Spiorad na Mara Offshore Wind Farm

Offshore Project

Environmental Impact Assessment Report

Appendix 19.1: Policy, Guidance and Legislative Context , Volume 2c

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1 INTRODUCTION

1.1 OVERVIEW

1.1.1.1 This appendix of the Environmental Impact Assessment Report (EIAR) presents the policy, guidance and legislation relevant to the assessment of airborne noise of the proposed Spiorad na Mara Offshore Wind Farm (hereafter referred to as 'the Offshore Project') with respect to offshore airborne noise. This appendix accompanies **Chapter 19: Offshore Airborne Noise, Volume 2a** of the EIAR.

1.1.1.2 This appendix should be read in conjunction with the project description provided in **Chapter 3: Project Description, Volume 1a** and the relevant parts of the following chapters and appendices:

- **Chapter 19, Volume 2a**;
- **Appendix 19.2: Noise Modelling and Prediction, Volume 2c**;
- **Appendix 19.3: Baseline Noise Survey, Volume 2c**;
- **Appendix 19.4: Wind Shear Correction, Volume 2c**;
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1.1.2 PROJECT BACKGROUND

1.1.2.1 Spiorad na Mara Limited (hereafter referred to as 'the Applicant') is proposing to develop the Project. The Project is an offshore wind farm (OWF) that will consist of up to 60 fixed-bottom wind turbine generators (WTGs).

1.1.2.2 The Project will include both offshore and onshore infrastructure. This EIAR supports the application for the offshore components of the Project as outlined in **Chapter 1: Introduction, Volume 1a**. The offshore components of the Project (the 'Offshore Project') includes all infrastructure and activities located seaward of Mean High Water Springs (MHWS) within the Array Area and Offshore Cable Area of Search (OCAS) (**Figure 1.2: Offshore Project Location, Volume 1b**). Further detailed information is provided in **Chapter 3, Volume 1a**.

1.1.2.3 The Offshore Project is situated off the northwest coast of Isle of Lewis/*Eilean Leòdhais* and the Array Area is located approximately 5-13 km offshore and is approximately 161 km^2 in size. It will comprise WTGs, foundations, Offshore Cables, Offshore Substation Platform (OSP) (if required), and Landfall. The Array Area combined with the OCAS is defined as the Offshore Project Boundary. The water depths across the Turbine Area range from 37 m-67 m with the southwest corner of the Array Area reaching 72 m. The proposed WTGs and fixed foundations will be located within a Turbine Area of approximately 140 km^2, within the Array Area.

1.2 PURPOSE OF THIS APPENDIX

1.2.1.1 There is currently no UK policy, legislation or guidance that specifically addresses offshore airborne noise generated by OWFs. In its absence, the relevant national and local policy, and guidance pertaining to onshore wind farms that forms the basis of the offshore airborne noise assessment is presented in this appendix.

2 NATIONAL POLICY

2.1 NATIONAL PLANNING FRAMEWORK 4

2.1.1.1 National Planning Framework 4 (NPF4), published in 2023, sets out Scotland's long-term spatial strategy and national planning policies. Noise is referenced several times but only at a high level. The policies relevant to noise are summarised below.

2.1.1.2 Policy 4 aims to protect, restore and sustainably manage natural places. The sound environment of a place is an important aspect of natural heritage:

"Policy 4, Natural Places: a) Development proposals which by virtue of type, location or scale will have an unacceptable impact on the natural environment, will not be supported".

2.1.1.3 Policy 11 supports all forms of renewable energy development, including wind farms, grid transmission and distribution infrastructure. Project design will demonstrate that noise impacts on communities and individual dwellings are addressed:

"Policy 11, Energy: … e) In addition, project design and mitigation will demonstrate how the following impact are addressed: i) impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker".

2.1.1.4 Policy 23 helps to protect health and wellbeing, it requires that noise impacts are planned for and managed:

"Policy 23, Health and safety: … e) Development proposals that are likely to raise unacceptable noise issues will not be supported. The agent of change principle applies to noise sensitive development. A Noise Impact Assessment may be required where the nature of the proposal or its location suggests that significant effects are likely".

2.2 ONSHORE WIND POLICY STATEMENT 2022

2.2.1.1 As there is currently no Scottish Government policy addressing offshore wind in relation to noise, the Onshore Wind Policy Statement 2022 (ONWPS) has been referenced. This document establishes principles for applying ETSU-R-97 and IOA GPG noise assessment guidance.

2.2.1.2 Section 3.7 is concerned with noise and states:

"3.7.1. 'The Assessment and Rating of Noise from Wind Farms' (Final Report, Sept 1996, DTI), (ETSU-R-97) provides the framework for the measurement of wind turbine noise, and all applicants are required to follow the framework and use it to assess and rate noise from wind energy developments.

