TECHNICAL APPENDIX 4.1: LEGISLATION, PLANNING POLICY AND GUIDANCE

Kirkton Energy Park

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CONTENTS

1.0 Introduction

This Technical Appendix provides a summary of specific relevant legislation, planning policy and guidance for each technical discipline considered in the Environmental Impact Assessment (EIA) Report, as follows:

- EIA;
- Landscape and Visual Amenity;
- Ecology;
- Ornithology;
- Hydrology, Hydrogeology, Geology and Soils;
- Cultural Heritage and Archaeology;
- Site Access, Traffic and Transport;
- Noise;
- Socio-economics and Land Use; and
- Other Environmental Issues.

The planning policy and legislation is covered in **Chapter 4: Renewable Energy and Planning Policy** of the EIA Report and is not repeated here.

2.0 EIA

2.1 Legislation

The relevant EIA legislation is set out in **Chapter 5: Environmental Impact Assessment** of the EIA Report and is not repeated here.

2.2 Guidance

This assessment is carried out in accordance with the principles contained within the following documents:

- Scottish Government Web Based Guidance Onshore wind turbines (First published in February 2011 and last updated in May 2014);
- Planning Advice Note (PAN) 1/2013 Environmental Impact Assessment (2013);
- Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment;
- Planning Circular 1/2017: Environmental Impact Assessment regulations; and
- Scottish Natural Heritage (SNH) (2018) Environmental Impact Assessment Handbook: Guidance for Competent Authorities, Consultation bodies and others involved in the Environmental Impact Assessment Process in Scotland (5th Edition).

3.0 Landscape and Visual Amenity

See **Chapter 7: Landscape and Visual** for detail on relevant policy and guidance.

4.0 Ecology

4.1 Legislation

The ecological assessment has been undertaken with reference to the following legislation:

- The EC Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora);
- The Wildlife and Countryside Act 1981 (as amended in Scotland);
- The Wildlife and Natural Environment (Scotland) Act 2011;
- The Nature Conservation (Scotland) Act 2004;
- The Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) (as amended in Scotland);
- The Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004); and
- The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.

4.2 Policy

The following planning policy documents that are of particular relevance to this Chapter are:

- Scottish Planning Policy (SPP) identifies that biodiversity is important because it provides natural services and products which we rely on, that it is an important element of sustainable development and makes an essential contribution to the economy and cultural heritage of Scotland. All Public Bodies in Scotland, including planning authorities, have a duty to *'further the conservation of biodiversity'* under the Nature Conservation

(Scotland) Act 2004 and the SPP highlights that this should be reflected in development plans and development management decisions.

- The Highland Wide Local Development Plan (2012) contains a number of policies relating to development and land use in The Highlands. Those relevant to non-avian ecology are:
    - Policy 51 – Trees and Development;
    - Policy 52 – Principle of Development in Woodland;
    - Policy 57 – Natural, Built and Cultural Heritage;
    - Policy 58 – Protected Species;
    - Policy 59 – Other Important Species;
    - Policy 60 – Other Important Habitats and Article 10 Features; and
    - Policy 63 – Water Environment.
- The Caithness and Sutherland Local Development Plan, also known as CaSPLAN was adopted by THC on 31 August 2018. The CaSPLAN primarily focuses on regional settlement strategies, however, it recognises the importance of the natural environment in achieving the outcome of high-quality places in the region.

4.2.1 Other Relevant Policy

- Planning Advice Note (PAN) 60: Planning for Natural Heritage (Scottish Government, 2008) provides details on how development and the planning system can contribute to the conservation, enhancement, enjoyment and understanding of Scotland's natural environment and encourages developers and planning authorities to be positive and creative in addressing natural heritage issues.

4.3 Guidance

Other documents and guidance reviewed and applied in the ecological assessment are outlined below (see also 'References' Section at the end of the Ecology Chapter):

- The Scottish Biodiversity List (SBL) (Scottish Government, 2020) is a list of animals, plants and habitats that the Scottish ministers consider to be of principal importance for biodiversity conservation in Scotland. Both scientific and social criteria have been used to define the SBL. Scientific criteria include all Priority Species and Priority Habitats included in the now superseded UK Biodiversity Action Plan (BAP) (UK Biodiversity Partnership, 2007 et seq.), which occur in Scotland. Social criteria are based on the results of an omnibus survey of the Scottish public carried out in 2006, and includes some common species and habitats. The Ecology Chapter only considers those listed using scientific criteria;
- Highland Nature: The Biodiversity Action Plan (Highland Environment Forum, 2015), sets out a number of objectives to help support the over-arching themes of the plan, including sustainable management of habitats, taking biodiversity into account in planning development and infrastructure, and identifying local opportunities to improve biodiversity. The plan identifies a wide range of local priority habitats and species;
- The Caithness Biodiversity Action Plan, issued in 2003 (Caithness Biodiversity Group, 2003) sets out the key biodiversity objectives for the region, including ensuring that all habitats are managed in a way that takes account of wildlife interests and conservation of threatened species. The plan identifies a wide range of local priority habitats and species;
- Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2018);

- Scottish Natural Heritage (SNH) general pre-application/scoping advice to developers of onshore wind farms (SNH, 2018);
- Bats and onshore wind turbines: survey, assessment and mitigation (SNH et al., 2019);
- Planning for development: What to consider and include in deer assessments and management at development sites. Version 2 (SNH, 2016a);
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTEs) (Scottish Environment Protection Agency (SEPA), 2017); and
- Good Practice during Wind Farm Construction (SNH, 2019).

