.	
Where an existing conductor is being replaced, details of the existing conductor, conductor bundle (e.g. twin, triple) and conductor spacing.	
Is planning consent required for the development? (as this may require a more detailed noise report in support)	
Anticipated commissioning dates?	
For new OHL's or diversions, please provide a map identifying the route of the OHL e.g. GeoGrid map or Google Maps.	
Any other comments?	

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## APPENDIX C

### 7. THE POLICY CONTEXT

#### 7.1.1. Relevant policies external to National Grid

##### Planning Policy Guidance

The National Planning Policy Framework<sup>11</sup> (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. It provides a framework within which local councils can produce their own local and neighbourhood plans. The NPPF states that *"the planning system should contribute to and enhance the natural and local environment by preventing new and existing developments from contributing to or being adversely affected by unacceptable levels of . . . noise pollution"*.

The NPPF states that planning policies and decisions should:

- Avoid noise giving rise to significant adverse impacts on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum potential adverse impacts on health and quality of life arising from noise from new development; and
- Identify and protect areas of tranquility which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The Noise Policy Statement for England<sup>12</sup> (NPSE) sets out the long-term vision of Government noise policy. The NPSE recognises that noise exposure can cause annoyance and sleep disturbance, both of which impact on quality of life and can give rise to adverse health effects. Through the effective management and control of environmental noise, the aims of the policy are to:

- Avoid significant adverse impacts on health and quality of life,
- Mitigate and minimise adverse impacts on health and quality of life and,
- Where possible, contribute to the improvement of health and quality of life.

National Policy Statement EN-1<sup>13</sup> sets out national policy for energy infrastructure where development consent is sought under the Planning Act 2008. In the context of this policy document, paragraph 1.2.1 of EN-1 advises that: "In *England and Wales this NPS is likely to be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended)*". EN-1 states that the Infrastructure Planning Commission should not grant development consent unless it is satisfied that the proposal will:

- Avoid significant adverse impacts on health and quality of life from noise;
- Mitigate and minimize other adverse impacts on health and quality of life from noise; and
- Where possible, contribute to improvements to health and quality of life through effective management and control of noise.

National Policy Statement EN-5<sup>14</sup> sets out assessment and technology specific information relating to the generation, impact and mitigation of noise from electricity infrastructure.

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<sup>11</sup> 'National Planning Policy Framework', Department for Communities and Local Government, March 2012

<sup>12</sup> 'Noise Policy Statement for England', Department for Environment Food and Rural Affairs, March 2010

<sup>13</sup> EN-1 'Overarching National Policy Statement for Energy', Department of Energy and Climate Change, July 2011

<sup>14</sup> EN-5 'National Policy Statement for Electricity Networks Infrastructure

Planning Policy Wales (PPW), Edition 10 sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales. It requires the effects of existing noise sources or the effects of noise generating uses to be considered in planning decisions.

In Wales, Planning Guidance, Technical Advice Note 11<sup>15</sup> (TAN 11) outlines some of the main considerations which local planning authorities should take into account in drawing-up development plan policies and when determining planning applications for development which will either generate noise or be exposed to existing noise sources.

### Technical Guidance

There are currently no European or national noise limits which have to be met. A number of documents provide guidance on threshold levels above which noise can impact on health and quality of life.

The World Health Organisation (WHO) Guidelines<sup>16</sup> set out guideline values for the onset of health effects from noise exposure. They offer little guidance on acceptable noise levels where the noise contains a large proportion of low frequency components typical of overhead line hum in wet weather conditions, simply stating that application of a lower guideline value is recommended.

The Night Noise Guidelines for Europe<sup>17</sup> document observed effect threshold levels for noise at night (based mainly on evidence relating to traffic noise), this being the level of noise above which an effect starts to occur. Such effects include impacts on sleep quality, wellbeing and specific medical conditions.

BS 8233<sup>18</sup> sets out internal noise criteria for bedrooms during the day and night and for living and dining rooms during the day; the standard also sets out external noise criteria for gardens. The noise criteria presented in BS 8233 are based on the guidance contained in the WHO Guidelines and therefore offer little guidance in relation to low frequency noise, other than to state that lower limits might be appropriate.

ProPG: Planning & Noise<sup>19</sup> provides guidance on a recommended approach to the management of noise within the planning system in England. It aims to encourage better acoustic design for new residential development and to protect people from the harmful effects of noise. It sets out internal noise criteria for bedrooms during the day and night and for living and dining rooms during the day.

Under Part III of the Environmental Protection Act 1990<sup>20</sup>, noise emitted from a premises, which is prejudicial to health or a nuisance, can be declared a Statutory Nuisance. In such circumstances, a Local Authority can serve an Abatement Notice on the responsible party.

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<sup>15</sup> Planning Guidance (Wales), Technical Advice Note (Wales) 11, Noise (TAN 11), October 1997

<sup>16</sup> 'Guidelines for Community Noise', World Health Organisation, 1999

<sup>17</sup> Night Noise Guidelines for Europe, World Health Organisation, 2009

<sup>18</sup> BS 8233: 2014 'Guidance on sound insulation and noise reduction for buildings', British Standards Institution, February 2014

<sup>19</sup> ProPG: Planning & Noise, Professional Practice Guidance on Planning and Noise, New Residential Development, May 2017

<sup>20</sup> Environmental Protection Act 1990

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Failure to comply with the Notice is a criminal offence and could lead to prosecution and costly mitigation actions.

BS 4142<sup>21</sup> sets out a method for assessing the impact of sound from a proposed new noise source on residential premises. The standard also offers guidance on the application of a decibel penalty where the noise has a distinguishing character, such as if the noise is tonal, impulsive, intermittent or has other distinguishing features.

BS7445 Description and Measurement of Environmental Noise has three parts:

- Part 1<sup>22</sup> defines the basic quantities to be used for the description of noise in community environments and basic procedures for the determination of those quantities.
- Part 2<sup>23</sup> describes methods for the acquisition of data which i) provide uniform descriptors of environmental noise and ii) enable the compatibility of any land use activity to be assessed with respect to existing or predicted noise.
- Part 3<sup>24</sup> lays down guidelines for the ways in which noise limits should be specified and describes procedures to be used for checking compliance with such limits.

National Grid Technical Report TR(T)94<sup>25</sup> (now withdrawn) presents a method to assess the potential effects of dry and wet noise from new overhead lines. TR(T)94 does not set specific noise assessment criteria; instead it refers to BS4142:1990 and the subjective response of communities and individuals to changes in noise levels.

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<sup>21</sup> BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound', British Standards Institution, June 2019

<sup>22</sup> BS 7445-1:2003 'Description and measurement of environmental noise' 'Part 1: Guide to quantities and procedures', British Standards Institution, December 2003

<sup>23</sup> BS 7445-1:1991 'Description and measurement of environmental noise' 'Part 2: Guide to the acquisition of data pertinent to land use', British Standards Institution, June 1991

<sup>24</sup> BS 7445-1:1991 'Description and measurement of environmental noise' 'Part 3: Guide to application to noise limits', British Standards Institution, June 1991

<sup>25</sup> Technical Report TR(T)94 'A method for assessing the community response to overhead line noise'. Issue 1 October 1993 (Withdrawn and superseded by PS(T)134, TGN(E)322 and TR(E)564)

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