UK Government

Technical Guidance for Managing Onshore Wind Turbine Interference with the Eskdalemuir Seismic Array

Safeguarding the Array to Enable Onshore Wind Development

Department for Energy Security and Net Zero (2026)

Contents

1. Introduction and Background

1.1 The Eskdalemuir Seismic Array (the Array) is a seismological monitoring station in the Southern Uplands of Scotland that was established in 1962 to detect seismic signals from nuclear explosions. Continuously operating and safeguarding the Array ensures that the United Kingdom would be able to comply with its international obligations under the Comprehensive Nuclear Test Ban Treaty (CTBT), if and when it is ratified.[1]

1.2 The CTBT bans any nuclear weapon test explosions or any other nuclear explosions, for military or civil purposes, and establishes a complex verification system to monitor compliance. Ending nuclear test explosions would constrain the development of new types of nuclear weapons and would therefore represent an important step towards global disarmament, as well as contributing significantly to nuclear non-proliferation. The Array is part of the verification and monitoring system envisaged under the CTBT. It is the only such site within the UK.

1.3 The Array is the UK's primary asset for monitoring underground nuclear tests. In addition to the UK's international obligations under the CTBT, it is also used to inform ministers on possible nuclear testing and explosions by countries of interest. The Ministry of Defence (MOD) considers that it is essential to national and global security that the Array is protected.

1.4 In 2004 the MOD (as represented by the AWE PLC), academics from Keele University, and representatives from the wind industry undertook a research project to consider the potential seismic interference that onshore wind turbines can cause to the detection capabilities of the Array. The subsequent 2005 'Styles Report' found that onshore wind turbines emit seismic ground vibrations (SGVs) in the form of blade-pass and structural resonance. The report found that SGVs from onshore wind turbines can be detected in the frequency band of interest to the Array (0.5Hz-8Hz).

1.5 In 2025, the Planning and Infrastructure Act made provisions for the Secretary of State to make regulations regarding a unique safeguarding framework around applications for wind generating stations which may affect relevant seismic array systems[2]. The Act provides powers for the Secretary of State to lay out an Exclusion Zone and Restricted Zone around a relevant seismic array system; to require applicants making an application within the Restricted Zone to generate and submit seismic impact data; and to require planning decision-makers to consult with MOD for applications within the Restricted Zone. The Act also provides powers for those regulations to require a planning decision-maker – which here, could include a Local Planning Authority, the Scottish Ministers, or the

[1] The CTBT opened for signature in 1996, however it cannot come into force until all countries have signed and ratified it. The UK signed the CTBT in 1996 and ratified it in 1998. The Nuclear Explosions (Prohibition and Inspections) Act 1998 ("1998 Act") implements the CTBT into domestic law. The 1998 Act will not enter into force until the CTBT itself does.
[2] Planning and Infrastructure Act 2025, s30.

Secretary of State – to refuse, or decline to determine or accept, planning applications relating to wind generating stations under certain circumstances.

1.6 This draft Technical Guidance document sets out how this framework should operate, and in particular the process through which developers of onshore wind generating stations, planning authorities and the MOD should work together to consider and control for the seismic impacts that onshore wind turbines can have on the Eskdalemuir Seismic Array.

1.7 To ensure an efficient, timely and efficacious development process that safeguards the detection capabilities of the Array, this Guidance:

1.7.1. Sets out clear instructions for how planning applications for wind generating stations should be treated within specific zones around the Array;

1.7.2. Provides technical information to enable the accurate measurement, or prediction, or both, of seismic impacts from wind turbine developments;

1.7.3. Details how the planning process can act as a mechanism to facilitate engagement between the relevant parties; and

1.7.4. Signposts best practice information and tools for use by relevant stakeholders.

1.8 Optimising onshore wind deployment is the responsibility of the UK and Scottish Governments, with the responsibility for planning and consenting being devolved. The UK Government also has responsibilities for energy policy through DESNZ and for defence through the MOD. The safeguarding of the Array lies within the defence remit of the MOD. The overall objective of the Government is to optimise the deployment of new and repowered onshore wind development, while ensuring the safeguarding of the operational effectiveness of the Array.