5.0 Ornithology

5.1 Legislation

The ornithology assessment has been undertaken in line with the following European legislation:

- Directive 2009/147/EC on the Conservation of Wild Birds ('Birds Directive');
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) ('Habitats Directive'); and
- Environmental Impact Assessment Directive 2014/52/EU;

The following national legislation is considered as part of the ornithology assessment:

- the Wildlife and Countryside Act 1981 (as amended);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland) (The Habitats Regulations) which transposes the Habitats Directive into UK law;
- the Nature Conservation (Scotland) Act 2004 (as amended); and
- the Wildlife and Natural Environment (Scotland) Act 2011.

5.2 Policy

Policies relevant to ornithology include:

- Scottish Planning Policy (SPP) identifies that biodiversity is important because it provides natural services and products which we rely on, that it is an important element of sustainable development and that it makes an essential contribution to the economy and cultural heritage of Scotland.

All Public Bodies in Scotland, including planning authorities, have a duty to 'further the conservation of biodiversity' under the Nature Conservation (Scotland) Act 2004 and the SPP highlights that this should be reflected in development plans and development management decisions.

5.2.1 Land Policy

The Highland Wide Local Development Plan (adopted 2012) has a number of policies relating to the natural and built environments with the aim of protecting habitats, species and landscapes of international, national and local importance.

Policies relevant to this Chapter are as follows:

- Policy 57 – Natural, Built and Cultural heritage. All development proposals will be assessed taking into account the level of importance and type of heritage features, the form and scale of the development, and any impact on the feature and its setting, in the context of the policy framework.
- Policy 58 – Species and Habitats. Certain species are protected under European and/or UK law and their presence on or near a development site will require consideration to ensure no offence under the relevant legislation is committed and more generally that no adverse effect on population, including cumulatively, arises.
- Policy 59 – Other Important Species. Development that is likely to have an adverse effect, individually and/or cumulatively, on protected bird species will only be permitted where:
    - There is no other satisfactory solution; and
    - The development is required in the interests of public health or public safety.

This will include but is not limited to avoiding adverse effects, individually and/or cumulatively, on the populations of the following priority protected bird species:

- Species listed in Annex 1 of the EC Birds Directive;
- Regularly occurring migratory species listed in Annex II of the Birds Directive;
- Species listed in Schedule 1 of the Wildlife and Countryside Act 1981 as amended; and
- Birds of conservation concern.

5.3 Guidance

This assessment is carried out in accordance with the principles contained within the following documents:

- Band, Madders and Whitfield. (2007) Developing field and analytical methods to assess avian collision risk at wind farms;
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine;
- Ruddock and Whitfield (2007) A Review of Disturbance Distances in Selected Bird Species;
- SERAD (Scottish Executive Rural Affairs Department) (2000). Habitats and Birds Directives, Nature Conservation; Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds ("the Habitats and Birds Directives"). Revised Guidance Updating Scottish Office Circular No 6/1995;
- European Commission (2010). Natura 2000 Guidance Document 'Wind Energy Developments and Natura 2000'. European Commission, Brussels;
- The UK Biodiversity Action Plan (BAP) and UK Post-2010 Biodiversity Framework;

- Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015). Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746;
- Scottish Natural Heritage (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. SNH Guidance Note;
- Scottish Natural Heritage (2009). Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees;
- Scottish Natural Heritage (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments;
- Scottish Natural Heritage (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Version 2;
- Scottish Natural Heritage (2016). Assessing connectivity with Special Protection Areas (SPAs). Version 3;
- Scottish Natural Heritage (2018). Assessing significance of impacts from onshore windfarms on birds outwith designated areas. Version 2;
- Scottish Natural Heritage (2018). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland;
- Scottish Renewables (2015) Good Practice during Wind Farm Construction. Version 3; and
- Scottish Government (2013) Scottish Biodiversity List (SBL).

6.0 Hydrology, Hydrogeology, Geology and Soils

6.1 Legislation

This assessment is carried out in accordance with the principles contained within the following legislation:

- European Union (EU) Water Framework Directive (2000/60/European Commission (EC));
- EU Drinking Water Directive (98/83/EC);
- Surface Waters (Fishlife) (Classification) (Scotland) Amendment Regulations 2003;
- The Flood Risk Management (Scotland) Act 2009;
- Water Environment and Water Services (WEWS) (Scotland) Act 2003 (WEWS Act);
- The Water Supply (Water Quality) (Scotland) Regulations, 2001;
- The Water Environment (Controlled Activities) (Scotland) Amendment Regulations, 2013 (Controlled Activities Regulations (CAR));
- Water Environment and Water Services (WEWS) (Scotland) Act 2003 (WEWS Act);
- The Public Water Supplies (Scotland) Regulations 2014; and
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017.

6.2 Policy

In addition to Scottish Planning Policy (SPP) published by The Scottish Government (June 2014), The Highland Council (THC) Highland-wide Development Plan (HwDP) (5th April 2012) provides planning guidance on the type and location of development that can take place in the region. The HwDP presents policies of which the following are relevant to this assessment:

- Policy 53 - Minerals;
- Policy 55 - Peat and Soils;
- Policy 58 - Protected Species;
- Policy 59 - Other Important Species;
- Policy 60 - Other Important Habitats;
- Policy 62 - Geo-diversity;
- Policy 63 - Water Environment;
- Policy 64 - Flood Risk; and
- Policy 72 – Pollution.

6.3 Guidance

6.3.1 General Guidance

- Scottish Renewables (2015) Good Practice during Wind Farm Construction. Version 3.

6.3.2 Planning Advice Notes

- PAN 61 Planning and Sustainable Urban Drainage Systems; and
- PAN 69 Planning and Building Standards Advice on Flooding.