3.7.2. The Institute of Acoustics (IOA) Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise was published in May 2013 to support the use of ETSU-R-97 when designing potential windfarm schemes, and the monitoring of noise levels from generating sites. The Scottish Government recognises this guide as a useful tool which developers can use in conjunction with ETSU-R-97".

2.2.1.3 It goes on to state that ETSU-R-97 should continue to be applied until such time that new guidance is produced. There is no reference to offshore wind energy development.

2.3 OFFSHORE WIND ENERGY - DRAFT UPDATED SECTORAL MARINE PLAN

2.3.1.1 The Sectoral Marine Plan for Offshore Wind Energy published in May 2025, replaces the October 2020 version. It provides the spatial planning framework for the ScotWind, and Innovation and Targeted Oil & Gas (INTOG) leasing rounds.

2.3.1.2 The plan level assessments (Strategic Environmental Assessment (SEA)) identifies key potential environmental and socio-economic effects at 'N4', the option area where the Offshore Project is proposed, which include the following:

"…Effects on population and human health arising from noise, vibration, light and shadow flicker effects (N4 only)".

2.3.1.3 On page 40, the northern region, encompassing option areas N1, N2, N3 and N4, is discussed further including the following:

"The key environmental risks for the North region are: … Noise, vibration, light and shadow flicker effects on the west coast of the Isle of Lewis".

2.3.1.4 Page 54 confirms that there is a statutory requirement for the responsible authority to monitor significant environmental effects, of the implementation of the plan, as set out in Section 17 of the Environmental Assessment of Plans and Programmes Regulations 2004. It is described that this is required to be undertaken with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate remedial action. The significant environmental effects identified in Section 5 of the SEA are repeated, including:

"Effects on population and human health arising from noise, vibration, light and shadow flicker effects (N4 only)".

2.3.1.5 Page 71 confirms the following:

"There are also measures in place to protect against human exposure to noise pollution and disturbance from vibration. These are entrenched in both the Environmental Noise Directive (2002/49/EC) at the European level and the Environmental Protection Act 1990 and Environmental Noise (Scotland) Regulations 2006 at the UK and national levels, respectively".

2.4 PLANNING ADVICE NOTE (PAN) 1/2011: PLANNING AND NOISE

2.4.1.1 Planning Advice Note (PAN) 1/2011 provides advice on the role of the planning system in helping to prevent and limit adverse effects of noise. The PAN 1/2011 promotes the principles of good acoustic design and a sensitive approach to the location of new developments. It promotes the appropriate location of noisy developments within the vicinity of existing noise generating uses, to ensure that quality of life is not unreasonably affected and that new development continues to support sustainable economic growth.

2.4.1.2 Information and advice on noise assessment methods are provided in the accompanying Technical Advice Note (TAN): Assessment of noise. Included within PAN 1/2011 and the accompanying TAN are details of the legislation, technical standards and codes of practice for specific noise issues.

2.4.1.3 Regarding noise from wind farms, paragraph 29 of PAN 1/2011 identifies that:

> *"There are two sources of noise from wind turbines – the mechanical noise from the turbines and the aerodynamic noise from the blades… Good acoustical design and siting of turbines is essential to minimise the potential to generate noise".*

2.4.1.4 The document identifies that planning advice for renewable energy technologies is contained in the Scottish Government's web-based 'Onshore wind turbines: planning advice', which in turn references the use of the Energy Technologies Support Unit's R-97 document, The Assessment and Rating of Noise from Wind Farms (ETSU-R-97).

2.4.1.5 The accompanying TAN to PAN 1/2011 also refers to ETSU-R-97, including a summary of the associated assessment approach.

2.4.1.6 With regards to the assessment and control of noise from construction sites, the use of BS 5228-1 1997 is discussed. This version of BS 5228 was superseded in 2009 and amended in 2014 (see Section 4.50).

3 LOCAL POLICY

3.1 OUTER HEBRIDES LOCAL DEVELOPMENT PLAN – ADOPTED PLAN, 2018

3.1.1.1 Comhairle nan Eilean Siar (CnES) is the local authority for the Western Isles/*Na h-Eileanan an Iar*. The Comhairle does not currently have policy that addresses offshore wind in relation to noise.

3.1.1.2 The Outer Hebrides Local Development Plan sets out the CnES's land-use planning policies to facilitate sustainable economic growth in the islands. While the plan does not contain advice specifically applicable to offshore wind noise, the advice provided can be applied based on the guidance and policy related to onshore wind farms.