1.9 Please note that this Technical Guidance Document is in draft form for consultation purposes only. This draft guidance does not represent a final position from Government and should not be used in an operational context by local planning authorities, applicants for wind turbine developments, or any other interested stakeholder during or after the consultation period.

2. Limiting the Cumulative Impact of Seismic Ground Vibrations Produced by Wind Farm Developments

Setting a Threshold

2.1 There is a Threshold of cumulative seismic ground vibrations (SGVs) produced by wind generating stations above which the detection capabilities of the Array are considered to be compromised. The Threshold is set at 0.336 nanometres (nm).

Zoning around the Eskdalemuir Seismic Array

2.2 Onshore wind developments proposed within 15km of the Array are determined to cause a disproportionate level of interference to the detection capabilities of the Array. This area is defined as the 'Exclusion Zone'. Planning applications for wind generating stations within the Exclusion Zone will be declined for acceptance or determination by the relevant Determining Authority on this basis, according with the process set out in section 4.4 of this Guidance document.

2.3 The Area between 15 and 50km from the Array is defined as the Restricted Zone. In the Restricted Zone, the MOD will assess the predicted cumulative SGVs of proposed wind turbine developments against the Threshold, according with the process as set out in Chapter 6 of this guidance document. Determining Authorities are required to have due consideration of the assessment made against the Threshold by the MOD, and where MOD have objected on these grounds, Determining Authorities must refuse the application accordingly, as set out in Chapter 7 of this guidance document. Where MOD have not objected on these grounds, Determining Authorities may continue to determine the application as normal.

2.4 The Exclusion Zone is therefore defined as extending in a 15km radius from the crossover point of the Array and the Restricted Zone is defined as extending in a radius between 15–50km from the crossover point of the seismic sensor array. These are the areas to which this guidance document applies.

2.5 A map of the Exclusion and Restricted Zones is provided at Annex 2 and should be referred to by applicants, Determining Authorities and the MOD when determining proposals for wind generating stations.

Applying a Seismic Impact Limit Within the Restricted Zone

2.6 To allow for optimal development of wind generating stations in the Restricted Zone, SGVs of wind turbine developments are controlled by a Seismic Impact Limit (SIL).

2.7 The SIL is applied to each individual turbine within a proposed development. The SIL is expressed in nanometres per square root of a megawatt (nm/√MW), representing the predicted ground vibration contribution from a single turbine.

2.8 The SIL is calculated by measuring the amplitude of the groundwave generated by the given turbine (in nanometres) that is detected at the Array, relative to the output power (in megawatts). It can be expressed by the following formula:

$$Seismic\ Impact\ Limit = \frac{Amplitude\ at\ EKA}{\sqrt{Power}}$$

2.9 The SIL is set at a single point between 0.004614 – 0.005479 nm/√(MW). Applicants must generate readings for the SGVs of their proposed turbines for assessment against the SIL according with the process and guidance set out under Chapter 3 of this Technical Guidance Document.

2.10 The MOD will continue to operate its Safeguarding Approach alongside the operation of the SIL, whereby the MOD would object if a proposed development, taken with already consented and/or operational development, and any pending applications which have already been noted by the MOD, would cumulatively result in the Threshold being breached. This process is set out under Chapter 6 of this guidance document.

2.11 For projects whose generating capacity may be constrained by the SIL, mitigation of the SGV of the turbines may be considered. The Applicant is expected to undertake and expense the testing of mitigation solutions separately to and in advance of the submission of their planning application. Consent conditions cannot be used to implement testing of mitigation solutions post-consent. Any mitigation measures must, in each case, be approved by the MOD, which must always protect the operational effectiveness of the Array. Using mitigation solutions to prove compliance with the SIL is discussed at sections 3.13 - 3.14 of this guidance document.

