



ESB Asset Development UK Ltd

Millmoor Rig Wind Farm

Further Environmental Information – Chapter 7 Aviation

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RSK



CONTENTS

7 AVIATION..... 7-1
Aviation Lighting Assessment..... 7-1
Aviation and Radar 7-1

7 AVIATION

Aviation Lighting Assessment

- 7.1 The amendments to the EIA Layout generated a requirement to review the aviation obstruction lighting scheme. A full review and consultation process was conducted, resulting in the approval of a revised lighting scheme, as discussed below.
- 7.2 The number of lit turbines has been reduced, to further reduce night time light pollution. The original lighting scheme for the EIA Layout specified medium intensity, visible spectrum, steady red lights on 6 turbines: T1, T3, T8, T9, T11 and T12. The revised scheme for the FEI Layout specifies medium intensity, visible spectrum, steady red lights on 5 turbines; T1, T3, T8, T9 and T12. The visible spectrum lighting on turbine T11 has been removed.
- 7.3 The revised lighting scheme, which was approved by the CAA (**Technical Appendix 7.1, FEI Report**, on 20 May 2024, comprises the following:
- medium intensity steady red (2000 candela) lights on the nacelles of turbines T1, T3, T8, T9 and T12 (five in total);
 - a second 2000 candela light on the nacelles of the above turbines to act as alternates in the event of a failure of the main light;
 - the lights on these turbines to be capable of being dimmed to 10% of peak intensity when the visibility as measured at the wind farm exceeds 5km; and
 - infra-red lights to MoD specification installed on the nacelles of all perimeter turbines, that is all turbines except T4, T5 and T13.

Aviation and Radar

- 7.4 The only substantive change relating to aviation and radar arising from the FEI Layout is a modification to the aviation obstacle lighting as a result of the amendment to the EIA Layout.
- 7.5 The Ministry of Defence (MoD) provided a consultation response to the S36 application for the Proposed Development in their letter dated 13 April 2023. The specific points raised by the MoD are discussed below. There has been progress with the MoD, to address their concerns. An objection remains at this time but dialogue between the Applicant and the MoD is ongoing regarding agreement of mitigation and planning conditions.
- 7.6 National Air Traffic Services (NATS) has identified a mitigation solution and is in a position to withdraw its objection once the Applicant has entered into a radar mitigation scheme contract, which the Applicant is actively pursuing.
- 7.7 This section details the changes to the aviation obstacle lighting scheme and provides an update on the NATS and MoD position.

MoD

- 7.8 The MoD is objecting to the proposal as a result of anticipated impacts to the:

1. RAF Spadeadam Deadwater Fell ATC (Air Traffic Control) Radar ('Point 1');
 2. RAF Spadeadam Deadwater Fell Secondary Surveillance Radar (SSR) ('Point 2')
 3. Eskdalemuir Seismological Recording Station ('Point 3');
 4. Threat Radar used within the RAF Spadeadam Electronic Warfare Threat Training Facility (EWTTF) ('Point 4'); and
 5. Potential for turbines to create a physical obstruction to low flying military aircraft operating within Tactical Training Area 20T (TTA 20T) ("Point 5").
- 7.9 A proposal for mitigation was submitted to the MoD on 22 August 2023. A written response was received, dated 01 February 2024. The response accepted the proposed mitigation for Threat Radar impacts and as a temporary solution to ATC radar impacts, but not as an enduring solution to ATC radar impacts and not as a solution to SSR impacts. The proposed mitigation did not address impacts to the Eskdalemuir Seismological Recording Station and the objection to those impacts remains while Government, MoD and the industry work towards an agreed solution.
- 7.10 In relation to **Points 1, 2 and 4** the Applicant sought to agree with the MoD to mitigate the effects of the Proposed Development upon the operation of these radars by establishing a management plan (secured by condition) which would define protocols between the wind farm operator and the MoD so that the wind turbines will be stopped for specific pre-arranged periods when the MoD radar sites are to be used. This regime would persist unless and until technical solutions acceptable to the MoD arise that would allow the uninterrupted operation of the Proposed Development.
- 7.11 To that end the Applicant sought a dialogue on the details of such an agreement, meeting MoD requirements to allow a conditional approval with regard to these specific impacts only. In addition the Applicant sought any data MoD could provide on historic use of the radars and hence of the periods over which such an agreement would have required the wind farm to be shut-down.
- 7.12 In its response to the Applicant on **Point 1**, dated 01 February 2024, MoD noted that there are already established stop start protocols in place for the PSR at RAF Spadeadam. These protocols are in place as an interim mitigation until an enduring technical mitigation solution is found. However, in order for the MoD to agree to a suspensive planning condition, and remove the PSR objection, MoD expects an enduring technical mitigation solution to be proffered. This would be captured in any agreement.
- 7.13 The MoD concluded that, as the stop start protocol is only an interim non-technical mitigation measure, it has not accepted the Applicant's mitigation proposal without enduring mitigation, and was therefore unable to agree to the use of a suspensive planning condition at that time. The Applicant notes the MoD's position and is considering what commercially viable enduring technical solutions may be technically acceptable to the MoD. There are two leading solutions with the potential to provide mitigation that will fully meet the MoD's requirements in the near future. The Applicant is continuing to engage with the MoD with a view to agreeing permanent mitigation that will enable them to agree to the use of a suspensive condition. The condition would require implementation of permanent mitigation as soon as it is achievable and interim mitigation as a temporary solution as already agreed in principle.
- 7.14 In relation to **Point 2**, regarding SSR, MoD responded on 13 February 2024 to the Applicant's mitigation proposals dated 22 August 2023. MoD confirmed the basis of its

objection, as set out in its consultation letter dated 13 April 2023, that only one turbine (turbine T11 as per the co-ordinates in Table 2.1 of the EIA Report, was unacceptable in terms of the anticipated impacts to the SSR. Turbine T11 is within 5 nautical miles of the SSR and is in line of sight to the radar. The MoD assessment identified that 124 m of the proposed turbine (200 m to blade tip height) would be seen by the SSR. MoD advised that the Applicant's proposals for a stop start protocol was not a suitable mitigation for the SSR, either as an interim or an enduring solution. MoD considered that, to remove the SSR objection, the turbine should be removed from line of sight of the SSR.

- 7.15 Noting the MoD's position on the removal of turbine T11 to overcome its objection on SSR, the Applicant believes an alternative mitigation proposal could be acceptable to MoD while an enduring technical solution is developed. This alternative proposal would be for the Applicant to accept a suspensive planning condition preventing installation of any above ground part of turbine T11 unless and until an enduring technical solution has been agreed in writing by the MoD. Such a suspensive condition is commonplace for radar mitigation solutions.
- 7.16 On **Point 3**, the Applicant's proposed mitigation did not address impacts to the Eskdalemuir Seismological Recording Station and the objection to those impacts remains. However, the Scottish Government, Department for Energy Security & Net Zero (DESNZ), Defence Infrastructure Organisation and the Eskdalemuir Working Group continue to work towards an enduring solution to address the current block on all onshore wind energy projects within the 50 km radius Safeguarding Zone around the Eskdalemuir Seismological Recording Station. The minutes of the most recent meeting of the Eskdalemuir Working Group held on 08 July 2025 (**Technical Appendix 7.2, FEI Report**) confirm that substantial progress is being made towards an enduring solution, including:
- The MoD baseline audit is nearing completion and expects to meet the September 2025 deadline to consult on the new approach to the management of the Eskdalemuir seismic noise budget, including Standard Impact Limit (SIL);
 - Written Ministerial Statements from the UK and Scottish Government's, also by September 2025, to provide provisional backing to the SIL approach whilst legislation related to the regulating the SIL goes through Parliament;
 - The technical work packages funded through the Aviation Investment Fund Company Limited (AIFCL) and undertaken by Xi Engineering are expected to be completed on schedule; and
 - The MoD tool work is still ongoing and the industry safeguarding tool is currently on schedule for completion.
- 7.17 DESNZ published an 'Onshore Wind Task Force Strategy' document in July 2025. This included a time-bound commitment to consult and enforce a revised solution to managing the Eskdalemuir Seismic Array. Action 30 stated that the Scottish Government and DESNZ will publicly consult by September before publishing updated guidance later in 2025 (pending consultation outcomes). This consultation will seek views on the implementation of a Seismic Impact Limit (SIL), as well as an expansion of the current 10km 'exclusion zone', aiming to unblock onshore wind development within 50k.
- 7.18 It is anticipated that once the new approach to the safeguarding of the Eskdalemuir seismic array and the management of the seismic ground noise budget is implemented, the Proposed Amended Development, due to its distance from the array beyond the anticipated SIL, would not require any technical mitigation, and that a suspensive