3.1.1.3 The context section for 'Energy & Heat Resources' states:

> *"The Comhairle wishes to capitalise on the significant renewable energy generation potential in and around the Outer Hebrides, e.g. wind and wave resources. There is already an established manufacturing base in the fabrication of energy equipment, and the Outer Hebrides has the potential to service and support further onshore and offshore activities and decommissioning. Equally the Islands could seek to expand energy from other sources including energy from heat and waste and to a lesser degree biomass".*

3.1.1.4 Policy EI 8: 'Energy and Heat Resources' identifies that:

> *"The Comhairle supports the principle of wind farm development in 'Areas with Potential for Wind Farms' … subject to a satisfactory assessment against other policies in this plan and Supplementary Guidance".*

3.1.1.5 The policy goes on to state:

> *"Proposals for all other renewable energy projects and oil and gas operations (including land based infrastructure associated with offshore projects) will be required to demonstrate…no significant adverse impact (including cumulative) on: … noise".*

3.1.1.6 The Plan states that all onshore wind energy developments will be assessed against the Council's 'Supplementary Guidance for Wind Energy Development'. There is no reference to offshore wind energy development.

4 GUIDANCE

4.1 ONSHORE WIND TURBINES: PLANNING ADVICE

4.1.1.1 As there is currently no Scottish Government guidance addressing offshore wind in relation to noise, the Scottish Government's web-based planning advice has been referenced. It advises that the Department of Trade and Industry's (DTI) document 'The Assessment and Rating of Noise from Windfarms' (ETSU-R-97) *"should be followed"*, stating:

"[ETSU-R-97]*... should be followed by applicants and consultees, and used by planning authorities to assess and rate noise from wind energy developments".*

and

"[it] *gives indicative noise levels thought to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable burdens on wind farm developers, and suggests appropriate noise conditions".*

4.1.1.2 Reference is made to reports by Hayes McKenzie for the Department of Energy and Climate Change (DECC) suggesting that best practice guidance is required to add to the way in which ETSU-R-97 should be implemented in practice. It is confirmed that:

"a previous report...by the same authors concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested. The Salford university report into Aerodynamic Modulation of Wind Turbine Noise...summarised the conclusions of the Hayes McKenzie report and investigated further complaints caused by amplitude modulation of aerodynamic noise (AM). Report findings were constrained by low incidence of AM and the low numbers of people adversely affected in the UK".

4.1.1.3 It is also recognised that the Institute of Acoustics (IOA) 'Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (IOA GPG) document:

"provides significant support on technical issues to all users of the ETSU-R-97 method for rating and assessing wind turbine noise, and should be used by all IOA members and those undertaking assessments to ETSU-R-97. The Scottish Government accepts that the guide represents current industry good practice".

4.2 OUTER HEBRIDES LOCAL DEVELOPMENT PLAN – SUPPLEMENTARY GUIDANCE FOR WIND ENERGY DEVELOPMENT

4.2.1.1 The Comhairle does not currently have specific guidance that addresses offshore wind in relation to noise, therefore, the Supplementary Guidance for Wind Energy Development is referenced. The guidance provides advice to assist in planning for onshore wind energy development in the Outer

Hebrides/*Na h-Eileanan Siar*. With reference to noise, the document sets out information and reporting requirements, and guidance on assessment methods and criteria to be adopted.

4.2.1.2 For construction, CnES (the Local Authority for the Outer Hebrides/*Na h-Eileanan Siar*) require details on the extent of the construction works, length of the construction period, proposed times, details of any borrow pit blasting and proximity to existing noise receptors. Proposals should take account of BS 5228-1 and BS 5228-2.

4.2.1.3 For operational wind turbine noise, the following is stated:

"[Given] *the low levels of background noise in the Outer Hebrides the Comhairle has adopted the following limits based on the lower limits of ETSU-R-97.*

a) During daytime (07:00-23:00, 35 dB $L_{A90,10min}$ or the Day-time Hours $L_{A90,\ 10min}$ Background Noise Level plus 5 dB(A), whichever is the greater;

b) during night hours(between 23:00-07:00), 38 dB $L_{A90,\ 10min}$, or the Night Hours $L_{A90,\ 10min}$ Background Noise Level plus 5 dB(A), whichever is the greater.

These limits are the maximum allowed for a specific development and would be measured from any noise sensitive premises, assuming there are no other consented wind turbines in the areas.

If there are other consented wind turbines within the vicinity then in addition to the limits above, the developer would have to demonstrate to the satisfaction of the planning authority, that the proposed development would meet the adopted cumulative limits:

a) during Day-time hours (0700-2300), 38 dB $L_{A90,\ 10min}$ or the Day-time Hours $L_{A90,\ 10min}$ Background Noise Level plus 5 dB(A), whichever is the greater;

b) during night hours (between 23:00-07:00), 40 dB $L_{A90,\ 10min}$, or the Night Hours $L_{A90,\ 10min}$ Background Noise Level plus 5 dB(A), whichever is the greater.

