EIA Report Chapter 12: Other Issues

Monan Repower

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12 Other Issues

12.1 Aviation and Radar

12.1.1 Introduction

This section considers the potential impacts on aviation and radar as a result of the Proposed Development during the construction, operation and decommissioning phases.

Wind turbines have the potential to affect civil and military aviation during operations. These impacts include but are not limited to:

- Physical obstructions;
- Generation of unwanted returns on Primary Surveillance Radar (PSR); and
- Adverse effects on the overall performance of Communications, Navigation and Surveillance (CNS) equipment

12.1.2 Guidance

Guidance and relevant publications for assessing the potential impact of wind turbines on aviation activities is given in:

- Renewable UK (2002) 'Wind Energy and Aviation Interim Guidelines';
- Civil Aviation Authority (2010) 'CAP 793- Safety Standards at Unlicensed Aerodromes (Including Helicopter Landing Sites and Aerodromes Used for Flying Training)';
- Civil Aviation Authority (2010) 'Lighting of En-Route Obstacles and Onshore Wind Turbines';
- Civil Aviation Authority (2016) 'CAP 764 – Policy and Guidelines on Wind Turbines';
- Renewable UK (2013) 'Guidance on Low Flying Aircraft and Onshore Tall Structures Including Anemometer Masts and Wind Turbines';
- Department of Environment and Climate Change (2015) 'Aviation Plan – 2015 Update';
- Airspace and Safety Initiative Windfarm Working Group (2013) 'Managing the Impact of Wind Turbines on Aviation'; and
- Met Office (2012) 'Guidelines for Wind Farm Developers: Meteorological Radar and Other Technical Sites used for Meteorology'.

12.1.3 Methodology

A desk-based assessment has been undertaken using online portals and self-assessment tools to determine potential impacts on aviation interests, as well as identify any necessary mitigation measures to minimise potential impacts on these.

12.1.4 Assessment of the Predicted Impacts and Effects

12.1.4.1 NATS

According to NATS Wind Farm Self-Assessment Data, The Proposed Development will not be visible to the NATS Primary Surveillance Radar, as visibility at the Site is only possible at heights of over 120m. An objection from NATS is unlikely.

A scoping response was received from NATS on 04/10/2023 and is highlighted below:

''The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal.''

12.1.4.2 MoD

A scoping response was received from the MoD in October 2023. The MoD noted that there are concerns over the potential of the Proposed Development to cause a physical obstruction to air traffic movements. This is due to the Proposed Development being located within Low Flying Area 14 (LFA 14), which is an area where fixed-wing aircraft may operate as low as 250 feet or 76.2 meters above ground level.

The MoD states *''The MOD would require that conditions are added to any consent issued requiring that the development is fitted with aviation safety lighting and that sufficient data is submitted to ensure that structures can be accurately charted to allow deconfliction.''*

In such cases, the MoD typically request that turbines be fitted with either low-intensity red aviation obstruction lights or 25cd infra-red lights.

The MoD was consulted on 01/12/2023 regarding the Proposed Development and a response was received on the 15th of January 2024. The repose is highlighted below:

''Fixed Wing military low-flying training takes place throughout the United Kingdom down to a height of 250ft above ground level and in certain designated areas down to a height of 100ft above ground level. A turbine development of the height and at the location you propose may have an impact on low-flying operations. We have produced a map which indicates areas in the UK where the MOD is more likely or less likely to object to wind turbine planning applications on the grounds of interference with low-flying operations.''

''Regardless of whether we object to your proposal, it is probable the MOD will request the turbines be fitted with MOD-accredited visible or infrared aviation safety lighting.''

Using the map provided by the MoD, it is clear that the entire Site is within a Low Priority Low Flying Zone. Meaning the MoD are less likely to object to the Proposed Development.

In anticipation of a safety lighting condition made by the MoD, as made clear through the scoping response and recent consultation, the turbines will be fitted with M0D-approved 25cd infra-red lighting.

