

## 17 SUMMARY OF MITIGATION

This Chapter of the Environmental Impact Assessment Report (EIA Report) provides a summary of mitigation measures that have been proposed within the EIA Report to prevent, reduce or offset the effects associated with the Akron Wind Farm (the Development).

Embedded mitigation measures have been integral to the design evolution of the Development as outlined in **Chapter 4: Development Description**. The overall aim of the design strategy was to create a wind farm with a cohesive design that relates to the surrounding landscape whilst taking account of the environmental characteristics of the area in which the Development is located (the Site), for example priority habitats and key ornithological species, peat and hydrological resources.

Table 17.1 presents a schedule of mitigation measures for the Development listed according to the relevant environmental topic, which would be applied during the construction and operation of the Development.

This Chapter has been written by Heather Kwiatkowski, Principal EIA Project Manager at Arcus Consultancy Services Ltd (Arcus). The Chapter has been technically reviewed by Stuart Davidson, Registered EIA Practitioner and Operational Director of Arcus.

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**Table 17.1 Summary of Mitigation**

Chapter	Proposed Mitigation / Enhancement Measures	Timing
Chapter 4: Development Description	<p><b>Micro-siting</b></p> <p>A micro-siting allowance of 50 metres (m) in all directions is proposed for all turbine infrastructure. This is to allow for a degree of flexibility should unsuitable ground conditions be encountered or in the event of environmental constraints identified during pre-construction surveys. Any changes will be subject to approval of the Ecological Clerk of Works (ECoW) with other specialist environmental advice (e.g. hydrology, archaeology, etc.) as required.</p> <p><b>Construction Environmental Management Plan (CEMP)</b></p> <p>A CEMP will be the overarching live document which combines the principles of all other management plans and environmental plans outlined within this EIA Report and would support the Construction Method Statements (CMSs). The CEMP (Appendix A4.1) will typically be supported by the following documents which apply to the construction process:</p> <ul style="list-style-type: none"> <li>• Pollution Prevention Plan (PPP) with draft measures presented as part of the Water CEMP;</li> <li>• Drainage Management Plan (DMP) with draft measures presented in Water CEMP;</li> <li>• Traffic Management Plan (TMP, for Framework TMP refer to Appendix A11.3);</li> <li>• Site Waste Management Plan (SWMP);</li> <li>• Stakeholder Management Plan (SMP);</li> <li>• Ecological Management Plan (incorporating Species Protection Plan, Breeding Bird Protection Plan and any habitat protection measures required during construction); and</li> <li>• Peat Management Plan (PMP, for the outline PMP refer to Appendix A13.2).</li> </ul> <p><b>Construction Method Statements (CMSs)</b></p> <p>The construction phase will be controlled via a series of detailed CMSs which will be prepared by a Principal Contractor appointed by the Applicant, who will have overall responsibility for environmental management on the construction site.</p>	Pre-Construction  Pre-Construction and During Construction
Chapter 6: LVIA	<p><b>Embedded Mitigation</b></p> <p>Embedded Mitigation includes the design changes that been implemented during the development of the scheme. These are set out in detail in <b>Chapter 4: Development Description</b>. All mitigation for landscape and visual effects is embedded within the final design for the Development.</p> <p>Mitigation for landscape and visual effects included:</p> <ul style="list-style-type: none"> <li>• Consideration of key sensitive receptors with respect to the appearance of the Development (arrangement of turbines to create a balanced array and minimise stacking or outlier turbines);</li> <li>• Maximising the separation between the Development and the coastal landscapes and North Coast 500 (NC500) tourist route (the A836);</li> </ul>	Pre-Submission (Embedded in Design)