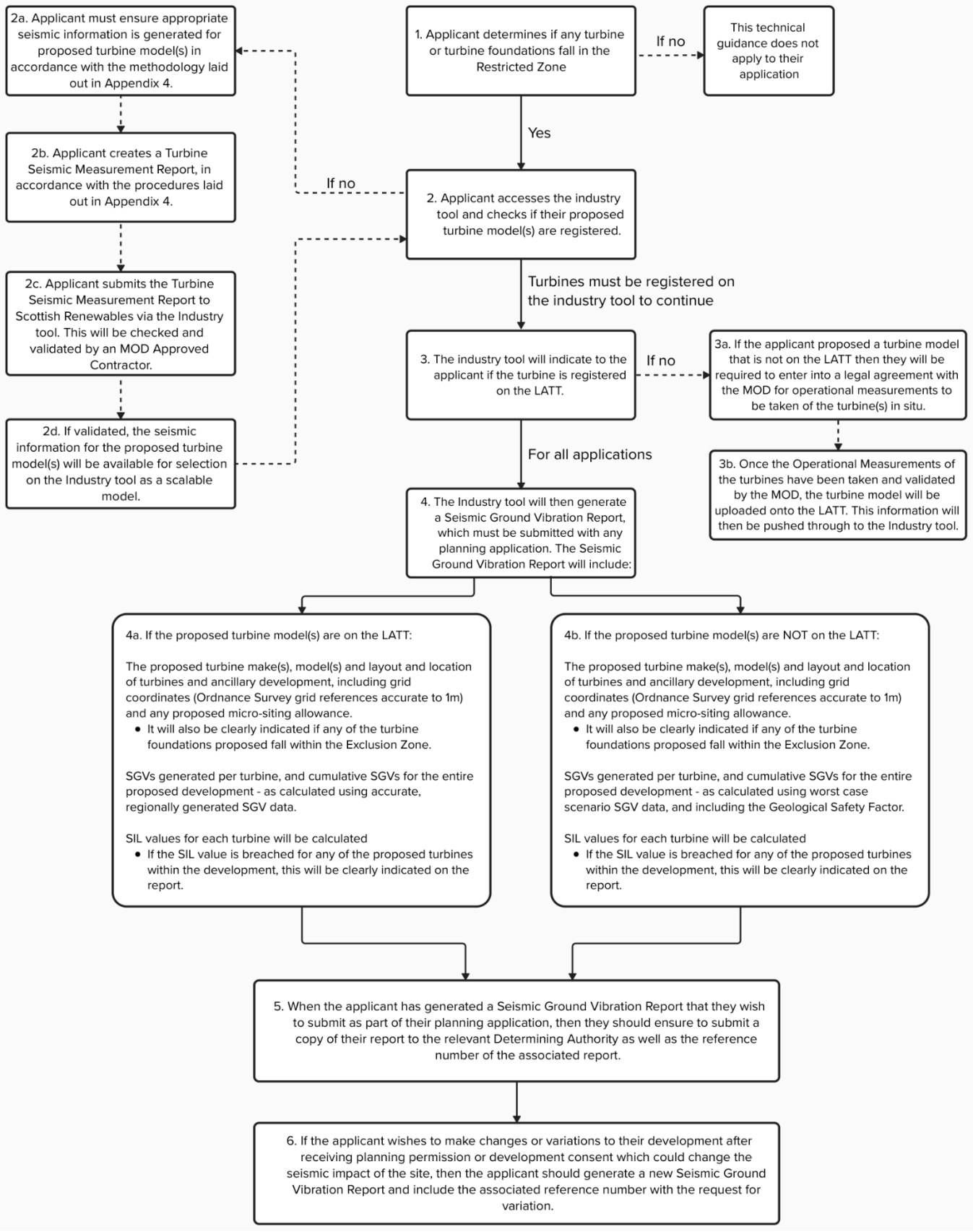
3. Generating Seismic Impact Information for Wind Turbines Before Submitting an Application

3.1 The applicant must generate SGV information for each of their proposed turbines to ensure their wind farm in compliance with the SIL. This is separate to any formal pre-application processes undertaken as part of planning applications; however, as usual, applicants are encouraged to engage with all mandatory consultees and the Determining Authority in advance of submitting their application.