12.1.4.3 Highlands and Islands Airports – Stornoway Airport

The Proposed Development is located 42km away from Stornoway Airport and is therefore located outside the designated safeguarding zone. It is anticipated that there will be no impacts on current infrastructure.

A scoping response was received from NATS on 21/12/2023 and is highlighted below:

''With reference to the above proposal, our preliminary assessment shows that, at the given position and height, this development would not infringe the safeguarding criteria and operation of Stornoway Airport. Therefore, Highlands and Islands Airports Limited has no objections to the proposal.''

12.1.5 Summary and Conclusion

Independent assessment has identified that there is an impact on the MoD low-flying zone. To mitigate this impact, the turbines will be fitted with 25cd infra-red MoD-approved lighting.

It should be noted that NATS and Stornoway Airport all had no objections at the scoping phase of the Proposed Development, and it is anticipated that no further objections will arise as a result of this application.

No other mitigation requirements are predicted at present.

12.2 Decommissioning of the Operation Scheme

A key element of a site repowering is the decommissioning of any existing turbines before they are replaced by newer turbines. As the existing turbines come to the end of their operational life, the decommissioning phase will commence which will be undertaken in line with the good practice guidance available, such as:

- NatureScot: Guidance – Good Practice During Wind Farm Construction, 4th Edition (2019)[1]
- SEPA: Guidance – Life Extension and Decommissioning of Onshore Wind Farms, Version 1 (2016)[2]
- EU Waste Framework Directive (2008/98/ EC)[3]
- Pollution Prevention Guide under the section 'Safe storage and disposal of used oils (PPG8) (2004)[4]

The decommissioning of the existing turbines will involve the removal of above-ground infrastructure. Before the decommissioning phase begins it is anticipated that ground works and infrastructure for the Proposed Development will be put in place before the removal of the existing wind turbines and above-ground infrastructure. After the existing wind turbines and above-ground infrastructure are removed, reinstatement works will begin. In this case, the Proposed Development will occupy locations close to the existing turbines, meaning there won't be the same need for reinstating works, normally associated with a decommissioning phase.

Additionally, much of the plant equipment used for the decommissioning of the existing turbines such as cranes, mobilisation and welfare setups will be used within the construction phase of the Proposed Development. Therefore, reducing traffic movements commonly attributed to the decommissioning phase.

Upon decommissioning of the existing wind turbines, the access track which leads to Loch na Learga (northeast of the Proposed Development) will remain, to provide recreational amenity for local walkers.

Before the existing turbines are removed from the Site the components, groundworks and infrastructure will be stripped of any recyclable materials such as steel, iron, and copper. Metals and composite materials will be identified, categorised, and recycled and/or disposed of per the EU Waste Framework Directive for the treatment of metals and PPG 8 for the safe storage and disposal of used oils.

It is proposed that a decommissioning plan be agreed upon with CnES and relevant consultees before the end of the life of the existing turbines and in line with the decommissioning plan of the operational scheme and any planning conditions.

12.3 Safety

This section outlines the procedures that will be put in place and followed to ensure the safety of the workforce and the public, specifically in relation to the following:

- Approach to safe operation and maintenance;
- Turbine safety;
- Safe operation;

[1] NatureScot: Guidance – Good Practice During Wind Farm Construction 4th Edition (2019)[1]. Available at: https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction

[2] SEPA: Guidance – Life Extension and Decommissioning of Onshore Wind Farms, Version 1 (2016)[2]. Available at: https://www.sepa.org.uk/media/219689/sepa-guidance-regarding-life-extension-and-decommissioning-of-onshore-windfarms.pdf

[3] EU Waste Framework Directive https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098

[4] Pollution Prevention Guidelines 8 https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/gpp-8-safe-storage-and-disposal-of-used-oils/

- Safety during adverse weather conditions; and
- Public safety.

