

Chapter 2: EIA Approach and Methodology

Creag Riabhach Wind Farm Extension

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2 Environmental Impact Assessment Process

2.2 Statutory Context

The Electricity Works (Environmental Impact Assessment) (Scotland) (EIA) Regulations 2017 (hereafter ‘the EIA Regulations’) outline statutory requirements and apply where consent is being sought for developments under the Section 36 of the Electricity Act 1989. The proposed development fits the criteria for Schedule 2 Development under the EIA Regulations as it is:

"a generating station, the construction of which (or the operation of which) will require a section 36 consent but which is not Schedule 1 development"

In this regard, the proposed development is of a type falling within Schedule 2 of the EIA Regulations and, therefore, requires to be screened as to whether or not it constitutes EIA development as envisaged by Regulation 7.

It was acknowledged at an early stage in the design process that given the nature, location and characteristics of the proposed development an EIA would be required to describe the likely significant effects of the proposed development on the environment. It was, therefore, not considered necessary to seek a screening opinion and this EIA Report is submitted voluntarily as set out in Scottish Government Guidance on Energy Consents.

Regulation 4 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 of the EIA Regulations states that the EIA must identify, describe and assess the direct and indirect significant effects of the proposed development on the following factors:

- population and human health;
- biodiversity;
- land, soil, water, air and climate; and
- material assets, cultural heritage and the landscape.

2.3 EIA Scoping

An underlying principle of the EIA process is that it should concentrate on environmental issues where effects associated with a development proposal are likely to be significant.

Although it is not mandated by the EIA Regulations, Creag Riabhach Wind Farm Limited (hereafter ‘the applicant’) conducted a Scoping process in order to determine issues that should be addressed in the EIA and the form topic-based assessments should take.

To support the requirements of Regulation 12 of the EIA Regulations, a Scoping Report was issued to the Scottish Government’s Energy Consents Units (ECU) in May 2022 on behalf of the applicant. The report provided a brief description of the proposed development, the approach to the EIA, the potential for likely significant environmental effects and proposed a methodology to assess such effects. The Scoping Report

was issued to a list of statutory and non-statutory consultees as agreed with the ECU, who issued a Scoping Opinion in October 2022 (Reference: ECU00004487)¹. The Scoping Opinion has informed the approach to assessment of the environmental effects of the proposed development.

The following statutory bodies were consulted at scoping:

- THC;
- SEPA;
- NatureScot;
- HES; and
- ECU.

In addition, following bodies were also consulted:

- British Telecom;
- Civil Aviation Authority (Airspace);
- Defence Infrastructure Organisation;
- Fisheries Management Scotland;
- Highlands and Islands Airports Ltd;
- John Muir Trust;
- Joint Radio Company;
- Kyle of Sutherland District Salmon Fisheries Board;
- Mountaineering Scotland;
- National Air Traffic Services (NATS) Safeguarding;
- OFCOM;
- RSPB Scotland;
- Scottish Council for Development and Industry (SCDI) (Highlands & Islands);
- Scottish Forestry;
- Scottish Water;
- Scottish Wildland Group;
- Scottish Wildlife Trust;
- Scotways;
- The Crown Estate Scotland;
- Transport Scotland and
- Visit Scotland.

The Scoping Report was issued to the following community councils:

- Lairg;
- Bettyhill, Strathnaver and Altnaharra;

¹ Scottish Ministers Energy Consents Unit (ECU). Available at:
<https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00004487>

- Tongue, Melness and Skerray;
- Durness;
- Kinlochbervie; and
- Scourie & District.

No responses were received from the following consultees:

- Scottish Forestry;
- Civil Aviation Authority;
- John Muir Trust;
- Mountaineering Scotland;
- ScotWays;
- Scottish Wildlife Trust;
- Scottish Wild Land Group;
- VisitScotland;
- Bettyhill, Strathnaver and Altnaharra Community Council;
- Tongue, Melness and Skerray Community Council;
- Durness Community Council;
- Scourie & District Community Council; and
- Kinlochbervie Community Council.

The scope of the individual assessments has been reviewed regularly throughout the EIA process to take account of new published guidance and/or assessment methodologies, stakeholder feedback, new environmental information and ongoing scheme design changes.

As part of the Section 36 process, a Gatecheck Report was issued to consultees for comment in April 2023. The Gatecheck Report described the design evolution of the proposed development following the scoping exercise including, where relevant, changes that have been made in response to consultation and community engagement. The document also set out the scope of the EIA in advance of the application for consent being made.

The outcome of further consultation, undertaken through the Gatecheck process and directly with consultees as requested in the Scoping Opinion, will be detailed in the relevant technical chapters of this EIA Report.