3.2 SGV Reports must be generated using the open access Eskdalemuir Seismic Budget Calculation Tool ('the industry tool'). The industry tool uses unique turbine seismic signatures derived from standardised seismic measurement methodologies accepted for use within the Restricted Zone, together with applicant-provided site and layout information (including micro-siting allowance and specific turbine details), to structure the data required for safeguarding assessment. The industry tool is publicly accessible, with information on access and use available from the Eskdalemuir Working Group Web Page:
https://www.scottishrenewables.com/membership/policyupdates/policy-making-process/onshore-wind/eskdalemuir-working-group

3.3 Please take time to familiarise yourself with this industry tool if it is of interest. Once the Turbine information has been submitted into the tool; a Seismic Ground Vibration Report (SGV Report) will be generated. This SGV Report should be submitted with a planning application to the relevant Determining Authority. For a template of the SGV Report, see Annex 6 (hosted on Scottish Renewables).

Figure 1 – A flow chart to demonstrate how an applicant produces the necessary Seismic Ground Vibration Report which would need to be submitted alongside a planning application.



Turbine Seismic Signatures

3.4 Turbine seismic signatures are unique readings that are produced by a specific turbine model. These turbine seismic signatures can then be interpolated through the Algorithm to determine the likely amplitude of the SGVs detected at the Array within the Restricted Zone. As the SGVs can be predicted through the Turbine Seismic Measurement Report's input into the Algorithm, it acts as a scalable model.

3.5 To ensure effective safeguarding of the Array, there are two separate lists of turbine models:

- One list is managed by the MOD as a part of their safeguarding approach; all of these turbine models have been tested in the Eskdalemuir region in accordance with the measures set out in Annex 4 and Annex 5 (hosted on Scottish Renewables), and has their findings approved by the MOD. This list is referred to as the List of Approved Turbine Types (LATT).

- The other list is managed by Scottish Renewables and can be found in the industry tool linked in section 3.2. These turbine models have been tested outside of the Eskdalemuir region in accordance with the measures set out in Annex 4 (hosted on Scottish Renewables), and had their findings verified by an MOD approved contractor. This list is referred to as the Approved Turbine List (ATL).

Approved Turbine List

3.6 For an applicant to be able to propose any given turbine model for a development in the Eskdalemuir region, the turbine model needs to have been tested in accordance with the measures laid out in Annex 4 (hosted on Scottish Renewables). If an applicant wishes to propose a turbine that is not currently registered on the ATL, then it is their responsibility to ensure that these tests are completed – as demonstrated in Step 2a-2d of the Flow Chart (Figure 1).

List of Approved Turbine Types

3.7 To ensure effective safeguarding of the Array, the MOD holds a list of turbine models that have been tested in situ within 50km of the Array. This list fully accounts for the geographical and geological factors found in the Eskdalemuir region which affect the SGVs that can be detected at the Array. Upon validation and approval of regional seismic data from the MOD, this allows for a more accurate interpolation of the SGVs produced by turbines within the Restricted Zone.

3.8 If an Applicant proposes a turbine model(s) for their development that is on the LATT, then their Turbine Ground Vibration Report, which is produced from the industry tool will include the information shown in Step 4a of the Flow Chart (Figure 1).

3.9 If an Applicant proposes a turbine model that is on the ATL, but not on the LATT, then the candidate will be required to include a Geological Safety Factor. The Geological Safety Factor has the effect of applying a margin of error to the data, generating a provisional turbine seismic signature that assumes worst-case SGV emissions. The Applicant does so at the risk of their application being deemed non-compliant when assessed against the seismic impact limit and predicted cumulative SGVs. If an Applicant opts to submit data on a turbine that is not included in the List of Approved Turbine Types, they will be required to enter into an agreement with the MOD (see bullet 6.6 and demonstrated by Steps 3a and 3b of the Flow chart (Figure 1)) that will oblige the Applicant to undertake operational measurements of the proposed turbine in situ, should they receive consent for their development.

3.10 If an Applicant chooses to propose a turbine model that is not on the LATT, then their associated Seismic Ground Vibration Report produced from the industry tool will include the information shown is Step 4b of the Flow Chart (Figure 1).

Development Data

3.11 The applicant must input into the industry tool:

- site name and address;
- number of turbines;
- layout and location of turbines and ancillary development, including grid coordinates (Ordnance Survey grid references accurate to 1m) and any proposed micro-siting allowance (which will be assessed on a worst-case basis by the MOD);
- maximum hub height and maximum rotor diameter;
- maximum nameplate power rating of proposed turbines; and
- turbine make and model.