12.3.1 Policy and Legislation

The construction of the Proposed Development must comply with the requirements of the Construction (Design and Management) Regulations 2015. These regulations oblige the developer to notify the Health and Safety Executive (HSE) of the project and to establish a safety management system encompassing risk assessment, design measures and management instructions to ensure the safety of construction (and operational) staff and the public. Best practice health and safety guidelines published by Renewable UK (2010), will be adhered to and speed limits will be put in place to regulate traffic flow.

NatureScot has also provided a Good Practice Guide to good practice in wind farm construction.

As for any mechanical or electrical installation, wind turbines could pose a safety risk if not managed and maintained correctly. The Construction (Design and Management) Regulations 2015 (CDM) are now well established as the key legislation that applies to the development and construction of onshore and offshore renewable energy projects within the jurisdiction of Great Britain. It is important to comply with this legislation to avoid enforcement action and possible prosecution.

Detailed risk analysis and avoidance limitation measures are required for every facet of the development and operation of a wind project. The measures would be contained in the Health and Safety file for the wind development Site which would be open to inspection by the Health and Safety Executive. All Site personnel would have full safety training to ensure risk of accidents occurring is minimised.

Safety of the public and contractors is of paramount importance to the developer. During construction and subsequent operation of the development, site safety procedures will be strictly enforced and followed.

12.3.2 Assessment of Predicted Impacts

12.3.2.1 Best Practice Guidelines for Energy Health and Safety

During the construction, decommissioning and operational phases of the project relevant guidance, legislation and standards as well as 'good and best practices' will be adopted to maintain site safety and protect the interests of ecology, hydrology and cultural heritage.

All personnel working on the Site would undergo an induction covering topics including health and safety, environmental protection and pollution prevention control and response.

A Construction Method Statement (CMS) will be developed post-consent to ensure a coordinated approach. This plan would highlight the health, safety and environmental considerations related to the proposed works and define the controls to be implemented to ensure a safe system of work.

12.3.2.2 Operational Safety

Modern wind turbines incorporate sophisticated supervisory control systems that continually interrogate the operational status and safe working of the key components of each turbine and allow an operator to remotely monitor the turbines via satellite link. Under fault conditions, affected turbines automatically shut down and send an alarm to the maintenance engineer. For safety-critical faults, turbines do not re-start until the maintenance engineer has diagnosed and rectified the problem.

In terms of general safety during operation, the turbines would be supported by the manufacturer's operational and maintenance safety manuals, which would be available on-site. These manuals would form the basis of the regular safety checks that would be undertaken throughout the life of the development.

The Proposed Development of wind turbines, in compliance with relevant safety regulations, would display appropriate warning signs concerning restricted areas on the Site, including the substation enclosure and control building. Authorised personnel and persons under their supervision who visit the restricted areas of the Site during its operation would operate under site-specific safety rules established by the owner and operator. Electrical installation is conducted in accordance with standards and recognised codes of practice, with adequate signage and protection.

It is considered that there will be no effect (not significant) due to the safe operation of the proposal.

12.3.2.3 Turbine Safety

The final wind turbine model will have full certification from a recognised authority against internationally recognised standards and a proven track record of safe operation. The main certification agencies have well-developed and proven certification procedures. A mature suite of safety and testing standards developed over many years by the International Electrotechnical Commission are now in place and are widely accepted. Working in parallel, these standards and certification procedures have ensured that wind turbines adhering to them have high levels of intrinsic safety.

As stated in PAN 45 "Many blades are composite structures with no bolts or other separate components. Even for blades with separate control surfaces on or comprising the tips of the blade, separation is most unlikely" (Para 48, SEDD, 2002). Although PAN 45 has now been superseded, this advice remains relevant. The highest risk of damage is in extreme wind speed conditions (>100mph) when the likelihood of anyone being on site is remote. Even under these conditions, the risk of damage is small (for example, the Wigton Wind Farm in Jamaica which RES constructed and commissioned in 2004 did not incur any significant damage by Hurricane Ivan which caused devastation throughout the island on 10th September that year). The turbines proposed for the Site would be certified to withstand appropriately extreme conditions and are already proven to perform well and operate safely on site.