condition embedded within the S36 consent would allow the MoD to remove their objection on the impact of the Eskdalemuir Seismologic Recording Station.

- 7.19 Regarding **Point 4**, in their response dated 01 February 2024 to the Applicant's mitigation proposals for threat radar, MoD confirmed that all thirteen turbines of the Proposed Development would be detectable to the threat radar sited at the Wigg Knowe remote threat radar site; nine of the turbines will be detectable to the Larriston Fell remote threat radar, and four of the turbines will be detectable to the Monkside remote threat radar.
- 7.20 MoD noted there is no technical mitigation available to address the impact wind farms have upon the operation of threat radar systems. However, the MoD confirmed the non-technical mitigation proffered by the Applicant by way of a stop start protocol would be an acceptable mitigation solution to address the impact of the development upon these types of radars. On this basis, the MoD would wish to agree a suitable planning condition, and provided a draft of such a condition for the Applicant's consideration.
- 7.21 The stop start protocol would be established through a legal agreement, between the MoD and the Applicant, that would obligate the Applicant to cease operations when the threat radars sited at Wigg Knowe, Larriston Fell and Monkside are in use. The MoD expected that this could be in the region of 240 hours over 30 days per calendar year.
- 7.22 To address **Point 5**, the impact of the Proposed Development on military low flying activities within TTA 20T, the Applicant proposes to install MoD accredited infra-red lighting in addition to visible spectrum aviation obstacle lighting meeting the requirements of the Air Navigation Order 2016. This lighting scheme has been approved by both the MoD and the CAA.
- 7.23 MoD confirmed this mitigation would be appropriate and a draft planning condition to cover the MoD's lighting and charting requirements was provided for the Applicant's consideration.
- 7.24 The MoD, together with Government and the Wind Industry, is also actively seeking enduring solutions to address impacts to ATC radar, for the benefit of both onshore and offshore wind energy, and to address the impacts on the Eskdalemuir Seismological Recording Station. Solutions to all the outstanding MoD concerns are anticipated, but the timescales for the development, acceptance and implementation of those technical solutions have yet to be determined.
- 7.25 The Applicant continues to work with the MoD towards solutions, leading to conditions requiring the implementation of agreed schemes of technical and operational mitigation.

NATS

- 7.26 The Proposed Development is expected to have an impact on the NATS En-route radar at Great Dun Fell. NATS has identified and, on 22 August 2022, approved a technical mitigation solution.
- 7.27 NATS will withdraw its objection, conditional upon the implementation of the agreed radar mitigation scheme, once the Applicant enters a mitigation contract with it. The solution is a large blank, to remove the radar clutter from the NATS Lowther Hill radar, which provides coverage in the area.

- 7.28 The Applicant will progress the NATS mitigation contract in parallel with the mitigation required to address the MoD concerns.