Developers will be required to submit evidence that the noise generated from a proposed wind farm can ensure compliance with the stated noise limits in this Policy, assessed in accordance with the Department of Trade and Industry publication "The Assessment and Rating of Noise from Wind Farms" (1996) and the Department of Energy and Climate Change publication "An Analysis of How Noise Impacts are considered in the Determination of Wind Farm Planning Applications" (2011) to the satisfaction of the Planning Authority".

4.2.1.4 In the section 'Community Amenity', it is stated that:

"wind farms should be located at a distance of at least 2 km from settlements".

4.2.1.5 In addition, it states:

> *"Planning applications for wind farms must be accompanied by evidence that the proposals have been assessed and found to have no unacceptable significant adverse impact on community amenity including no unacceptable impact on living conditions in relation to… noise".*

4.2.1.6 In the section 'Cumulative Impacts', it is stated that:

> *"Applications will be assessed for their cumulative impacts, taking into account turbines already consented and erected in the context of the natural and built environment, in particular with regard to noise, landscape, and visual amenity".*

4.2.1.7 In 'Appendix 3 Additional Sources of Information', the following documents are referenced:

- *"ETSU – Energy Technology Support Unit"* this is assumed to refer to ETSU-R-97;
- *"ETSU Noise Guidance"* this reference is to the Institute of Acoustics': *A Good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise* (IOA GPG);
- *"Analysis of How Noise Impacts are Considered in the Determination of Wind Farm Planning Applications' April 2011"* this reference is to a Hayes McKenzie Partnership Ltd document prepared for the Department of Energy and Climate Change;
- *"The Scottish Government's Technical Advice Note on the technical evaluation of noise assessments".* this is TAN to PAN 1/2001.

4.3 ENERGY TECHNOLOGY SUPPORT UNITS R-97 DOCUMENT: THE ASSESSMENT AND RATING OF NOISE FROM WINDFARMS (ETSU-R-97)

4.3.1.1 As referenced for use in PAN 1/2011, the online planning advice for renewable technologies: 'Onshore wind turbines: Planning Advice', and the OnWPS, ETSU-R-97 were written by a 'Noise Working Group' (NWG) including developers, noise consultants, and environmental health officers, set up in 1995 by the Department of Trade and Industry through ETSU (Energy Technology Support Unit).

4.3.1.2 This document presents a consensus view of the NWG and was prepared to present a common approach to the assessment of noise from onshore wind turbines. This document states that noise from wind turbines or wind farms should be assessed against site specific noise limits.

4.3.1.3 These limits are derived based on a set of acceptable lower limits, and an allowable exceedance above the prevailing background noise levels, including consideration to a range of prevailing wind speed conditions, relevant to a proposed development. The noise limits should be derived for external areas used for relaxation, or areas where a quiet noise environment is highly desirable. Separate limits are required for night-time and daytime periods. Night-time limits are derived drawing upon measured night-time background noise levels, whilst daytime limits are derived drawing upon the background noise levels measured during 'quiet daytime' periods.

4.3.1.4 Night-time is defined as the period 23:00-07:00, whilst 'quiet daytime' periods are defined as 18:00-23:00 on all days, as well as 13:00-18:00 on Saturdays and Sundays, and 07:00-13:00 on Sundays.

4.3.1.5 For the daytime, the suggested limits are 5 dB above the prevailing background noise level determined during quiet daytime periods, or 35-40 dB(A), whichever is the higher. The absolute criterion within the 35-40 dB(A) range is selected taking account of the Site environs (e.g. number of local receptors), the energy generation capacity of the wind farm (e.g. number of kilowatt Hours (kWh) that can be generated), and the associated duration and level of exposure.

4.3.1.6 During the night-time, the suggested limits are 5 dB above the prevailing night-time background noise level or 43 dB(A), whichever is the higher. The absolute criterion for the night-time is higher than that for the daytime, as the derivation of this limit is based on preventing sleep disturbance within a building whereas for the daytime, limits are based on occupation of external spaces used for relaxation.

4.3.1.7 It is required that the prevailing background noise levels are determined in terms of the $L_{A90,10min}$ noise index for both quiet daytime and night-time periods, for wind conditions ranging from 2-12 m/s.

4.3.1.8 The noise limits are calculated by undertaking a regression analysis of the $L_{A90,10min}$ background noise levels and the prevailing average wind speed for the same 10-minute periods, when measured or determined at 10 m above ground at the location of the proposed wind turbines. The allowable limit is then defined at +5 dB above the average noise level at each wind speed (as defined by the regression analysis), or the absolute noise level lower limit (or 'fixed element'), whichever is the higher (assuming no financial involvement with the scheme).