6.3.3 SEPA Pollution Prevention Guidance Note (PPG) and Guidance for Pollution Prevention (GPP)

- PPG01 General Guide to the Prevention of Pollution;
- GPP02 Above Ground Oil Storage Tanks;
- PPG03 Use and Design of Oil Separators in Surface Water Drainage Systems;
- GPP05 Works and Maintenance in or near Water;
- PPG06 Working at Construction and Demolition Sites;
- PPG07 Safe Storage – The Safe Operation of Refuelling Facilities;
- GPP08 Safe Storage and Disposal of Used Oils;
- GPP13 Vehicle Washing and Cleaning;
- GPP21 Pollution Incident Response Planning; and
- GPP22 Dealing with Spills.

6.3.4 Construction Industry Research and Information Association (CIRIA) Publications

- C532 Control of Water Pollution From Construction Sites (2001);
- C741 Environmental Good Practice on Site (2015); and
- C753 The Sustainable Urban Drainage Systems (SUDS) Manual (2015).

6.3.5 SEPA Publications

- Engineering in the Water Environment: Good Practice Guide – River Crossings (2010);

- Engineering in the Water Environment: Good Practice Guide – Sediment Management (2010);
- Engineering in the Water Environment: Good Practice Guide – Temporary Construction Methods (2009);
- Position Statement – Culverting of Watercourses (2015); and
- Groundwater Protection Policy for Scotland, Version 3 (2009).

7.0 Cultural Heritage and Archaeology

7.1 Legislation

The principal relevant legislation comprises:

- The Ancient Monuments and Archaeological Areas Act 1979;
- Scottish Statutory Instrument No. 101 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997; and
- The Historic Environment (Amendment) (Scotland) Act 2011.

7.2 National Policy

The Scottish Government and Historic Environment Scotland (HES) have issued several statements of policy with respect to dealing with the historic environment in the planning system:

- Scottish Planning Policy (SPP; 2014);
- National Planning Framework 3 (NPF3; 2014);
- Onshore Wind Turbines: Planning Advice (2014);
- Historic Environment Circular 1 May 2016;
- Our Place in Time (OPiT; 2014);
- Historic Environment Policy for Scotland (HEPS) May 2019; and
- Planning Advice Note 2/2011: Planning and archaeology.

7.3 Local Policy

The Highland Wide Local Development Plan (Highland Council 2012) has one policy statement in relation to Cultural Heritage assets of local/regional and national importance relevant to this assessment. Policy 57 states that:

"All development proposals will be assessed taking into account the level of importance and type of heritage features, the form and scale of the development, and any impact on the feature and its setting, in the context of the policy framework detailed in Appendix 2. The following criteria will also apply:

1. For features of local/regional importance we will allow developments if it can be satisfactorily demonstrated that they will not have an unacceptable impact on the natural environment, amenity and heritage resource.

2. For features of national importance we will allow developments that can be shown not to compromise the natural environment, amenity and heritage resource. Where there may be any significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance. It must also be shown that the development will support communities in fragile areas who are having difficulties in keeping their population and services."

7.4 Guidance

Four relevant pieces of guidance have been published by HES, by HES in conjunction with Scottish National Heritage, and by the professional archaeological body the Chartered Institute for Archaeologists. These publications are:

- Historic Environment Scotland guidance on Managing Change in the Historic Environment: Setting 2016;
- A Guide to Climate Change Impact: On Scotland's Historic Environment (2019);
- Chartered Institute for Archaeologists Standard and Guidance for Historic Environment Desk Based Assessment 2014; and
- Scottish National Heritage (SNH) and Historic Environment Scotland Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland 2018.

8.0 Noise

8.1 Legislation

In the UK, noise and vibration and nuisance are controlled using:

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

8.2 National Policy

8.2.1 Scottish Planning Policy

Scottish Planning Policy (SPP) states (at paragraph 170) that "wind farms should be sited and designed to ensure impacts are minimised and to protect an acceptable level of amenity for adjacent communities". The SPP goes on to state that noise should be one of the environmental criteria considered when assessing effects on communities and individual dwellings (paragraph 169).

8.2.2 Planning Advice Note (PAN) 1/2011

PAN 1/2011, 'Planning and Noise' (Scottish Government, 2011) states that there are two sources of noise from wind turbines, the mechanical noise from the turbines and the aerodynamic noise from the blades. The document states that *"good acoustical design and siting of turbines is essential to minimise the potential to generate noise".*

The document (at paragraph 29) refers to web-based Scottish Government planning advice on renewable technologies for onshore wind turbines; however, no other guidance or reference to wind turbine noise is made within PAN 1/2011.

8.2.3 Onshore Wind Turbines Scottish Government Planning Advice

The web-based Scottish Government planning advice for onshore wind turbines (last updated 28 May 2014) also refers to the two sources of noise generated by wind turbines (as per PAN 1/2011) and states:

"The Report, 'The Assessment and Rating of Noise from Wind Turbines' (Final Report, Sept 1996, DTI) (ETSU-R-97) describes a framework for the measurement of wind farm noise, which should be followed by applicants and consultees, and used by planning authorities to assess and rate noise from wind energy developments, until such time as an update is available. This gives indicative noise levels thought to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable burden on wind farm developers, and suggest appropriate noise conditions".

The web-based guidance also refers to the Institute of Acoustics (IOA) 'Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (hereafter referred to as the IOA GPG), stating that *"the Scottish Government accepts that the guide represents current industry good practice"*.