Chapter	Proposed Mitigation / Enhancement Measures	Timing
	<ul style="list-style-type: none"> <li>Access option from the A897 to avoid an access junction and to reduce track visibility from the A836/NC500; and</li> </ul> Consideration of onsite track alignment up the hill slopes when viewed from Melvich.	
Chapter 7: Ecology	<p>A critical design consideration has been the avoidance of habitats with high conservation value and potential groundwater dependency, as well as limiting watercourse crossings (only one proposed as part of the Development) and its sensitive design to safeguard the water environment and effectively mitigate construction-related direct and indirect impacts to fish and other aquatic features.</p> <p>Good practice design mitigation measures will be adopted to minimise the risk of bats colliding with operational turbines, in accordance with NatureScot<sup>1</sup> published guidance<sup>2</sup>. Turbines will have a 50 m separation distance between blade tips and high-value bat habitats, such as woodland, riparian habitats, and forest edges.</p> <p>Mitigation through practice aims to safeguard of protected species during construction and operation and to restore and enhance peatland habitats. These measures include:</p> <ul style="list-style-type: none"> <li>As part of the Ecological Protection Plan (EPP), the Principal Contractor will appoint an Ecological Clerk of Works (ECOW) to provide ecological advice during construction, including the monitoring of compliance with the recommendations of this EIA Report and subsequent planning conditions;</li> <li>Pre-construction Surveys for protected species, such as otter, badger, pine marten and water vole, as well as electro-fishing will be undertaken to provide up-to-date information about the distribution and abundance of the protected species identified in the baseline. The results of the surveys will inform the need for and scope of any species protection plans and associated mitigation and licencing requirements for incorporating into the EPP; and</li> <li>A Habitat Management Plan (HMP) will be produced to inform and guide the commencement of practical habitat creation and restoration techniques during the life cycle of the Development.</li> </ul> <p>Mitigation by Practice during the operational phase will ensure no tree regeneration within 50 m of turbine locations.</p>	Pre-Submission (Embedded in Design)  During Construction and Operation
Chapter 8: Ornithology	<p>The Ecological Protection Plan (EPP) would include a breeding bird protection plan to ensure that disruption to nesting birds, and any disturbance to Schedule 1 breeding birds (or roosting Schedule 1 raptors year-round) during the construction period is avoided. Pre-construction surveys will be carried out by a suitably qualified ornithologist who would determine whether any breeding activity is taking place within potential species-specific disturbance zones of any proposed infrastructure.</p>	During Construction

<sup>1</sup> Scottish Natural Heritage (SNH) rebranded in August 2020 as NatureScot. Where relevant reference is still made to SNH within this chapter in respect of guidance which remains valid and is yet to be republished etc.

<sup>2</sup> SNH (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: January 2019. Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, ScottishPower Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust

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	<p>In addition, specific mitigation to ensure that breeding common scoter and hen harrier (if present) are not disturbed is described in Appendix A8.5.</p> <p>The HMP would benefit a number of important ornithological features and proposed habitat enhancements are likely to have a net positive effect on these species.</p> <p>An Ornithological Monitoring Plan will be implemented to determine how particular target species (common scoter, divers, Schedule 1 raptors, waders and Arctic tern) are affected by the Development during the breeding season.</p> <p>In line with NatureScot guidance<sup>3</sup>, surveys should take place annually during construction, and after the Development becomes operational, during years 1-5, 10 and 15 as a minimum, with the requirement for further surveys to be determined based on previous survey results.</p>	<p>During Construction, Operation</p>
<p>Chapter 9: Archaeology and Cultural Heritage</p>	<p>Known archaeological features have been avoided and no mitigation is recommended. The greatest archaeological potential for unknown and unrecorded archaeology of significant is at lower elevations in proximity to the watercourses so that this potential is low with no mitigation required.</p>	<p>N/A</p>
<p>Chapter 10: Noise</p>	<p>Noise effects were taken into consideration in the design of the Development with the placement of turbines and other sources of operational noise positioned more than 750 m from the two closest properties, Ackron Farm and Golval.</p> <p>Good practice measures will be implemented to include:</p> <ul style="list-style-type: none"> <li>• Operations shall be limited to times agreed with the Council;</li> <li>• Deliveries of turbine components, plant and materials by HGV to site shall only take place by designated routes and within times agreed with the Council;</li> <li>• The site contractors shall be required to employ the best practicable means of reducing noise emissions from plant, machinery and construction activities, as advocated in BS 5228;</li> <li>• Where practicable, non-tonal and / or directional reversing alarms should be used;</li> <li>• Where practicable, the work programme will be phased, which would help to reduce the combined effects arising from several noisy operations;</li> <li>• Where necessary and practicable, noise from fixed plant and equipment will be contained within suitable acoustic enclosures or behind acoustic screens;</li> <li>• All sub-contractors appointed by the main contractor will be formally and legally obliged, and required through contract, to comply with all environmental noise conditions;</li> <li>• Where practicable, night-time working will not be carried out. Local residents shall be notified in advance of any night-time construction activities likely to generate significant noise levels, e.g. turbine erection; and</li> </ul>	<p>Pre-Submission (Embedded in Design)</p> <p>During Construction</p>

<sup>3</sup> SNH (2009) *Guidance on Methods for Monitoring Bird Populations at Onshore Wind Farms*. Guidance Note. NatureScot.