4.3.1.9 Where a property has a financial involvement in the scheme, the document allows a relaxation of the derived noise limits, stating that:

"It is widely accepted that the level of disturbance or annoyance caused by a noise source is not only dependent upon the level and character of noise but also the receiver's attitude towards the noise source in general. If the residents at the noise-sensitive properties were financially involved in the project, then higher noise limits will be appropriate".

and

"It is recommended that both the day and night-time lower fixed limits can be increased to 45 dB(A) and that consideration should be given to increasing the permissible margin above background where the occupier of the property has some financial involvement in the windfarm".

4.3.1.10 The ETSU guidance states that the derived limits should be applied to noise from the proposed wind farm or wind turbines in terms of the $L_{A90,T}$ index, and that the $L_{A90,T}$ of the wind farm noise is typically 1.5-2.5 dB less than the $L_{Aeq,T}$ measured over the same period.

4.3.1.11 The derived noise limits are applicable to both the aerodynamic (e.g. 'blade swish') and mechanical (e.g. generator related) components of wind farm noise.

4.3.1.12 Where noise from the wind farm is tonal, a correction of between 2 and 5 dB is to be applied to the wind farm noise. Guidance is provided on how to determine the level of correction required, but typically, the need for any applicable correction is confirmed by the wind turbine manufacturers.

4.3.1.13 It is stated within this document that:

> *"The NWG is of the opinion that absolute noise limits and margins above background should relate to the cumulative effect of all wind turbines in the area which contribute to the noise received at the properties in question. It is clearly unreasonable to suggest that, because a windfarm was constructed in the vicinity in the past which resulted in increased noise levels at some properties, that residents of those properties are now able to tolerate still higher noise levels. The existing windfarm should not be considered as part of the prevailing background noise".*

4.3.1.14 Accordingly, where an existing wind farm contributes to the prevailing background noise levels:

- It is necessary that significantly affected measurements are discarded in the determination of the underlying baseline conditions;
- It is necessary to either include for the contribution of that wind farm when assessing wind farm noise levels against the allowable noise limits, or correct for that contribution when deriving a limit applicable to the proposed wind farm operating in isolation.

4.3.1.15 ETSU-R-97 also details a simplified assessment methodology, which is based on the principle that if the lowest fixed element for the daytime noise limits (35 dB $L_{A90,T}$) can be met at high wind speeds, then the need to consider the limit element which is relative to the background noise levels can be discounted, because this would only be higher at such speeds.

4.4 THE INSTITUTE OF ACOUSTICS: A GOOD PRACTICE GUIDE TO THE APPLICATION OF ETSU-R-97 FOR THE ASSESSMENT AND RATING OF WIND TURBINE NOISE (IOA GPG)

4.4.1.1 The IOA GPG presents the report of a NWG assembled in response to a request from the DECC. The guide is intended to represent current good practice in applying the ETSU-R-97 method to assessing the noise impact of wind turbine developments with a power rating of over 50 kilowatts (kW).

4.4.1.2 The document provides clarification and updated guidance on a range of matters relating to ETSU-R-97 noise assessments, including consultation with relevant stakeholders, background noise survey methodology, noise survey data analysis, derivation of noise limits, noise prediction model input data, algorithms and parameters, cumulative impact assessment procedures, assessment

reporting, planning conditions and AM. A set of supplementary guidance notes (SGNs) also form part of the publication and include further specific detail for different technical areas:

- SGN 1: Data Collection;
- SGN 2: Data Processing & Derivation of ETSU-R-97 Background Curves;
- SGN 3: Sound Power Level Data;
- SGN 4: Wind Shear;
- SGN 5: Post Completion Measurements;
- SGN 6: Noise Propagation Over Water For On-Shore Wind Turbines.

4.4.1.3 The detail of the IOA GPG has been considered in the preparation of this assessment. Some of the key considerations relevant to this assessment are summarised as follows:

- Calculations of predicted onshore wind turbine noise may be carried out using ISO 9613-2: Acoustics – Attenuation of sound during propagation outdoors (International Organization for Standardization, 1996) (ISO 9613-2); preferred receptor heights, meteorological and ground absorption input parameters for this calculation procedure are given;
- SGN 6 presents advice on noise level prediction where propagation is over a large body of water, such as lakes and reservoirs. SGN 6 states *"This SGN does not cover noise propagation for offshore wind farms"*;
- Wind turbine sound power level source data should include appropriate uncertainty corrections. Guidance is given for determining when such uncertainty corrections have been inherently included in wind turbine source emission data;
- '*excess amplitude modulation*' (i.e. where the wind turbine noise has higher variability with momentary time than the 2-3 dB(A) considered within ETSU-R-97) is still the subject of research; current practice (at the time of publishing of the IOA GPG) in relation to determining applications for wind turbine developments is to not impose a planning condition specific to this phenomenon;
- A method is detailed within the IOA GPG to allow the effect of wind direction to be taken into account during noise level predictions. This method details a number of corrections based on the angle of the wind in relation to the position of the source and receiver, and the nature of the local ground (flat or complex).