8.3 Local policy

8.3.1 The Highland-wide Local Development Plan

The Highland-wide Local Development Plan (HwLDP) was adopted on 05 April 2012 (The Highland Council, 2012). The HwLDP sets out the overarching spatial planning policy for the whole of the Highland Council area, except the area covered by the Cairngorms National Park Local Plan, which is subject to a separate Development Plan.

Chapter 22 of HwLDP addresses sustainable development and climate change and recognises the great potential the Highlands area has for renewable energy

generation. Onshore wind is recognised as one of the technologies making substantial contributions to renewable energy production in The Highlands.

Policy 67, Renewable Energy proposed developments, of the HwLDP states:

"… Subject to balancing with these considerations and taking into account any mitigation measures to be included, the Council will support proposals [for renewable energy generation] where it is satisfied that they are located, sited and designed such that they will not be significantly detrimental overall, either individually or cumulatively with other developments (see Glossary), having regard in particular to any significant effects on the following: … the safety and amenity of any regularly occupied buildings and the grounds that they occupy- having regard to visual intrusion or the likely effect of noise generation…"

8.3.2 The Highland Council – Onshore Wind Energy Supplementary Guidance

The Highland Council's 'Onshore Wind Energy Supplementary Guidance' (2016) details how onshore wind energy development proposals would be managed. The guidance has a section that sets out the assessment methods and key guiding principles that should form the basis of the noise assessment. The guidance states that a noise assessment for a proposed large-scale wind turbine development should be undertaken in accordance with ETSU-R-97 and the IOA GPG.

The guidance goes on to state that due to the undeveloped nature of the Highlands, proposals should aim to achieve noise limits at the lower end of ranges given in national guidance at sensitive locations.

With regard to the cumulative effects of noise from wind farms, THC states:

"Where noise from more than one wind turbine development may have a cumulative impact at any noise sensitive location, applicants must ensure this is adequately assessed in accordance with best practise, which includes consideration of both predicted and consented levels".

8.4 Guidance

8.4.1 Construction Noise Guidance

BS5228-1:2009+A1:2014

BS5228-1:2009+A1:2014 sets out a methodology for predicting noise levels arising from a wide variety of construction activities and it contains tables of sound power levels generated by mobile and fixed plant.

Annex E of BS5228-1:2009+A1:2014 gives several examples of acceptable limits for construction noise, the most simplistic being based upon the exceedance of fixed noise limits. In this respect, Section E.2 of the standard states: *"Noise from construction sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut".*

The assessment of construction noise associated with the proposed development is based on the following fixed limit from BS5228-1:2009+A1:2014, which is applicable for rural areas away from main road traffic and industrial noise and outside living rooms during the daytime period:

- Noise levels, between 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary, should not exceed 70dB(A).

8.4.2 Construction Traffic Noise Guidance

Design Manual for Roads and Bridges

Noise generated by construction traffic is assessed following the guidance within Part 7 of DMRB. DMRB states that *"a change in noise level of 1dB is equivalent to a 25% increase or 20% decrease in traffic flows, assuming all other factors remain unchanged".*

DMRB also provides advice on the magnitude of effects associated with increases in total traffic flows and associated noise levels. Paragraph 3.37 of DMRB states

that *"a change in road traffic of 1dB LA10,18h in the short term (e.g. when a project is opened) is the smallest that is considered perceptible".*

8.4.3 Operational and Cumulative Noise Guidance

ETSU-R-97

ETSU-R-97 sets out the findings of the Working Group on Noise from Wind Turbines, which was set up in 1993 by the (former) Department of Trade and Industry (DTI) to consider the available methods of noise assessment for wind farms and to derive a method and criteria suitable for future assessments.

ETSU-R-97 recommends that acceptability of wind farm noise should be assessed relative to existing background noise levels, so that both the outdoor amenity and the sleep of local residents are protected. It suggests that noise from wind turbines should be limited to 5dB above the background noise (LA90) at all times. It does however also suggest absolute lower fixed limits of between 35 and 40dB LA90 for daytime (07.00 – 23.00) and 43dB LA90 for night-time (23.00 – 07.00). The absolute lower night-time fixed limit of 43dB LA90 is derived from the sleep disturbance criteria referred to in (the now superseded) PPG 24 (Department for Communities and Local Government, 1994), with an allowance of 10dB for attenuation through an open window and a 2dB correction to convert an LAeq value to LA90.

An increased noise limit of 45dB LA90 (or background noise plus 5dB) is suggested for both daytime and night-time periods for properties where the occupier has financial involvement in the wind farm.

The limits are derived by plotting a best fit line through a graph of the measured background noise levels and the corresponding average wind speeds. The ETSU-R-97 limits are then defined as 5dB above the average background noise level at each wind speed (as defined by the best fit line), or the absolute lower fixed limit, whichever is the highest.

An additional 'simplified' assessment is also presented within ETSU-R-97 (page 66), whereby if an appropriate fixed noise limit can be achieved regardless of the wind speed, then this is considered sufficient for the protection of residential amenity without the measurement of background noise levels. In this regard, ETSU-R-97 states the following:

"If the developer can demonstrate that noise conditions would be met even if there was no increase in background noise with speed until quite high wind speeds, then a simplified approach can be adopted. We are of the opinion that if the noise is limited to an LA90,10min of 35dB up to wind speeds of 10m/s at 10 height, then this condition alone would offer sufficient protection of amenity and background noise surveys would be unnecessary. We feel that, even in sheltered areas when the wind speed exceeds 10m/s on the wind farm site, some additional background noise will be generated which will increase background noise levels at the property."

All noise limits in ETSU-R-97 are expressed in terms of a 10-minute LA90 noise level. This approach has been adopted to avoid extraneous transitory events unduly affecting the noise generated by wind farms when attempting to measure their noise emission level.