Explanations of the methods of assessment adopted and the issues identified are provided in **Chapters 5 to 14** of this EIA Report, which detail the findings in relation to the various environmental aspects considered in the EIA.

As a result of the Scoping and Gatecheck process, the following factors will be included for investigation in the EIA owing to the potential for significant environmental effects to arise or where a scoping consultee has made clear an assessment is required:

- Landscape and Visual Impact Assessment;
- Ecology and Ornithology;
- Hydrology, Geology and Hydrogeology;
- Transport and Access;
- Noise;
- Forestry;
- Socio-economics, Recreation and Tourism; and
- Carbon Assessment.

The following environmental factors have been scoped out² of the EIA based on the limited potential for environmental effects to arise:

- Climate Change;
- Cultural Heritage³;
- Aviation;
- Telecommunications, TV and Radio Links;
- Air quality;
- Shadow flicker;
- Ice throw, and
- Accidents and Disasters.

The scoping process concluded that the relationship and compliance of the proposed development to local, regional and national planning policy would be best established in a separate planning statement. Accordingly, the applicant has prepared a standalone planning statement that accompanies the s.36 application for the proposed development.

2.4 EIA Report

2.4.1 Requirements of the Legislation

The findings of the EIA should be included in an EIA Report prepared by the developer. Regulation 5 sets out the content of an EIA Report. The EIA and EIA Report have been undertaken by the EIA team listed in **Table 1.3 of Chapter 1: Introduction**.

The EIA Report must identify, describe and assess the potential direct and indirect significant effects of the proposed development and the potential interactions between those factors. The description should detail the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the proposed development.

² The EIA Report includes sufficient justification for scoping these issues out of the EIA.

³ As agreed by Historic Environment Scotland and The Highland Council's Historic Environment Team, cultural heritage has been scoped out of the EIA; however, a chapter has been included to provide justification for scoping out of this topic as per best practice guidance.

Schedule 4 of the EIA Regulations sets out the information that must be included in the EIA Report, including:

- description of the development, including in particular:
 - a description of the location of the development;
 - a description of the physical characteristics of the whole development;
 - a description of the main characteristics of the operational phase of the development;
 - an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.
- a description of the reasonable alternatives studied by the developer;
- a description of the relevant aspects of the current state of the environment (the 'baseline scenario') and an outline of the likely evolution thereof without implementation of the project;
- a description of the factors specified above likely to be significantly affected by the development;
- a description of the likely significant effects of the development on the environment, resulting from:
 - the construction and existence of the development, including, where relevant, demolition works;
 - the use of natural resources, in particular land, soil, water and biodiversity;
 - the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances and the disposal and recovery of waste;
 - the risks to human health, cultural heritage or the environment;
 - the cumulation of effects with other existing and/or approved development;
 - the impact of the development on climate and the vulnerability of the development to climate change; and
 - the technologies and the substance used;
- a description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment;
- a description of the mitigation measures envisaged to avoid, prevent, reduce and if possible offset any significant adverse effects on the environment and, where appropriate, of any monitoring arrangements;
- a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned;
- a non-technical summary of the information covered by the points above; and
- a reference list detailing the sources used for the descriptions and assessments in the EIA report.

2.4.2 EIA Delivery

The approach to the reporting of individual environmental assessments in **Chapters 5 to 14** has been led by the applicable guidance relevant to the environmental topics and the professional expertise of the authors. The broad approach followed by each of the individual chapters is summarized below.

EIA Guidance

The EIA has been undertaken with regard to the following published best-practice guidance:

- Planning Circular 1: The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017;
- Planning Advice Note 1/2013: Environmental Impact Assessment;
- Web Based Guidance Onshore wind turbines (Scottish Government);
- Guidelines for Environmental Impact Assessment (IEMA, 2004);
- A handbook on environmental impact assessment: Guidance for competent authorities, consultees and others involved in the Environmental Impact Assessment process in Scotland (Scottish Natural Heritage⁴, 2018);
- Delivering Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (IEMA, 2017);
- Methods of Environmental Impact Assessment (Morris and Therivel (2009));
- The State of Environmental Impact Assessment in the UK (IEMA, 2011); and
- Environmental Impact Assessment Guide to Shaping Quality Development (IEMA, 2016).

Establishment of Baseline Environment

The EIA of scoped-in environmental aspects commenced with the identification and review of information relating to known, or the likely presence of, environmental receptors and resources within a defined study area to determine their relative value, importance and/or sensitivity towards change.

