Noise

Relevant Policy and Guidance

The noise assessment will be undertaken with reference to the following documents:

- ETSU-R-97 The Assessment and Rating of Noise from Wind Farms (The Working Group on Noise from Wind Turbines, 1996);
- PAN 01/2011 Planning and Noise and associated Technical Advice Note (Scottish Government, 2011);
- Onshore Wind Turbines: Planning Advice. Online planning advice, Scottish Government, last updated 28 May 2014.
- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (Institute of Acoustics (IoA), 2013);
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (British Standards Institution, 2014);
- HMSO Department of Transport (1988). Calculation of Road Traffic Noise; and
- The Highways Agency, Transport Scotland, Transport Wales, the Department for Regional Development (Northern Ireland) (2011). Design Manual for Roads and Bridges (DMRB), Volume 11, section 3, Part 7, Traffic Noise and Vibration.

Baseline

The proposed Development is located in a relatively sparsely populated area, although there are a number of individual properties directly adjacent to the Site. The noise environment surrounding these receptors is expected to be dominated by 'natural' sources, such as wind disturbed vegetation and forestry, watercourses (in places), birds and farm animals, with a varying influence in the ambient noise environment from adjacent operating windfarms.

Proposed Additional Baseline Work

An initial review of the baseline data surveyed for other windfarm schemes, and which are publicly available in the EIA Reports for those schemes, suggests that existing baseline levels have been sufficiently defined for the purposes of an assessment of operational noise in accordance with ETSU R 97 and best practice (see Table 1). Therefore, undertaking additional noise monitoring is not anticipated to be necessary, which in any case may have to be conducted with nearby adjacent operational wind turbines, and could therefore be contrary to best practice.

Potentially Significant Effects

During construction, noise could arise from both onsite activities, such as the construction of onsite access tracks, turbine foundations, the substation/control building etc., and also from the movement of construction related traffic both onsite and travelling on public roads to and from the Site.

During operation, wind turbines have the potential to create noise effects through both aerodynamic noise and mechanical noise. Other operational elements of the proposed Development with the potential to create noise effects (including the proposed energy storage facility) will be located remote from any noise sensitive receptors. Consequently the operational noise assessment will focus on the noise emitted from the proposed wind turbines.

Proposed Assessment Methodology and Approach

The noise impact assessment will assess the effects of construction (including traffic) of the proposed Development and operational noise of the wind turbines on nearby noise sensitive receptors (including cumulatively with nearby windfarms as necessary). The assessment will identify where significant effects may occur, what mitigation measures may be necessary, what residual effects there may be and what post commissioning monitoring will be undertaken.

The study area for the assessment will comprise the nearest noise sensitive receptors considered to be representative of residential dwellings in the immediate vicinity that may experience noise effects from construction or operation of the proposed Development based on professional judgement and initial noise modelling. Receptors will be agreed with the nominated Environmental Health Officers (EHOs) from Dumfries & Galloway Council and East Ayrshire Council

as appropriate. An initial review of those receptor locations nearby and which require to be assessed is shown below in Table 1. For each receptor, relevant information are discussed, which it is proposed to reference when assessing noise from the proposed Development.

Table 1: List of receptor locations adjacent to the proposed Development which may require operational noise to be assessed. Included for each receptor is a discussion of sources of information on background noise levels and derived ETSU R 97 noise criteria.

Receptor (Easting, Northing)	Assessment of the Proposed Development
Hillend (268201, 608890)	This location has noise limits already defined for the operational Harehill Windfarm and the operational Harehill Extension Windfarm. These limits will be used as the basis of the assessment of the proposed Development and reference background noise levels from which these limits derive.
Bank Cottage (270530, 606420) Glenglass (270796, 606363) Glenglass Cottage (272954, 607106)	The noise impact assessment report for the Sanqhuar II Windfarm stated these locations were derelict and were not assessed. It is proposed to not assess these locations for the proposed Development. Should assessment be required, it is proposed to assess the proposed Development by reference to limits which are already defined for these locations in the Whiteside Hill Windfarm consent or the Sanquhar Windfarm consent.
Polskeoch (268688, 602320)	Background noise levels were surveyed for the consented Lorg Windfarm, from which consent noise limits were derived. These background noise levels would be referenced for assessment of the proposed Development.
Dalgonar (270038, 603129)	The background noise levels were surveyed for the proposed Sanqhuar II Windfarm and ETSU-R-97 criteria defined. These criteria would be referenced for assessment of the proposed Development.
Polgown (271866, 603844)	Background noise levels were surveyed for the proposed Sanqhuar II Windfarm and ETSU-R-97 criteria defined in the Sanqhuar II noise impact assessment report. These criteria would be referenced for assessment of the proposed Development.
Chanlockhead (275336, 600219)	The noise impact assessment report for the Sanqhuar II Windfarm stated this location was derelict and not assessed. It is proposed to not assess this location for the proposed Development.
Shinnelhead (272926, 599169)	Background noise levels were surveyed for the proposed Sanqhuar II Windfarm and ETSU-R-97 criteria defined in the Sanqhuar II noise impact assessment report. These criteria would be referenced for assessment of the proposed Development.
Cairnhead (270133, 597200) Corlae (265835, 597727)	Background noise levels were surveyed for the consented Lorg Windfarm at Nether Holm of Dalquhairn, from which consent noise limits were derived. These background noise levels would be referenced for assessment of the proposed Development.
Upper Holm of Dalquhairn (265547,599285) Nether Holm of Dalquhairn (265527,599008)	Background noise levels were surveyed for the consented Lorg Windfarm at both locations, from which consent noise limits were derived. These background noise levels would be referenced for assessment of the proposed Development.
Lorg (266850, 600875)	The location will no longer be a residential receptor once the Lorg Windfarm is operational. However should the Lorg Windfarm not become operational this location could be a potential receptor location and require assessment. Background noise levels were surveyed for the consented Lorg Windfarm at Windfarm at Nether Holm of Dalquhairn, from which consent noise limits were derived both locations, from which consent noise limits were derived for both Cairnhead and Corlae (see above). These background noise levels would be referenced for assessment of the proposed Development.
Craig An Dhu / Lynn View (262729, 605695)	The noise impact assessment report for the Sanqhuar II Windfarm was based on background noise levels from Pencloe Wind Farm Decision Notice. These

