

Scope of Works: Onshore Wind Developments in the Eskdalemuir Seismic Array Region

Background to Eskdalemuir

The Eskdalemuir Seismic Array is a seismological monitoring station in Dumfries and Galloway which forms part of the UK's obligations under the Comprehensive Test Ban Treaty. The array's operation can be compromised by excessive seismic noise in the vicinity, which can be produced by wind turbines operating around the array.

In May 2005, Scottish Ministers and the Ministry of Defence (MoD) issued a technical site direction with a safeguarding map to relevant planning authorities in England and Scotland as well as Scottish Ministers. This direction advised that any sites within 50km of the array would require consultation with MoD before determination. This 50km radius is often referred to as the 'consultation zone'.

Within the consultation zone there is an existing hard no-build area at a radius of 10km from the array – any applications for windfarms within 10km will be objected to by MOD due to the unacceptable impact they would have on the array.

In 2005, a Report by Styles recommended a threshold (commonly referred to as the "noise budget") of 0.336 nm of seismic noise disturbance would prevent the array's operation being comprised. Exceeding the 0.336 nm threshold would compromise the array's detection capabilities.

This was followed by the 2014 work undertaken by Xi Engineering on behalf of the Eskdalemuir Working Group, which developed a spreadsheet tool enabling the MoD to manage this seismic ground vibration threshold and thereby safeguard the detection capabilities of the array.

The MOD's position is that, at present, the threshold has been reached and that it requires to object to all applications in order to preserve the array's detection capabilities.

Unlocking potential capacity whilst safeguarding the array will require decisive and meaningful action from the Scottish Government and UK Government. To do so, we must recognise:

- Safeguarding of the array lies within the MoD policy remit.
- Maximisation of renewable energy deployment lies within the Scottish Government policy remit.

We are aware that the MoD's management approach is due to be reviewed and the Scottish Government remains engaged with MoD as they determine next steps for developing policy on this matter.

Work Done to Date

Through a [series of technical evaluations and studies](#), the Scottish Government have suggested that the algorithm used by the MoD to calculate the budget takes a conservative approach and, by design, over-estimates the seismic contribution of each wind turbine.

The Scottish Government has engaged with MoD to seek their approval of data collected and are seeking agreement that MoD will adopt this evidence-based approach and adjust the calculation for budget utilisation.

It is important to note that the limited 0.336nm budget remains applicable and unchanged. Exceeding the 0.336 nm threshold would compromise the array's detection capabilities.

Proposed Approach(es)

Following these conversations and reflecting on the results of the recent draft Onshore Wind Policy Statement consultation, as well as the multi-phased technical work, the Scottish Government are minded to pursue the following approaches:

1. Establishing a Seismic Impact Limit for Eskdalemuir Seismic Array and the consultation zone

In order to secure a minimum additional capacity of 1 GW within this zone and encourage the use of turbines with the lowest seismic impact, the Scottish Government would require that any proposal yet to be determined must limit the seismic impact of each individual turbine within the consultation zone to $0.00809 \text{ nm.MW}^{-0.5*}$, and ensuring the 0.336nm threshold is not exceeded

*This limit is based on calculations undertaken by Xi Engineering on behalf of the Scottish Government.

2. Deployment Maximisation Zone at the Eskdalemuir Seismic Array

To aid in protection of the array, in addition to maximising potential for onshore wind deployment in areas with lesser impact on the array, we would replace the existing 10km exclusion zone with a 15 km exclusion zone. This means that no turbine could be constructed within a 15 km radius of the Eskdalemuir Seismic Array. This would apply only to applications submitted after the finalisation of such an approach.

It is important to note that neither of these suggested approaches are finalised and understanding the levers and powers at Scottish Government, UK Government and MoD disposal is a key element of developing these approaches and their implementation.

The Scottish Government therefore suggest the Eskdalemuir Working Group, under its reformed membership, seek to develop a guidance document for development of

onshore wind within the Eskdalemuir Consultation Zone. Through this guidance the Eskdalemuir Working Group will explore development of the below:

- The process for engagement with planning authorities and/or the Energy Consents Unit at Scottish Government and/or BEIS at UK Government on these matters;
- The process for engagement with Ministry of Defence on these matters;
- A set of criteria to test turbine makes and models against ensuring developers can make decisions factoring in a turbine's seismic impact;
- Explore the potential approaches set out and how these would be applied

Timescales

The EWG propose that this work should commence Q2 2023 with a view to having a draft ready for consultation by Q4 2023.