The dataset which the applicant inputs must be complete and internally consistent, and must represent the maximum reasonably foreseeable design envelope of the proposed development.

3.12 Using the registered turbine data and applicant inputs, the industry tool will generate a Seismic Ground Vibration Report summarising the structured input data and the predicted seismic impact of the development. A template of the Seismic Ground Vibration Report is provided at Annex 6 (hosted on Scottish Renewables). The report will identify whether any of the proposed turbines and/or turbine foundations are within the Exclusion Zone, the predicted SGV contribution of each turbine, and will indicate if all the turbines within the development are compliant with the Seismic Impact Limit. The report will also indicate the cumulative SGV contribution of the site to the Threshold.

Mitigations

3.13 Where one or more turbines would exceed the Seismic Impact Limit, the prospective applicant may wish to consider mitigations to reduce the seismic impact of the development. Developers may wish to make amendments to site parameters, such as the position of turbines or their make, model or rated power, in order to bring the turbines below the Seismic Impact Limit ahead of submitting their planning application.

3.14 The developer may also wish to implement technical mitigations which would alter the seismic signature of turbines used, such as software or engineering changes. For any form of software or engineered mitigation, the developer will, at its own expense, be required to test the mitigation in the field in advance, outside of the Eskdalemuir Restricted Zone, against the proposed turbine model and provide evidence of any measured mitigation to the MOD. The MOD can choose to verify the data and approve the mitigation. However, the MOD is not compelled to do so, to accept the findings of any mitigation testing, nor to engage with any further testing or assurance. Any such mitigation must be proven to the MOD's reasonable satisfaction in advance of the submission of an application. Until the MOD is willing to engage with developers on mitigation which may be applied through software or engineered solutions, developers should mitigate the seismic impact of their development through amendments to site parameters (noted above in para 3.11).

4. Submitting a Planning Application

4.1 Once the development proposal has been finalised for submission to the Determining Authority, the applicant must designate the dataset within the tool as submitted. The submitted dataset will be locked and assigned a reference identifier. The corresponding Seismic Ground Vibration Report and reference identifier will form the definitive applicant submission for Array safeguarding purposes.

4.2 For the purposes of assessment under this guidance, and in addition to other requirements set out under relevant planning policy and regulations, applicants for wind generating stations within the Restricted Zone and/or Exclusion Zone are required to provide the Determining Authority with the SGV Report generated according with Chapter 3, above.

Deciding whether an application will be determined

4.3 If applicants do not submit a valid SGV Report, or if any of the turbines within the proposed development exceed the SIL, set at a single point between 0.004614 – 0.005479 nm/√(MW), the Determining Authority will decline to determine or accept the application.

4.4 If a proposed development includes any turbine or turbine foundation which, in part or as a whole, falls within the Exclusion Zone, the Determining Authority will decline to determine or accept the planning application. The turbine foundation for these purposes is defined as the structural component at the base of the wind turbine, forming the interface between the turbine tower and the ground. Ancillary works such as access tracks and cabling, or the site boundary, may separately fall within the Exclusion Zone without triggering the requirement for a Determining Authority to decline to determine or accept the planning application.

4.5 The Determining Authority may wish to engage with the MOD to confirm their decision to decline to determine or accept the planning application based on the location of the turbines or turbine foundations, according with the proposed co-ordinates of the development and the safeguarding map as set out in Annex 2.

4.6 Where all turbines and turbine foundations included in an application fall outside of the Exclusion Zone, and any turbine or turbine foundation, in part or as a whole, falls within the Restricted Zone, the Determining Authority may validate the application, or accept it for determination (depending on the planning system under consideration), and must then consult with the MOD as set out below.

4.7 Once the application has been submitted along with the Seismic Ground Vibration Report, and where the Determining Authority has accepted or validated the application

for determination, the application will then be processed as normal by the Determining Authority according to the usual processing requirements. Any requirements relating to timelines for determining the application will be unchanged.

5. Engagement Between Determining Authorities and the MOD

Consulting the Ministry of Defence for Wind Turbine Applications Made Within the Restricted Zone

5.1 Where an application is made and accepted for determination within the Restricted Zone, the planning application will be processed as normal by the relevant Determining Authority. As a statutory consultee, the MOD will receive notice of the new application, and the details of the proposed development including the submitted Seismic Ground Vibration Report will be shared with them by the Determining Authority.