Craig (263442, 606454)	locations are likely to be sufficiently distant that noise from the proposed Development would not be acoustically important. This would be determined through reference to the ETSU-R-97 criteria used for these locations in the Sanqhuar II Windfarm noise impact assessment report.

The assessment of construction noise effects would be undertaken in accordance with the guidance contained within BS 5228:2009+A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open sites. Part 1: Noise (BS 5228-1). An assessment of potential impacts arising from any changes in traffic flows as a result of the proposed Development will also be undertaken as part of the construction noise assessment. Where necessary, appropriate levels of mitigation would be identified, in accordance with best practice, to ensure that noise levels are acceptable during the construction phase.

The assessment of operational noise effect will be undertaken using ETSU-R-97 'The Assessment of Rating of Noise from Wind Farms' (The Working Group on Noise from Wind Turbines, 1996). The report defines a procedure for assessing and rating wind farm noise.

ETSU-R-97 recommends that noise limits should be set relative to existing background noise levels at the nearest receptors and that these limits should reflect the variation in background noise with wind speed. Separate noise limits apply for day-time and for night-time periods. Daytime limits are chosen to protect a property's external amenity, and night time limits are chosen to prevent sleep disturbance indoors, with windows open.

Based on the approach set out in Table 1 above and the adopted quiet day and night-time wind varying background noise levels for each identified noise sensitive receptor, noise immission limits will be derived in accordance with the methodology set out in ETSU-R-97. The significance of the predicted scheme noise immission levels will then be determined against these criteria.

A representative wind turbine will be nominated for the assessment of noise from the operational development and meet the design requirements for the proposals. A computer model will be constructed and used to predict noise levels resulting from the operation of the proposed Development, based on the methodology detailed in ISO 9613-2:1996, with the specific modelling procedure defined in the IOA Good Practice Guidance (2013).

Matters to be Scoped Out

Groundborne vibration resulting from the operation of wind turbines is imperceptible at typical receptor separation distances and is therefore proposed to be scoped out from the noise impact assessment.

Noise associated with the operation of the substation and routine maintenance visits and operational traffic is likely to be negligible, and therefore would be scoped out of the noise impact assessment. Subject to it being carefully located, noise from the proposed energy storage facility is also likely to be negligible and consequently would be scoped out of the noise impact assessment. This will be confirmed with consultees once the energy storage facility location has been finalised.

Due to advances in turbine design, low frequency noise and vibration from turbines has been reduced. The Scottish Government references a report for the UK Government and concerning Low Frequency Noise notes that:

"…there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines that were tested."

Therefore, it is proposed that low frequency noise is scoped out from the impact assessment.

Consultee Questions

- Do consultees agree with the proposed approach to the noise and vibration assessment as set out above?

Legend

- Site Boundary
- Site Boundary 2km Buffer
- Indicative Turbine Location
- Local Authority Boundary

Residential Receptors within 2km of Site Boundary

- Residential
- Residential - Potenially Inhabited

East Ayrshire

Dumfries and Galloway

260000 265000 270000 275000 280000

610000 605000 600000

N

1:60,000 Scale @ A3

0 1 2 3 Km

Rev	Date	By	Comment
A	14/02/20	LM	First Issue.

Euchanhead Renewable Energy Development

Scoping Report

Residential Receptors

Drg No	00481.00052.0102.0
Rev	A
Date	14/02/20
Figure	1

Datum: OSGB36
Projection: TM