4.4.1.4 The IOA GPG also confirms that the ETSU-R-97 noise level limits should be applied cumulatively and provides guidance on determining when a cumulative assessment is required as well as appropriate cumulative assessment methods for a variety of different scenarios. These scenarios include '*concurrent application'*, '*existing wind farm consented with less than total ETSU-R-97 limits*', '*existing wind farms consented to the total ETSU-R-97 limits currently operating'*, '*permitted wind farm consented to total ETSU-R-97 limits but not yet constructed*', and '*significant headroom present*'.

4.4.1.5 In the section entitled 'Cumulative impact assessment necessary', it is stated that:

"During scoping of a new windfarm development consideration should be given to cumulative noise impacts from any other wind farms in the locality. If the proposed wind farm produces noise levels within 10 dB of any existing windfarms at the same receptor location, then a cumulative noise impact assessment is necessary".

"Equally, in such cases where noise from the proposed wind farm is predicted to be 10 dB greater than that from the existing wind farm (but compliant with ETSU-R-97 in its own right), then a cumulative noise impact assessment would not be necessary".

4.4.1.6 This confirms that where noise levels from the new development are 10 dB(A) or more below the limits imposed on surrounding developments further consideration to cumulative impacts is not required.

4.4.1.7 The subsequent advice on appropriate assessment methods is then provided for a situation where the 10 dB difference check is not demonstrable:

"Concurrent applications.

Concurrent applications with no pre-existing wind farms permit the apportionment of the ETSU-R-97 limits on an energy basis to each wind farm from the outset. LPAs may wish to bring together concurrent wind farm applicants, such that apportionment can be discussed and agreed in conjunction with the applicants. Noise limits for all the wind farms operating cumulatively are derived at all noise sensitive receptors, just as they would be if one wind farm were being considered. Having derived noise limits for the cumulative effects of all the contributing wind farms, the wind farm developers can then work together to 'apportion' the noise limits for each wind farm operating in isolation such that the cumulative effects of all wind farms operating together cannot cause the cumulative noise limits derived in accordance with ETSU-R-97 to be exceeded. Thus the noise limits which meet with the requirements of ETSU-R-97 could only be exceeded if one or more of the wind farms were to operate above its own apportioned noise limits".

4.4.1.8 The text above positively promotes dialogue between the applicants of concurrent developments to seek to agree limit apportionment. Figure 7 of the document then presents an illustration of an apportioned limit between 2 proposed wind farms. That figure presents 2 different daytime noise limits, 1 for each development, the sum of which gives the total ETSU-R-97 limit. The figure also presents how the predicted levels from each of the 2 developments fall below their respective limits (and as such the combined levels when operating simultaneously would be below the total ETSU-R-97 daytime limit).

"Existing wind farm/s consented with less than total ETSU-R-97 limits. If an existing wind farm is consented to noise limits of less than the total ETSU-R-97 limits, a future wind farm applicant can then use these limits as a base within their predictions. Whether the existing wind farm is currently operating or not is immaterial to the assessment, as it will not be able to exceed its own conditions. It is becoming more common to apply noise limits which are less than total ETSU-R-97 limits because of cumulative considerations.

This should be undertaken in consultation with the LPA and relevant applicant(s). An example of this in practice is the apportionment of the ETSU-R-97 noise limit between concurrent applications. It may be the case that conditioning the scheme to the exact predicted noise levels (at all wind speeds) for the candidate turbine presented within the submitted noise impact assessment may constrain the applicant in future turbine procurement options. Therefore, a constant margin above the predicted noise levels (or below the total ETSU-R-97 limits) could be chosen which provides the applicant with procurement options but in combination with the neighbouring wind farm/s can still achieve the ETSU-R-97 limits".

and

"Significant presented headroom.

In cases where there is significant headroom (e.g. 5 to 10 dB) between the predicted noise levels from the existing wind farm and the total ETSU-R-97 limits, where there would be no realistic prospect of the existing wind farm producing noise levels up to the total ETSU-R-97 limits, agreement could be sought with the LPA as to a suitable predicted noise level (including an appropriate margin to cover factors such as potential increases in noise) from the existing wind farm to be used to inform the available headroom for the cumulative assessment without the need for negotiation or cumulative conditioning. This may be the case particularly at low wind speeds".