Institute of Acoustics Good Practice Guide to ETSU-R-97

The Scottish Government has formally endorsed the IOA GPG and the current (web-based) Scottish planning advice recommends that it is used for the assessment of wind turbine noise.

The IOA GPG does not replace the limits within ETSU-R-97, but it does provide good practice guidance on the use of the ETSU document in relation to background noise surveys and on the prediction of wind turbine noise. This is on the proviso that the appropriate input parameters and correction factors are used for the prediction of wind turbine noise, as follows:

- Downwind propagation;
- A receptor height of 4m;
- Atmospheric conditions of 10°C and 70% humidity;

- A ground absorption factor of G = 0.5; and
- Turbine noise emission levels which include a margin for uncertainty.

ISO 9613-2:1996 Prediction Method

The noise generated by the operation of a wind farm is predicted in accordance with ISO 9613-2:1996 (International Organisation for Standardisation, 1996), as recommended by the IOA GPG and as shown below:

Predicted Octave Band Noise Level = Lw – Ageo – Aatm – Agr – Abar - Amisc

(Where Lw is the octave band Sound Power Level (SWL) in decibels (dB) and A represents the various attenuation factors, also in dB)

The attenuation factors indicated in the above formula are detailed as follows:

Ageo is the attenuation due to geometric divergence. This is the reduction in noise levels caused by the spherical spreading of the noise over distance from the point source. The attenuation factor, therefore, increases as the distance from the noise source increases.

Aatm is the absorption of the noise by the atmosphere as sound energy is converted to heat. The level of absorption varies depending on the distance from the source and the atmospheric conditions (temperature and humidity). ISO 9613-1:1993 (International Organisation for Standardisation, 1993) provides appropriate air attenuation factors for differing atmospheric conditions. In line with the IOA GPG, atmospheric conditions of 10°C and 70% humidity are used within the propagation model *"to represent a reasonably low level of air absorption"*.

Agr is the ground factor and represents the reduction in noise levels due to the absorption of sound energy by ground cover. The level of reduction will vary significantly depending on the absorptive qualities of the ground cover. ISO 9613-1:1993 provides advice on appropriate attenuation factors based on a range of cover from hard ground (G = 0) to soft absorbent ground (G = 1). A ground factor of 0.5 is assumed in the predictions of operational wind turbine noise. This is in accordance with the IOA GPG (paragraph 4.3.4), which recommends that a ground factor of 0.5 is used for turbines with warranted Sound Power Levels (SWLs) or with emission levels which include a margin for uncertainty.

Abar relates to the attenuation due to the screening and reflection effects provided by obstacles between the source and receiver. The level of attenuation will vary depending on the degree by which the line of sight between source and receiver is affected and the frequency considered. In relation to wind farms, local topography would provide the largest influence on barrier effects; however, within the operational noise model, attenuation attributable to local topography is not included.

The predicted (LAeq) noise levels for all turbines are totalled to provide an overall A-weighted noise level. A further correction of 2dB is subtracted to convert the LAeq level to the LA90 as required for the ETSU-R-97 assessment. This is reiterated in the IOA GPG (at paragraph 4.25) which states:

"To obtain the LA90 parameter required by ETSU-R-97, it is necessary to apply a correction to the prediction results. Based on recent research, the assumption described in ETSU-R-97 in this regard continues to remain valid. A correction of -2dB is commonly applied."

Institute for Environmental Management and Assessment (IEMA) Guidelines

The noise assessment has also been undertaken with reference to the 'Guidelines for Environmental Noise Impact Assessment' (2014), produced by IEMA.

9.0 Site Access, Traffic and Transport

9.1 Legislation

- Road Vehicles (Authorisation of Special Types) (General) Order 2003; and
- The Roads (Scotland) Act 1984.

9.2 Policy

9.2.1 Scottish Planning Policy (SPP)

Relevant to impacts from road traffic, SPP states:

"Proposals for energy infrastructure developments should always take account of spatial frameworks for wind farms and heat maps where these are relevant. Considerations will vary relative to the scale of the proposal and area characteristics but are likely to include:

- *impacts on road traffic;*
- *impacts on adjacent trunk roads; and*
- *cumulative impacts"*

It is also noted that:

"Where a new development or a change of use is likely to generate a significant increase in the number of trips, a transport assessment should be carried out. This should identify any potential cumulative effects which need to be addressed."

9.2.2 Planning Advice Note (PAN) 75 – Planning for Transport

PAN 75 refers to SPP for the requirement to prepare a Transport Assessment for significant travel generative developments. It also notes that:

"Development applications will therefore be assessed by relevant parties at levels of detail corresponding to their potential impact."

The Note seeks to influence travel behaviour of new developments to more sustainable modes, although there are only very limited opportunities to consider sustainable travel modes to the proposed development, given its remote location. It is noted that:

"The Transport Assessment process should then establish ways to accommodate or mitigate the impacts of less sustainable transport modes in order to meet the mode share targets."

Therefore, **Chapter 12: Site Access, Traffic and Transport** of the EIA Report confirms that construction staff, operational service staff and raw materials for construction would be sourced as locally as possible to reduce overall travel distances as far as practicable. Car sharing is also considered to be a viable solution for reducing overall vehicle trips from the proposed development during construction.

9.2.3 Development Plan

The Development Plan for the site comprises the Highland-wide Local Development Plan adopted in April 2012 (HwLDP), the Supplementary Guidance: Onshore Wind Energy Supplementary Guidance (amended 2017) (OWESG) and the West Highland and Islands Local Plan (continued in force 2012). The HwDP presents policies of which Policy 56 'Travel' is the most relevant to this assessment.