Chapter	Proposed Mitigation / Enhancement Measures	Timing
	<ul style="list-style-type: none"> <li>Any plant and equipment normally required for operation at night (23:00 - 07:00), e.g. generators or dewatering pumps, shall be silenced or suitably shielded to ensure that the night-time lower threshold of 45 dB, <math>L_{Aeq,night}</math> shall not be exceeded at the nearest noise-sensitive receptors.</li> </ul> <p>In the event that stone is required to be extracted from borrow pits by blasting, the following process would be employed to ensure that the effects of blasting noise and vibration on nearby properties are adequately controlled:</p> <ul style="list-style-type: none"> <li>Compliance with planning conditions specifying limits to vibration resulting from blasting, restrictions on times of blasting, and a requirement for vibration monitoring;</li> <li>Trial blasting, using progressively larger charge loads, to establish maximum acceptable charge; and</li> <li>Provision of information on blasting to neighbouring residents.</li> </ul>	
Chapter 11: Access, Transport and Traffic	<p>Implementation of a Traffic Management Plan (TMP) to include at minimum:</p> <ul style="list-style-type: none"> <li>Management of junctions;</li> <li>Timing of movements; and</li> <li>Traffic management measures including restricted use of the A897 from Helmsdale to site entrance.</li> </ul> <p>A framework Construction TMP is provided at Appendix A11.3 to the EIA Report.</p>	During Construction
Chapter 12: Hydrology and Hydrogeology	<p>The following mitigation measures relating to the hydrological environment are embedded into the design and construction of the Development:</p> <ul style="list-style-type: none"> <li>50 m watercourse buffers for construction works with the exception of watercourse crossings.</li> </ul> <p>Construction good practice methods and works for protection of hydrological receptors as outlined in the Appendix A4.1. The WCEMP within the CEMP describes water management measures to control surface water run-off and drain hardstanding's and other structures during the construction and operation of the Development. This will form part of a Pollution Prevention Plan (PPP) to be implemented for the Development. Private Water Supply Monitoring at Ackron Farm and provision of alternative supply, as required.</p>	Pre-Submission (Embedded in Design)  During Construction
Chapter 13: Geology and Peat	<p>The following mitigation measures relating to peat are embedded into the design:</p> <ul style="list-style-type: none"> <li>Site layout avoiding deep peat (i.e. no turbines sited in peat &gt; 1 m) or limiting the impacts on deep peat where possible, as well as taking cognisance of hydrological and ecological features and associated buffers.</li> </ul> <p>Micrositing allowance of 50 m for turbines, where feasible in regards to other constraints, to reduce the impact on deep peat and peaty soils.</p> <p>Implementation of construction best practice, good drainage and regular slide risk monitoring as detailed in Appendix A4.1.</p>	Pre-Submission (Embedded in Design)  Pre-Construction and During Construction

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	<p>Slope stability monitoring will occur during pre-construction and construction phases of work, including for both peat stability and non-peat related stability. These would focus on locations highlighted as being of risk in Appendix A13.1.</p> <p>Best practice measures for managing excavated peat and peaty soils are detailed in Appendix A13.2.</p>	
Chapter 14: Land Use, Socio-Economics and Tourism	Habitat Management Plan to ensure compensation of felled woodland that includes replanting within same landowners' holdings or habitat restoration.	Operation
Chapter 15: Climate Change and Carbon Balance	<p>The design choices made as a consequence of the key constraints are considered to be mitigation which is 'embedded' in the design; the following are most relevant for the CCIA:</p> <ul style="list-style-type: none"> <li>• Development infrastructure is built to withstand strong windspeeds and to harness energy;</li> <li>• Turbine spacing is sufficient to reduce turbulence effects on turbines downwind;</li> <li>• The turbines are located to maximise energy generation while minimising environmental impacts;</li> <li>• The Development design aims to reduce impacts on peat – e.g. through use of existing track layout where possible and avoiding areas of deep peat;</li> <li>• Implementation of a CEMP (Appendix A4.1), PMP (Appendix A13.2) etc. during construction to minimise environmental impacts and peat disturbance; and</li> <li>• Buffers from watercourses incorporated in layout design, protecting water quality and also protecting Development infrastructure from flooding.</li> </ul>	Pre-Submission (Embedded in Design)
Chapter 16: Other Issues (including Accidents, Shadow Flicker, Infrastructure, Telecommunications, Waste and Aviation)	<p>Implementing of construction best practice as detailed in Construction Method Statement and CEMP (Appendix A4.1)</p> <p>Control at source for mitigating shadow flicker via pre-calculated and programmed into the shutdown calendar of the Development's SCADA system.</p> <p>No effects identified for Telecommunications and Television. However, in the event that interference which is directly attributable to the Development is experienced, the Applicant will endeavour to implement a suitable mitigation solution.</p> <p>Installation of infra-red lighting of turbines as per agreed lighting scheme in accordance with MoD requirements.</p>	During Construction Operation