4.4.1.9 In addition to the above, under the section entitled '*Existing wind farm/s consented to the total ETSU-R-97 limits, currently operating',* the principle of a '*controlling property*' is described, i.e. in complying with the noise limits at one property (which for example may be in close proximity to a given wind farm), there would be limit headroom at another property (which for example may be at a greater distance from that wind farm). This principle can equally be applied where the limit in question is less than the total allowable ETSU-R-97 limit.

4.4.1.10 The document includes a table detailing the key points which good practice suggests should be included in assessment reporting, as duplicated in **Table 4-1**.

Table 4-1 IOA GPG key points for inclusion in a wind turbine assessment report for Policy, Guidance and Legislative Context

Topic	Reporting Requirements
Consultations	• Consultation with Local Planning Authority; • Environmental Health Officer input into selection of background noise measurement equipment.
Background measurements	• Number of monitoring locations; • Map showing monitoring locations; • Description of monitoring locations; • Description of noise environment; • Photos of monitoring locations; • Monitoring period; • Description of noise measurement equipment wind shield; • Certification/calibration of all equipment used and any calibration drift; • Wind (speed and direction) and rainfall measurement data sources; • Clear representation of excluded data in time histories or scatter plots; • Chart showing distribution of wind speeds and direction; • Cumulative issues in background measurements.
Noise predictions	• Prediction methodology; • Candidate wind turbine model; • Wind turbine source noise data (including noise-reduced modes if used); • Wind turbine source octave band noise levels; • Description of noise propagation/attenuation factors; • Atmospheric attenuation – assumed temperature and relative humidity; • Ground effects – Assumed ground factor; • Assumed receiver height; • Barrier/screening attenuation; • Wind direction filtering (if considered); • Noise contours.
Assessment	• Wind shear assessment method; • Derivation of prevailing background noise; • Type, order and coefficients of regression line; • Scatter data shown on plots; • Derivation of noise limits and numerical values; • Amenity noise limit; • Justification for amenity noise limit if chosen; • Night-time noise limit; • Financially involved noise limit; • Capping of noise limits at highest wind speed measured; • Comparison of predicted noise level with derived noise limits; • Correction from L_{Aeq} to L_{A90}. • Potential tonal content; • Properties covered by assessment; • Incorporated mitigation (wind turbines running in low noise mode) (if relevant); • Cumulative issues.

Source: IOA GPG Table 1

4.5 BRITISH STANDARD 5228-1:2009+A1:2014: CODE OF PRACTICE FOR NOISE AND VIBRATION CONTROL ON CONSTRUCTION AND OPEN SITES – PART 1: NOISE (BS 5228-1)

4.5.1.1 BS 5228-1 sets out techniques to predict the likely noise effects from onshore construction works, based on detailed information on the type and number of plant being used, their location and the length of time they are in operation. BS 5228-1 states *"At distances over 300 m noise predictions have to be treated with caution, especially where a soft ground correction factor has been applied, because of the increasing importance of meteorological effects"*. The BS 5228-1 prediction method is not applicable to noise propagation over large bodies of water.

4.5.1.2 The noise prediction methods can be used to establish likely noise levels in terms of the $L_{Aeq,T}$ over the core working day. This standard also documents a database of information, including previously measured sound pressure level data for a variety of different construction plant undertaking various common activities.

4.5.1.3 3 example methods are presented for determining the significance of construction noise impacts. In summary, these methods adopt either a series of fixed noise level limits, are concerned with ambient noise level changes as a result of the construction operations or a combination of the 2.

4.5.1.4 With respect to absolute fixed noise limits, those detailed within Advisory Leaflet 72: 1976: Noise control on building sites are presented. These limits are presented according to the nature of the surrounding environment, for a 12-hour working day. The presented limits are:

- 70.0 dB(A) in rural, suburban and urban areas away from main road traffic and industrial noise;
- 75.0 dB(A) in urban areas near main roads and heavy industrial areas.

4.5.1.5 The above noise level limits are applicable at the façade of the receptor in question (not free-field).

4.5.1.6 The standard goes on to provide methods for determining the significance of construction noise levels by considering the change in the ambient noise level that would arise as a result of the construction operations. 2 example assessment methods are presented, these are the 'ABC method' and the '5 dBA change' method.