Environmental resources were defined as those environmental aspects that support and are essential to natural or human systems. These include areas or elements of population, ecosystems, watercourses, air and climatic factors, landscape, and material assets.

Environmental receptors were defined as people (i.e. occupiers of dwellings and users of recreational areas, places of employment and community facilities) and elements within the environment (e.g. flora and fauna) that rely on environmental resources.

Desk-based data sources comprised consultation responses; published literature; databases, records and schedules relating to environmental designations; national, regional and local policy documentation; historic and current mapping; aerial photography; and data gathered from previous environmental studies.

Site surveys were undertaken to verify and consolidate information gathered during the desk-based review, and to evaluate the relationships between specific environmental interests and their wider environmental value.

Study area extents vary in accordance with the environmental aspect being considered. These study areas are detailed in the technical chapters. For some topics, a study area has been defined as being relatively localised to the proposed development, while for others it has extended outward to capture the surrounding road network, distant communities, and environmentally sensitive areas. The definition of each study area has been informed by a review of the relationship between the proposed scheme and the receiving environment, the outcomes of Scoping, and reference to thresholds stipulated in topic-specific EIA guidance.

⁴ Now NatureScot

Mitigation by Design

Following the baseline characterisations, the environmental constraint information is used to inform the consideration of design alternatives. This is an iterative process, whereby the applicant considers various turbine layouts and heights. The aim of the design process as part of the EIA is to develop a design which seeks to maximise potential renewable energy generation, but is cognisant of technical and environmental constraints. Avoiding likely significant environmental effects through the design was key to the process.

Impact Prediction and Assessment

Impacts comprise identifiable changes to the baseline environment. These can be either beneficial (e.g. introduction of planting to screen visually detracting elements) or adverse (e.g. loss of an attractive environmental component), and can take the following forms:

- direct [primary] (e.g. loss of habitat to accommodate the proposed development);
- indirect [secondary] (e.g. pollution downstream arising from silt deposition during earthworks);
- transboundary;
- short-term/temporary (e.g. dust generated during construction);
- medium-term (e.g. cutting back of planting which is subsequently allowed to regenerate);
- long-term/permanent (e.g. improvement in air quality); and
- cumulative (e.g. incremental changes caused by other past, present or reasonably foreseeable actions together with those associated with the proposed scheme, or where a receptor or resource is subject to a combination of individual impacts such as air pollution, noise and visual impact associated with the proposed scheme in isolation).

Impact assessments have been both quantitative and qualitative in nature, and based on comparisons between the environmental conditions immediately prior to the assumed construction of the proposed development and the predicted environment conditions resulting from its implementation. Each technical chapter of the EIA Report describes the forecasting methods used in the EIA.

Impacts have been defined in accordance with accepted terminology and standardised methodologies to predict the magnitude of impact (or change) resulting from the proposed development.

Assessments have been undertaken for the year of construction and in the year when the proposed development would become operational. Some environmental aspects have required further assessment beyond the operational year to take account of factors such as predicted traffic growth or activities associated with decommissioning of the proposed development.

Although it is the intention of the applicant to operate the proposed development with the existing Creag Riabhach Wind Farm as one development, which may reach the end of its operational life before the full duration being applied for, the assessments are based on an operational life of up to 40 years.

For decommissioning, as elements of the Proposed Development may remain in-situ (such as cable trenches, access tracks, etc.), generally impacts associated with the decommissioning works will be lower than those associated with the construction phase.

Where relevant, the assessments describe the expected significant effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters relevant to the proposed scheme. This includes consideration of effects resulting from future climate change and the vulnerability of the project to climate change.

Environmental Mitigation

Mitigation measures have been developed to address potentially significant adverse environmental effects where it has not been possible to avoid the effect through design of the turbine or infrastructure layout. Mitigation measures include standard measures (e.g. best practice construction management to control dust emissions) that are enforceable through conditions of consent, and measures proposed in outline (e.g. implementation of biodiversity enhancements through a Biodiversity Enhancement and Restoration Plan) that may require further development and formal agreement to ensure their implementation.

The principles adopted in the identification and development of environmental mitigation for the proposed development are avoidance (wherever possible), reduction (where avoidance cannot be achieved) and compensation (where reduction is unachievable or would not achieve the required level of mitigation).

Environmental Effects

Effects are defined as the consequence of impacts. They are formulated as a function of the receptor/resource value and sensitivity, and the predicted magnitude of impact (or change).

Professional judgement, defined thresholds, established criteria and standards have been used to report the environmental effects of impacts, which can be referred to as either being prior to, or following establishment of, environmental mitigation.