9.3 Guidance

- Transport Assessment and Implementation: A Guide (August 2005);
- Design Manual for Roads and Bridges (DMRB)
- Guidelines for the Environmental Assessment of Road Traffic (EART) (1993);

- Scottish Planning Policy (SPP) (2014);
- Planning Advice Note 75: Transport and Planning (2005)
- Moray Local Development Plan;
- Moray Onshore Wind Energy Policy Guidance;
- Road Vehicles (Authorisation of Special Types) (General) Order 2003;
- the Roads (Scotland) Act 1984; and
- National Road Traffic Forecasts (Great Britain) 1997.

10.0 Socio-Economics and Land Use

10.1 Policy

10.1.1 Scottish Planning Policy (2014) (SPP)

SPP Paragraph 29 requires that policies and decisions should, amongst other matters, give *"due weight to net economic benefit"*.

SPP Paragraph 169 requires that the planning system supports the transformational change to a low carbon economy, consistent with national objectives and targets. Considerations in respect of proposals for onshore wind that are relevant to this assessment include:

- net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities;
- the scale of contribution to renewable energy generation targets;
- public access, including impact on long distance walking and cycling routes and scenic routes identified in the national policy framework (NPF); and
- impacts on tourism and recreation.

Paragraph 79 also requires that the planning system promotes economic activity and diversification including, where appropriate, sustainable development linked to farm diversification and renewable energy developments.

10.1.2 National Planning Framework 3 (2014) (NPF3)

NPF3 is the spatial expression of the Government's Economic Strategy, and sets out a long-term vision for development and investment across Scotland over the next 20 to 30 years. NPF3 aims *"to share the benefits of growth by encouraging economic activity and investment across all of Scotland's communities, whilst*

protecting our natural and cultural assets". A sustainable, economically active rural area, which attracts investment and supports vibrant, growing communities, is said to be essential to the Government's vision.

With regard to rural development, NPF3 identifies that in rural areas there should be strengthened links between people and the land, including increased community ownership of rural assets.

NPF3 also sets out that development of a national long distance walking and cycling network will link key outdoor tourism locations across the country and will be an important tourism asset in its own right; as such, it is identified as a National Development.

10.2 Guidance

10.2.1 Scottish Natural Heritage (2018) Environmental Impact Assessment Handbook

The SNH handbook on Environmental Impact Assessment states (at E.2.2) that *"the Environmental Statement may set out material considerations which could outweigh the [relevant planning] policies - such as economic benefits or benefits to other aspects of the environment that may be enhanced rather than harmed."*

10.2.2 Scottish Government (2019) Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments

This guidance was updated in 2019 as a result of the Scottish Government's recognition that the renewables industry is in a period of transition at the moment, following changes to UK Government support schemes. This means that new models of community benefits, and new approaches, are likely to be needed. The revised guidance places a greater focus on achieving a lasting legacy for local communities underpinned by a well-developed community action plan. The guidance notes that within the previous 12 months, 214 projects offered community benefits packages totalling over £15 million. The guidance is supportive of renewable energy businesses that seek to offer communities a flexible package of benefits that might not necessarily be based on Scottish Government's recommended national rate of £5,000 per installed MW per year.; such flexible packages of benefit should offer an element of additionality and go beyond the requirements of the planning process, and also recognise the ambition to offer the lowest cost energy for consumers.

The package of benefits that a renewable energy business offers may vary in line with the priorities of community/communities involved, and the size and scope of the renewable energy project. However, community benefits should relate to the specific needs and aspirations of local people. The guidance advises that possession of a community action plan is key to delivering a community's aspirations and ambitions, and guidance is provided as to how this should be developed with a view to establishing a lasting legacy.

10.2.3 Scottish Government (2019) Good Practice Principles for Shared Ownership of Onshore Renewable Energy Developments

This guidance is intended to provide guidance on the Government's ambition to ensure that, by 2020, at least half of newly consented renewable energy projects will have an element of shared ownership. It provides guidance on the process of a renewable energy business making an offer, and a community accepting that offer. The aim of the review was to ensure that Scottish communities continue to benefit from local projects in a manner that is appropriate for the current and future context in which renewable energy projects are developed, and advises on how local communities, renewable energy companies and local authorities can work together to achieve this.

10.2.4 Scottish Government (2016) Draft Advice on Net Economic Benefit and Planning

The draft advice on net economic benefit from the Scottish Government provides advice to developers on the methodology to be used when modelling economic benefits. The advice states the importance of using assumptions that are completely transparent, evidence-based and as accurate as possible. The assessment is expected to consider the net economic benefit by comparing the estimated economic position where the development proceeds with the position if the proposal does not go ahead.

10.2.5 SNH (2019) Good Practice During Wind Farm Construction

Scottish Natural Heritage Good Practice Guidance on windfarms contains advice on management measures to provide for continuing public access to core paths and rights of way. The Guidance advises that management measures should be flexible enough to take reasonable account of public access requirements. The Guidance emphasises the importance of effective communication.

10.2.6 Tourism Scotland 2020 and Key Facts on Tourism in Scotland 2019

The Tourism Scotland 2020 document advises that tourism is one of Scotland's key economic contributors. It identifies four groups of assets that contribute to the tourist appeal of Scotland. These are:

- nature heritage and activities;
- destination towns and cities;
- events and festivals; and
- business tourism.

The document sets an aspiration to increase annual visitor spend in Scotland by £1 billion by 2020 from the baseline in 2011 (at 2011 prices). It identifies the need to develop market opportunities associated with the assets set out in paragraph 14.16.