5.2 Applications may be made to vary consent[3] where a proposed development has previously been granted planning permission or development consent, or where a development is already operational, within the Restricted or Exclusion Zone. Wherever the application to vary consent would amend core parameters of the site as set out under section 3.6, this may have an impact on the seismic impact of the site. The applicant should therefore generate an SGV report for the proposed changes and submit it alongside the application to vary consent, and the Determining Authority should consult with MOD. MOD will process the SGV report and attribute headroom according to the procedure laid out in their safeguarding approach[4].

5.3 However, applications to vary consent which relate solely to parameters other than those laid out under section 3.6, such as an extension to operating timelines only, will not affect the seismic impact of a site but require full consultation with the MOD. In these cases, the development will retain the headroom the original application was given at the time of initial consent. The Determining Authority in these circumstances can continue to consider the application as normal, but should notify the MOD at their earliest convenience.

Changes to the Planning Application After Submission

5.4 In the event that any of the core parameters, as set out under section 3.11 of this guidance, are altered over the course of the determination of the planning application (for instance, in response to the objections or requests from other relevant consultees), the applicant must regenerate their Seismic Ground Vibration Report according with the process as set out in Chapter 3 of this guidance. The applicant must share the updated

[3] Under s42 of the Town and Country Planning (Scotland) Act 1997, s73 of the Town and Country Planning Act 1990, s36C of the Electricity Act 1989, s3 and s4 of Schedule 6 of the Planning Act 2008, Infrastructure Planning (Changes to, and Revocation of Development Consent Orders) Regulations 2011

[4] [link when published]

Report with the Determining Authority, and the Determining Authority is then required to share this with the MOD.

5.5 In the event that an application is withdrawn, the Determining Authority should notify the MOD at their earliest convenience to allow for any headroom attributed to the proposal to be reattributed accordingly.

5.6 In the event that an application is withdrawn to allow the applicant to resubmit the same proposal under a separate planning system (e.g. from a Town and Country Planning Act application to a S36 or NSIP application), then the Determining Authority should notify the MOD at their earliest convenience. The MOD may wish to retain any headroom that was attributed to the original application until a Seismic Ground Vibration Report is provided by the new Determining Authority, as set out under section 5.1 above. Should the resubmitted application require additional headroom, the whole project will require re-assessment by the MOD according with its safeguarding approach.

6. MOD's Safeguarding Approach for Assessing the Cumulative Seismic Ground Vibrations of Wind Turbine Proposals

6.1 On receipt of the SGV report from the planning authority (as part of the statutory consultation process), the MOD will assess the development proposal to ensure that the cumulative SGV of the proposal does not exceed available headroom in the Threshold and therefore lead to a breach of the Threshold.

6.2 MOD policy for the assessment of the development proposal is referred to as the 'Safeguarding Approach'. MOD own the safeguarding approach and may amend the approach via consultation. The current Safeguarding Approach is separately detailed by the MOD here: [link when published]

6.3 The MOD use a safeguarding tool to calculate the cumulative SGV of a proposal and determine whether the project can be accommodated within the available headroom under the Threshold. The methodology and modelling undertaken by the MOD to do so is detailed under their Safeguarding Approach. If MOD deem an application to be compliant, they will attribute headroom based on the date the planning application is received by the relevant MOD office (as stated in their safeguarding approach) from the Determining Authority.

6.4 The MOD will respond to the consultation by the Determining Authority in accordance with its Safeguarding Approach.

6.5 Determining Authorities should expect the MOD to:

- If consulted, to confirm compliance with regulations and in turn, whether the determining authority should accept the application.;
- object to an application where any part of the turbine, or turbine foundation (including micro-siting allowance) would be proposed to be located in the Exclusion Zone; and
- only confirm that a proposed development is compliant if both i) the predicted SGV of the proposed development does not exceed the remaining available headroom in the Threshold, ii) none of the turbines, or turbine foundations (including micro-siting allowance) would be located within the Exclusion Zone.