The significance of an environmental effect has been established by way of reference to the importance/value of affected resources; the number and sensitivity of affected receptors; impact magnitude, duration, frequency and extent of effect; and the reversibility of effect (or the extent to which the adverse effects can be effectively reduced).

The following generic significance criteria **Table 2.1** have been applied across the environmental aspects to ensure identified environmental effects are assessed in a comparable manner, except where such criteria are not applicable due to other prevailing topic-specific guidance (e.g. ecological impact assessment) and/or established standards and thresholds (e.g. UK limit values for air emissions):

Table 2.1: Generic Significance Criteria

Level	Description
Major	Very large or large change in environmental or socio-economic conditions. These effects, both adverse and beneficial, are likely to be important considerations at a national to regional level because they contribute to achieving national / regional objectives or are likely to result in exceedance of statutory objectives and/or breaches of legislation.

Level	Description
Moderate	Intermediate change in environmental or socio-economic conditions. These effects are likely to be important considerations at a regional and local level.
Minor	Small change in environmental or socio-economic conditions. These effects may be raised as local issues, but are unlikely to be of importance in the decision-making process.
Negligible	No discernible change in environmental or socio-economic conditions (i.e., variation within normal bounds or below measurable levels). An effect that is likely to have a negligible or neutral influence, irrespective of other effects.

Only **major and moderate effects**, which are likely to be factors in deciding whether a development is acceptable, are usually considered significant effects.

The residual effects (i.e. the post-mitigation effects) of the proposed development are considered by the Scottish Ministers in the decision-making process when determining the S36 application.

Assessment Reporting

Each individual assessment follows a comparable format to ensure consistency in reporting the existing environmental conditions and the potential effects on them arising from implementation of the proposed development.

- **Introduction** introduces the assessment topic under consideration.
- **Scope and Methodology** identifies and describes the scope of the assessment, the methods and criteria adopted, relevant guidance followed, and any assessment limitations, assumptions or difficulties encountered.
- **Consultation Undertaken** summarises the stakeholder engagement including dialogue with statutory consultees and with other stakeholders and where relevant the influence on the EIA.
- **Statutory and Planning Context** outlines statutes, guidance, policies and plans relevant to the environmental interests forming the focus of the assessment.
- **Existing Environment** describes the features and characteristics associated with the baseline environment.
- **Predicted Impacts** reports the potential predicted impacts on the baseline environment during the construction, operational and decommissioning phases.
- **Mitigation** details all measures that have been incorporated into the design of the project and/or agreed as deliverable, including proposed monitoring where applicable.
- **Summary of Residual Effects** summarises the nature and significance of residual environmental effects that are predicted to remain, post-implementation of mitigation measures.

Assumptions, Uncertainties and Limitations

The EIA was undertaken and the resulting EIA Report compiled using the environmental information made available to the EIA team by the applicant and members of their project team, together with other readily available and publicly accessible material including existing literature and studies, as well as personal communication with local experts. To the best of the applicant's knowledge, the information used as a basis for the assessment is accurate and up to date. Other than where individually identified within **Chapters 5** to

14, the team is not aware of any limitations of the underlying information or of any constraints that would materially affect the evaluations.

The applicant has also have also carried out its own site visits, surveys and investigations at or in the vicinity of the site to provide more information for the assessments and to fill data gaps. This has resulted in a more complete and up to date set of baseline data to use as the basis for the impact assessment. Although the data have been collected over a period of time, the EIA team is of the opinion that the data is relevant and valid at the time of reporting. It should be noted that the surveys and investigations are conducted on a sampling basis in line with industry guidance and this places a limit on the certainty of the data set.

This EIA Report has been based on the best available information at the time of publication. However, further information may become available during the detailed design phase that would be used to inform the project if relevant.

Assumptions adopted in the evaluation of impacts are reported in each of the relevant sections. However, these assumptions are often implicit and rely on expert judgement. Any assumptions and known technical deficiencies have been documented.

The EIA has been undertaken during the initial design phase of the project and, therefore, some of the technical aspects of the construction and operation have yet to be determined. Where an alternative option could cause additional impacts, these are discussed within the relevant sections. In addition, the EIA has taken a precautionary approach to adopt conservatism in the assumptions made and any scenarios assumed, so that a reasonable 'worst case' scenario was assessed. Therefore, inherent uncertainties are accounted for and subsequent modifications to the project during the detailed design phase are less likely to fall outside of the assumed envelope of the assessment parameters.

2.5 References

- IEMA (2004), Guidelines for Environmental Impact Assessment.
- IEMA (2011), The State of Environmental Impact Assessment in the UK.
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