The 2019 review shows an increase in total overnight stays and spend in tourism, from the previous 2018 levels, hailing it as the best performance in the sector in a decade, although there was a 3% decrease in day tourism, this was offset by the 12% increase in overnight tourism and 9% increase in spending, during which time the number of wind farms in Scotland has increased.

10.3 Local Policy and Guidance

10.3.1 Development Plan

The Development Plan for the site comprises the Highland-wide Local Development Plan adopted in April 2012 (HwLDP), the Supplementary Guidance: Onshore Wind Energy Supplementary Guidance (amended 2017) (OWESG) and the West Highland and Islands Local Plan (continued in force 2012).

The HwLDP Policy most relevant to the proposed development is Policy 67 – Renewable Energy Developments, which sets out THC's support in principle for renewable energy developments. The first part of Policy 67 states:

"Renewable energy development proposals should be well related to the source of the primary renewable resources that are needed for their operation. The Council will also consider:

- *The contribution of the proposed development towards meeting renewable energy generation targets; and*
- *Any positive or negative effects it is likely to have on the local and national economy;*

and will assess proposals against other policies of the development plan the Highland Renewable Energy Strategy and Planning Guidelines and have regard to any other material considerations, including proposals able to demonstrate

significant benefits including by making effective use of existing and proposed infrastructure of facilities."

The second part of Policy 67 'Renewable Energy Developments' sets out a number of criteria that must be addressed by wind farm applications. The policy states:

"Subject to balancing with these considerations and taking into account any mitigation measures to be included, the Council will support proposals where it is satisfied that they are located, sited and designed such that they will not be significantly detrimental overall, either individually or cumulatively with other developments (see Glossary), having regard in particular to any significant effects on the following:

- *natural, built and cultural heritage features;*
- *species and habitats;*
- *visual impact and impact on the landscape character of the surrounding area (the design and location of the proposal should reflect the scale and character of the landscape and seek to minimise landscape and visual impact, subject to any other considerations);*
- *amenity at sensitive locations, including residential properties, work places and recognised visitor sites (in or outwith a settlement boundary);*
- *the safety and amenity of any regularly occupied buildings and the grounds that they occupy- having regard to visual intrusion or the likely effect of noise generation and, in the case of wind energy proposals, ice throw in winter conditions, shadow flicker or shadow throw;*
- *ground water, surface water (including water supply), aquatic ecosystems and fisheries;*
- *the safe use of airport, defence or emergency service operations, including flight activity, navigation and surveillance systems and associated infrastructure, or on aircraft flight paths or MoD low-flying areas;*
- *other communications installations or the quality of radio or TV reception;*
- *the amenity of users of any Core Path or other established public access for walking, cycling or horse riding;*
- *tourism and recreation interests;*
- *land and water based traffic and transport interests.*

Proposals for the extension of existing renewable energy facilities will be assessed against the same criteria and material considerations as apply to proposals for new facilities.

In all cases, if consent is granted, the Council will approve appropriate conditions (along with a legal agreement/obligation under section 75 of the Town and Country Planning (Scotland) Act 1997, as amended, where necessary), relating to the removal of the development and associated equipment and to the restoration of the site, whenever the consent expires, other than in circumstances where fresh consent has been secured to extend the life of the project, or the project ceases to operate for a specific period."

Regarding community involvement in renewable energy development, the Policy 68 "Community" Renewable Energy Development sets out that these will be subject to the same conditions as larger-scale, however, when a community has a share in a larger-scale project, they should be the community that is significantly impacted by the development, stating:

"The Council's initial assessment of renewable energy proposals will apply the same tests of acceptability for a community project as it would to a commercial proposal. However, where a community wishes to develop a small project solely as a community venture, or takes a share in a larger project, then where it is the only community significantly impacted by the proposal the Council will regard this as a material consideration. In such circumstances and subject to the proposals being assessed as acceptable under other relevant policies of the Plan, the Council may grant consent for renewable energy development with greater impacts upon the

amenity of that community's area as a place in which people reside or work than would normally be the case"

For renewable projects developing in the wider countryside, Policy 36 Development in the Wider Countryside states:

"Renewable energy development proposals will be assessed against the Renewable Energy Policies, the non statutory Highland Renewable Energy Strategy and where appropriate, Onshore Wind Energy: Supplementary Guidance."

Regarding public access, Policy 77 Public Access sets out that:

"Where a proposal affects a route included in a Core Paths Plan or an access point to water, or significantly affects wider access rights, then The Council will require it to either:

- retain the existing path or water access point while maintaining or enhancing its amenity value; or
- ensure alternative access provision that is no less attractive, is safe and convenient for public use, and does not damage or disturb species or habitats.

For a proposal classified as a Major Development, the Council will require the developer to submit an Access Plan. This should show the existing public, nonmotorised public access footpaths, bridleways and cycleways on the site, together with proposed public access provision, both during construction and after completion of the development (including links to existing path networks and to the surrounding area, and access point to water)."

10.3.2 The Caithness and Sutherland Local Development Plan (CaSPlan)

The CasPlan covers the area of Caithness and Sutherland within the Highland Council region and sets out the plan for the region, from its adoption in 2018, for the following 20 years. The primary focus of the Plan are the settlements and the communities, with respect to their employment, connectivity and environment.