6.6 Where the MOD deems an application to be compliant, and it has been submitted with provisional turbine seismic signatures due to being included on the ATL but not the

LATT (see section 3.5), then MOD will require that the applicant submits operational measurements of the proposed turbine in situ for validation of the turbine and inclusion in the List of Approved Turbine Types. This will also allow the MOD to remove the precautionary GSF and re-attribute headroom accordingly. The specifications of the operational measurements are set out in Annex 4 and Annex 5 (hosted on Scottish Renewables).

6.7 The MOD may require a condition to be attached to a consent regarding strict compliance with the information provided with the application.

Repowering

6.8 The MOD defines "repowering" as being where turbine(s) which comprise an existing development are decommissioned and new turbine(s) are installed in their place.

6.9 The MOD consider applications for the repowering of wind turbine generating stations to be equivalent to new planning applications for the purposes of safeguarding the Array. As such, applications for repowering existing sites within the Restricted Zone will be subject to the same process for assessing applications, where compliant applications are attributed headroom based on the date the planning application is received by the relevant MOD office from the Determining Authority.

7. Consent Determination on the Grounds of Seismic Impact

7.1 This section sets out what determining authorities should expect in instances where the MOD:

- objects to an application where the predicted SGV of the proposed development exceeds the remaining available headroom, thereby breaching the Threshold; or
- confirms that a proposed development is compliant, such that the predicted SGV of the proposed development does not exceed the remaining available headroom in the Threshold.

7.2 If the MOD objects to an application on the grounds of unacceptable interference with the Eskdalemuir Seismic Array, because the predicted SGV of the proposed development exceeds the remaining available headroom, thereby breaching the Threshold, then the Determining Authority must refuse the application on these grounds.

7.3 If the MOD confirms that a proposed development is acceptable on the grounds of interference with the Eskdalemuir Seismic Array, then the Determining Authority can continue to determine whether to grant consent for the development based on the policies and regulations that apply, according with the relevant planning system. The Determining Authority may then issue a consent without conditions, a consent with conditions, or a refusal based on the merits of the application.

7.4 The Determining Authority should not issue a consent for the development with any conditions attached that relate to the management of seismic interference with the Array without the prior agreement of MOD. Consent conditions may be used to ensure ongoing compliance with the SIL and SGV allowance.

7.5 For separate reasons, such as environmental protection or visual amenity, the Determining Authority may need to attach a condition or conditions to a consent which would alter the predicted SGV or SIL of turbines, beyond what is permitted through micro-siting allowances. This would include any conditions relating to a change in:

- number of turbines;
- layout and location of any of the proposed turbines and ancillary development (Ordnance Survey grid references accurate to 1m);
- maximum hub height and maximum rotor diameter of any of the proposed turbines;
- maximum nameplate power rating of proposed turbines;
- make and model of any of the proposed turbines; and
- any technical mitigations as agreed under the process set out in section 3.13-3.14.

Annexes:

Annex 1 – Glossary of Terms

Term	Definition
Eskdalemuir Seismic Array	The seismometer array near Eskdalemuir in the Southern Uplands of Scotland which has been operating since May 1962. The array is part of the seismic network of the organisation set up to help verify compliance with the Comprehensive Test Ban Treaty (CTBT) which bans nuclear explosions.
The Array	See *Eskdalemuir Seismic Array*
Restricted Zone	The zone in which any onshore wind farm application must seek consultation with the Ministry of Defence in the interests of safeguarding the Eskdalemuir Seismic Array. This zone is set at between 15km and 50km radius from the Array.
Exclusion Zone	The zone in which any onshore wind farm application will be refused consent in the interests of the Eskdalemuir Seismic Array. This is set at a 15km radius from the Array.
Rated power	The maximum electrical power that a give wind turbine can produce in megawatts (MW)
Megawatt	A unit of power equal to one million watts. In wind energy, it represents the rate at which a wind turbine produces electricity.
Nanometre	The amplitude of seismic ground vibrations measured as surface displacement. One nanometre (1 nm) is one billionth of a meter (1e-9 m).
Seismic Ground Vibration (SGV)	Seismic ground vibration is defined for this document as the vertical component of ground oscillations produced by natural phenomena and cultural activity including wind turbines.
The Algorithm	A physics-based algorithm used to estimate the seismic impact of wind turbines on The Array. The Algorithm calculates the impact of each turbine in the consultation zone based on its distance to The Array, its rotor diameter and its hub height.