It is considered that there will be no effect (not significant) in relation to the safe operation of the wind turbines over the lifetime of the development.

12.3.2.4 Public Safety

During the construction phase, the Site will be marked with appropriate warning signage, and where appropriate diversions may be put in place to stop members of the public accessing the immediate site.

Once commissioned, there would be no immediate danger to members of the public through the day-to-day operation of the wind turbines. All turbines are locked so access to control systems and electrical components are restricted.

The plant, equipment and their enclosures are designed to incorporate the best available technology and access to the proposed wind project Site should pose no danger to the public.

Wind turbine technology is mature and has been extensively safety tested across the globe. Wind turbines are fitted with many safety features as standard that force the turbine to shut down in the event of an adverse weather event or potential malfunction. As per industry requirements, there is no potential risk to public safety during the operation of the wind turbines.

During routine maintenance operations 'warning' signs would be erected. At the main entrance to the Site, signs would be deployed giving basic safety information, including speed limits, and appropriate personal protective equipment and also giving details of whom to contact in an emergency. Emergency contact information would also be posted at the local police station and with the local power distribution company, SSEN.

Given the current use of the Site and the limited available access by members of the public, it is considered that there is likely to be no effect (not significant) with regards to public safety during the construction and operation of the wind farm.

12.3.2.5 Safety During Adverse Weather Effects

Although the possibility of attracting lightning strikes applies to all tall structures, wind turbines have specific protection requirements due to their size and nature. Specific design features are required to ensure safety and to ensure that the turbines can operate during lightning storms without damage and impact on reliability. Specific features are incorporated into the blades to ensure strikes are conducted harmlessly past the sensitive parts of the nacelle and down the tower into the earth. Protection also includes a buried Earthing mat around each turbine foundation and/or a deeply sunk lightning conduction cable which is sunk to a substantial depth into the earth, sufficient to ensure appropriate conduction to ground.

Extreme weather conditions such as windstorms can lead to rotor failure and overspeed events. In the case of a fault or extreme weather conditions, the EWT machine is stopped by feathering the blades to vane position (blades swivelled to 90^{o} with respect to the rotor's rotational plane). In case of power loss, an independent energy backup system in each blade ensures the blades are feathered.

In some countries, icing of wind turbine blades presents a potential risk that must be managed. Generally, in the UK there is no inherent danger in operating a wind turbine at low temperatures, and there is no particular risk simply because it is frosty or snowing. The existing turbines have not experienced any icing events in their lifetime.

Based on this information, the location for the development Site and limited potential for members of the public to be present on Site it is considered that there will be no effect (not significant) during the construction and operation of the proposed wind farm.

12.3.3 Summary and Conclusion

Modern wind turbines have a proven track record for safety, and the turbines proposed will be constructed and operated following relevant health and safety legislation. Commercial-sized turbines are particularly reliable, requiring minimal intervention and maintenance during operation. They are designed to cope with extreme wind and weather conditions.

Only turbines with a proven record of safety and reliability will be selected for this Site.

The risk of ice throw (ice falling or being thrown from a turbine during particular circumstances) is also low. As a further safety measure, notices at access points alerting members of the public of potential risks under certain conditions will be provided.

The development Site is an area of open upland moorland. In terms of access, the potential for interaction between members of the public and the development are low. The Site's location has been given detailed consideration throughout the design process and appropriate separation has been included between all infrastructure elements and the nearest residential receptors, paths, public rights of way and any other access points to the development Site.

The assessment undertaken shows that there are no likely significant effects on human health through the safe operation of the Proposed Development.

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