Melvich and Portskerra, settlements to the north of the proposed development, has been identified as a 'Growing Settlement', in which the desired outcome of Policy 3 is stated in these areas as:

- *"take account of the issues and placemaking priorities identified for the individual Growing Settlements in 'Caithness Growing Settlements' and 'Sutherland Growing Settlements'; are likely to help sustain, enhance or add to facilities with proposals being located within active travel distance of any facility present;*
- *are compatible in terms of use, spacing, character and density with development within that settlement and demonstrate high quality design;*
- *can utilise spare capacity in the infrastructure network (education, roads, other transport, water, sewerage etc.) or new/improved infrastructure can be provided in a cost efficient manner, taking into account the Council's requirement for connection to the public sewer other than in exceptional circumstances;*
- *avoid a net loss of amenity / recreational areas significant to the local community; and*
- *would not result in an adverse impact on any other important heritage feature (including natural or built), important public viewpoint/vista or open space."*

With a further desired outcome for the areas, regarding employment:

"A strong, diverse and sustainable economy characterised as being an internationally renowned centre for renewable energy, world class engineering, land management and sea based industries and a tourist industry that combines culture, history, adventure and wildlife."

10.3.3 Modified Core Paths Plan (Caithness and Sutherland) Amended

The Highland Council (THC) has a duty under the Land Reform (Scotland) Act 2003 to identify Core Paths to satisfy the basic needs of local people and visitors for general access and recreation and provide links to the wider path network throughout the Highland region. The Caithness and Sutherland Core Paths Plan was amended on 29 April 2019, however objections were raised, and it was subsequently withdrawn, THC are now awaiting the outcome from the Public Inquiry before this can be formally adopted.

11.0 Other Environmental Issues

11.1 Guidance

11.1.1 Scottish Government Guidance

The Scottish Government's online information on onshore wind turbines, states that *"under certain conditions of geographical position, time of day and time of year, the sun may pass behind the rotor and cast a shadow on neighbouring properties. When the blades rotate, the shadow flicks on and off, the effect is known as "shadow flicker". It occurs only within buildings where the flicker appears through a narrow window opening. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the potential site."*

The Scottish Government's advice states that where shadow flicker could be a problem, *"developers should provide calculations to quantify the effect. In most cases however, where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters) "shadow flicker" should not be a problem. However, there is scope to vary layout/reduce the height of turbines in extreme cases".*

11.1.2 Planning and Best Practice

Planning guidance in the UK requires developers to investigate the impact of shadow flicker. This guidance does not specify how to assess the impact, or how to assess the significance of the impact. In Scotland current guidance is available in the Scottish Government Specific Renewables Advice Sheet on *"Onshore Wind Turbines"* (last updated May 2014) which replaced Planning Advice Note (PAN) 45, which is now revoked.

Onshore Wind Turbines (2014), states that:

"Under certain combinations of geographical position, time of day and time of year, the sun may pass behind the rotor and cast a shadow over neighbouring properties.

When the blades rotate, the shadow flicks on and off; the effect is known as "shadow flicker". It occurs only within buildings where the flicker appears through a narrow window opening. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the potential site.

Where this could be a problem, developers should provide calculations to quantify the effect. In most cases however, where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), "shadow flicker" should not be a problem. However, there is scope to vary layout / reduce the height of turbines in extreme cases".

In England, the National Planning Policy Framework (NPPF), Planning Practice Guidance identifies that: *"Only properties within 130 degrees either side of north, relative to the turbines can be affected at these latitudes in the UK – turbines do not cast long shadows on their southern side."*

Guidance from Northern Ireland in Best Practice Guidance to PPS18: Renewable Energy (Department for the Environment, 2009) states that:

"At distance, the blades do not cover the sun but only partly mask it, substantially weakening the shadow. This effect occurs first with the shadow from the blade tip, the tips being thinner in section than the rest of the blade. The shadows from the tips extend the furthest and so only a very weak effect is observed at distance from the turbines.

Problems caused by shadow flicker are rare. At distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the site. Where shadow flicker could be a problem, developers should provide calculations to quantify the effect and where appropriate take measures to prevent or ameliorate the potential effect, such as by turning off a particular turbine at certain times.

It is recommended that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day".

The above criteria are widely accepted in shadow flicker analysis for wind farms. Additionally, the 10 rotor diameter rule has been widely accepted across different European countries, and is deemed to be an appropriate assessment area, although there is potentially a need to take into consideration areas at different latitudes.

The Highland Council Onshore Wind Energy Supplementary Guidance (November 2016) states that *"Wind energy schemes should always be designed to avoid causing shadow flicker, blade glint, glare and light effects to any regularly occupied buildings not associated with the development. Where this cannot be achieved, the Council will expect wind energy developments to be located a minimum distance of 11 times the blade diameter of the turbine(s) from any regularly occupied buildings not associated with the development. Within a distance less than 11 times the blade diameter, a shadow flicker assessment will be required. The Council may support a scheme that relies on mitigation, where it is deemed to be effective. In such instances turbine shutdown systems will be the required mitigation. The increase in distance from the widely accepted 10 times rotor diameter to 11 is to account for the northern latitudes of Highland - this is in line with the conclusions of the DECC Update of UK Shadow Flicker Evidence Base, 2011."*

11.1.3 Scottish Government Onshore Wind Policy Statement

The Scottish Government published its Onshore Wind Policy Statement in December 2017.

It refers to a two-year study published by ClimateXChange (CXC) on 1 July 2015 which it commissioned to look at residential amenity impacts including shadow flicker. The study aimed to determine whether documentation submitted with planning applications and as assessed by competent authorities, is consistent with the impacts actually experienced once the wind farm is operational through case studies and surveys of residents. In the residents' survey some people recorded that they experienced shadow flicker even though they live in properties beyond

the distance at which the current method for assessing potential shadow flicker predicts it to occur.

The Scottish Government Onshore Wind Policy Statement - refresh 2021: Consultative Draft, was published in October 2021.

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