The 2005 Styles Report	A report that set the threshold for seismic impact on The Array from wind turbines.
Threshold	The maximum allowable cumulative seismic impact of all wind turbines within the consultation zone. The threshold was set at 0.336 nm by The 2005 Styles Report.
Seismic Impact Limit (SIL)	An upper limit to the seismic impact that any single wind turbine can have on The Array for its given total rated power. A proposed value for the Seismic Impact Limit is set at a single point between 0.004614 – 0.005479 nm/√(MW).
Safeguarding Approach	The MOD's Approach to safeguarding the Eskdalemuir Seismological Array
Determining Authority	The authority responsible for determining the outcome of a planning application or development consent application. This will be the local planning authority in the case of wind turbine development applications made under the Town and Country Planning (Scotland) Act 1997 or the Town and Country Planning Act 1990 (or the Secretary of State or Scottish Ministers in cases where there are the decision maker); in the case of applications under section 36 of the Electricity Act 1989, it will be the Scottish Ministers; and in the case of applications under the Planning Act 2008, it will be the Secretary of State.
Planning Application	In this document, a planning application refers to any application for planning permission or development consent which includes wind generating stations. Such an application may be made under the Town and Country Planning (Scotland) Act 1997, the Town and Country Planning Act 1990, section 36 of the Electricity Act 1989, or the Planning Act 2008.
Approved Turbine List	A list of seismic information, collected in accordance with the methodology set in Annex 4 (hosted on Scottish Renewables), outside of the Eskdalemuir region and their results validated by an MOD Approved Contractor This list is accessible through the industry open access tool, and all developers are required to generate a Seismic Ground Vibration Report of their proposed turbine location, and model alongside any planning application they make. They are also required to re-submit a Seismic Ground Vibration Report generated from this tool with any variation to

	their planning application that will result in changes to the core parameters of the development.
List of Approved Turbine Types (LATT)	A list of seismic turbine information which have been generated in the Eskdalemuir region, that are contained within the MOD safeguarding tools. Any turbines that are contained within this list are indicated on the Industry Access Tool, and the resulting Seismic Ground Vibration Reports that are generated are more seismically accurate.
Turbine Seismic Measurement Reports	A report generated, at the developers' cost, which states the unique seismic signature generated and associated SGV output by a specific turbine make and model.
Seismic Ground Vibration Report	A report generated from the Industry Access Tool which states, based on specific conditions specified in the planning application, the SGVs generated per turbine that will be detected at the Eskdalemuir Seismic Array
Geological Safety Factor	A coefficient to be added to the calculation for Seismic Ground Vibrations per turbine by the MOD for turbines that are being proposed that are not get registered on the LATT.

Annex 2 – 11

- Annex 2: Eskdalemuir Zoning Map (hosted on gov.uk)
- Annex 3: Technical Guidance Process Flow Chart (hosted on gov.uk)
- Annex 4: Standardised Measurement of Operational Wind Turbine Seismic Noise (hosted on Scottish Renewables)
- Annex 5: LATT Coefficients (hosted on Scottish Renewables)
- Annex 6: Example Seismic Ground Vibration Report (hosted on Scottish Renewables)
- Annex 7: Example Output - Approved Turbine List, SIL Compliant (hosted on Scottish Renewables)
- Annex 8: Example Output – Approved Turbines List, SIL Non-Compliant (hosted on Scottish Renewables)
- Annex 9: Example Output – MOD LATT, SIL Compliant (hosted on Scottish Renewables)
- Annex 10: Example Output – MOD LATT, SIL Non-Compliant (hosted on Scottish Renewables)
- Annex 11: Standardised Measurement of Baseline Seismic Noise (hosted on Scottish Renewables)

This publication is available from: www.gov.uk/government/consultations/eskdalemuir-seismic-array-managing-onshore-wind-turbine-interference

Any enquiries regarding this publication should be sent to us at: onshorewind@energysecurity.gov.uk

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