4.5.1.7 The 'ABC method' is summarised in **Table 4-2**.

Table 4-2 Example threshold of potential significant effect at dwellings (construction noise) for Policy, Guidance and Legislative Context

Assessment category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,T}$)		
	Category A [A)]	Category B [B)]	Category C [C)]
Night-time (23:00-07:00)	45	50	55
Evenings and weekends [D)]	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00-13:00)	65	70	75
NOTE 2: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise. NOTE 3: Applied to residential receptors only.			
A) Category A: threshold values to use when ambient levels (when rounded to the nearest 5 dB) are less than these values. B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values. C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values. D) 19.00-23.00 weekdays, 13.00-23.00 Saturdays and 07.00-23.00 Sundays			

Source: BS 5228-1 Table E.1

4.5.1.8 With respect to the '5 dB(A) change' method, the guidance states:

> *"Noise levels generated by construction activities are deemed to be significant if the total noise (pre-construction ambient plus construction noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB L_{Aeq}, from construction noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant impact".*

4.6 REPORT FOR UK GOVERNMENT: A REVIEW OF NOISE GUIDANCE FOR ONSHORE WIND TURBINES (2023) (BEIS REPORT)

4.6.1.1 Prepared by WSP for the UK Government and published in September 2023, this study sets out the findings of a detailed literature review and extensive stakeholder engagement exercise. The review was aimed at answering the question as to whether existing noise assessment guidance for wind turbine noise should be updated in view of government policies on noise and commitments to net zero.

4.6.1.2 The review represents only an initial step in any process of updating existing guidance as may subsequently be progressed. The review identified guidance areas that warrant consideration for updating and provides recommendations for further evidence needed to support any future updates, should they be progressed.

4.6.1.3 The report confirms that:

> *"…the weight of evidence appears to indicate that wind turbine infrasound has no adverse effects on human health at typical exposure levels…"* and that; *"…due to the inherent characteristics of wind turbine sound, suitable controls on A-weighted sound levels are expected to also provide sufficient control for the potential impact of low frequency noise"*.

4.6.1.4 The BEIS Report itself does not provide new guidance, nor does it form, or function as, a replacement for ETSU-R-97, and it does not supersede any parts of the current policy or guidance frameworks in place, in Scotland or elsewhere in the UK.

5 GLOSSARY OF TERMS AND ABBREVIATIONS

5.1.1.1 A list of key terms and acronyms used in this Appendix are provided in **Table 5-1** and **Table 5-2**.

Table 5-1 Acronyms and abbreviations

Term	Definition
AM	Amplitude Modulation
BEIS	UK government Department for Business, Energy & Industrial Strategy
dB	Decibel
dB(A)	A-weighted decibel
CnES	Comhairle nan Eilean Siar
DECC	Department of Energy and Climate Change
DTI	Department of Trade and Industry
EIAR	Environmental Impact Assessment Report
IOA	Institute of Acoustics
IOA GPG	The Institute of Acoustics guidance document: *A Good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise* (2013)
BS	British Standard
ETSU	Energy Technology Support Unit
ETSU-R-97	Energy Technology Support Unit's R-97 document: *The Assessment and Rating of Noise from Wind Farms* (1996)
INTOG	Innovation and Targeted Oil & Gas
ISO	International Organization and Standardization
km	Kilometre
kW	Kilowatt
kWh	Kilowatt hour
NPF4	National Planning Framework 4 (2023)
NWG	Noise Working Group
MHWS	Mean High Water Springs
OCAS	Offshore Cable Area of Search
OHLDP	Outer Hebrides Local Development Plan (2018)
OnWPS	Onshore Wind Policy Statement (2022)
OSP	Offshore Substation Platform
OWESMP	Offshore Wind Energy – Draft updated Sectoral Marine Plan (2025)
OWF	Offshore Wind Farm
PAN	Planning Advice Note 1/2011: Planning and Noise (2011)
SGN	Supplementary Guidance Note
SEA	Strategic Environmental Assessment
TAN	Technical Advice Note
WTG	Wind Turbine Generator

Table 5-2 Glossary

Term	Meaning
the Applicant	Spiorad na Mara Limited (the Project owner)
A-weighting	Frequency weighted sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
$L_{A90,T}$	A statistical noise index defined as the level that is exceeded for 90% of the time over the measurement time-period T. The 'A' denotes that the level is determined with 'A-weighting' applied.
$L_{Aeq,T}$	The 'continuous equivalent sound level' noise index. A single-figure noise index that represents the constant sound level that would contain the same sound energy as the fluctuating noise experienced over the time-period 'T'. The 'A' denotes that the level is determined with 'A-weighting' applied.
Offshore Project	The offshore components of the Spiorad na Mara offshore wind farm (the Project) located seaward of Mean High Water Springs (MHWS).
Onshore Transmission Works (OTW)/ Onshore Project	The onshore components of the Spiorad na Mara offshore wind farm (the Project) located landward of Mean Low Water Springs (MLWS). The Applicant will seek consent for the OTW Project through a separate application and so does not form part of this application.
Project	The Spiorad na Mara offshore wind farm development. This term describes the whole development, including all offshore and onshore components.

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