atmos CONSULTING

36405 R2

Environmental Impact Assessment

Sandy Knowe Wind Farm Extension

Chapter 2: EIA Approach and Methodology

ERG UK Holding Ltd

ERG

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Glossary of Terms

Term	Definition
The Applicant	ERG UK Holding Limited
The Agent	Atmos Consulting Limited
Environmental Impact Assessment	Environmental Impact Assessment (EIA) is a means of carrying out, in a systematic way, an assessment of the likely significant environmental effects from a development
Environmental Impact Assessment Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations)
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations
The Proposed Development	The Sandy Knowe Wind Farm Extension
The Proposed Development Footprint	The area within which the Proposed Development will be located
The Proposed Development Site	The full application boundary including Sandy Knowe Wind Farm and Sandy Knowe Wind Farm Extension

List of Abbreviations

Abbreviation	Description
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ECU	Energy Consents Unit

2 EIA Approach and Methodology

2.1 Introduction

This Chapter of the EIA Report sets out the approach taken to the EIA for the Proposed Development.

This Environmental Impact Assessment Report (EIAR) has been prepared to satisfy the requirements of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the 'EIA regulations') (Scottish Government, 2017a).

The preparation of this EIAR has been undertaken in accordance with the Scottish Government Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017b).

The EIAR has also been informed by relevant best practice guidance on EIA generally, for example the Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment (2016), NatureScot and Historic Environment Scotland's Environmental Impact Assessment Handbook Version 5 (2018), and on specific environmental subjects (for example noise, air quality and landscape and visual assessment). Technical guidance has been referred to in the appropriate chapters of this EIA Report.

2.2 EIA Screening and Scoping

2.2.1 The Requirement for EIA (Screening)

Schedule 1 of the EIA Regulations lists those developments for which an EIA is mandatory, whilst Schedule 2 describes projects for which the need for EIA is judged by Scottish Ministers on a case-by-case basis.

The Proposed Development is not a Schedule 1 development, but it does fall within Schedule 2 of the EIA Regulations because it is a generating station, the construction and operation of which requires a Section 36 consent.

A Schedule 2 development is determined an EIA development if it is likely to have significant effects on the environment by virtue of factors such as its nature, size or location. Schedule 3 of the EIA Regulations sets out the criteria that should be considered by Scottish Ministers in determining whether a Schedule 2 development is likely to have significant environmental effects and requires an EIA.

It was recognised by the Applicant that the Proposed Development would have the potential to have significant environmental effects and has voluntarily undertaken an EIA and is submitting an EIA Report. Under the EIA Regulations, this decision deems the Proposed Development to be an EIA Development, subject to the provisions of the EIA Regulations. Whilst it is considered that the Proposed Development has the potential for significant environmental effects, it is important to note that this does not mean that this is the conclusion of the EIA.

The Applicant considers that EIA has an important role in developing the design of the Proposed Development to minimise adverse environmental effects and maximise positive benefits, through embedded mitigation into the design or the incorporation of

mitigation measures into the construction and/or operation of the Proposed Development to avoid, reduce and, if possible, remedy any significant adverse effects or enhance positive effects.

2.2.2 The Scope of the EIA Report (Scoping)

An EIA Scoping Opinion was requested from the ECU in May 2021 through the submission of an EIA Scoping Report (Ref. ECU00003274). The EIA Scoping Report contained details of the site baseline and the Proposed Development design. It also proposed which environmental impacts would be assessed in the EIA, and the assessment methodologies that would be used.

The ECU consulted with a variety of statutory and non-statutory consultees before providing an EIA Scoping Opinion on 26 October 2021.

In accordance with the EIA Regulations (Regulation 5 (3)) this EIAR is based on the Scoping Opinion obtained from the ECU on 26 October 2021 and the advice contained within it regarding assessment methodology, topics and consultee comments.

Throughout the design and assessment process consultation has been undertaken with relevant parties to obtain baseline information and to agree aspects of methodology. More details of the consultation feedback relevant to each discipline are provided in the relevant chapters of this EIA Report and the Gatecheck 1 Report (Appendix 2-1).

2.3 Location of Information in the EIA Report

The EIA Regulations require a description of the likely direct and indirect significant effects on the following factors:

- Population and human health;
- Biodiversity;
- Land, soil, water, air and climate; and
- Material assets, cultural heritage and the landscape.

Along with the potential interactions between those factors, the Regulations also require identification, description and assessment of the expected effects deriving from the vulnerability of the development to risks of major accidents and disasters in so far as these risks are relevant to the development.

In accordance with Regulation 5(2) the EIA Report must include:

a) *"a description of the development comprising information on the site, design, size and other relevant features of the development;*

b) *a description of the likely significant effects of the development on the environment;*

c) *a description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*

d) *a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;*

e) *a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*

f) *any other information specified in schedule 4 relevant to the specific characteristics of the development and to the environmental features likely to be affected.*"

Table 2.1 identifies the location within this EIAR of the information required for inclusion in accordance with Schedule 4 of the EIA Regulations.

Table 2.1: Information Contained within the EIA Report

Required information (EIA Regulations)	Relevant Section of this EIA Report
A description of the development, including in particular: (a)a description of the location of the development; (b)a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; (c)a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and (d)an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.	A description of the location of the Proposed Development and its characteristic of the construction and operation phases is presented in **Chapter 3**. The predicted materials and natural resources used and the expected residues and emissions of the Proposed Development are reported in **Chapters 5 to 13.**
2. A description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.	**Chapter 3** discusses the reasonable alternatives considered.
3. 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 as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of relevant information and scientific knowledge.	The baseline description is included in each of the technical chapters of the EIA Report**, Chapters 5 to 13.**
4. A description of the factors specified in regulation 4(3) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land	**Chapters 5 to 13** discuss the aspects likely to be affected. Effects on population and human health are considered in relation to visual aspects in **Chapter 5**, traffic aspects in **Chapter 9**, noise aspects in **Chapter**

Required information (EIA Regulations)	Relevant Section of this EIA Report
take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydro-morphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	**11**, socio-economic aspects in **Chapter 12** and shadow flicker, telecommunications and aviation radar aspects in **Chapter 13.** Effects on biodiversity are considered in **Chapters 6 and 7.** Effects on land, soil and water are considered in **Chapter 8**. Effects on Climate are considered in respect of climate change and carbon balance in **Chapter 3.** Effects on material assets and cultural heritage assets are considered in **Chapter 10.** Effects on Landscape are considered in **Chapter 5.**
5. a description of the likely significant effects of the development on the environment.	The predicted significant effects of the Proposed Development are presented as residual effects after relevant stated mitigation measures in **Chapters 5-13**.
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	**Chapters 5 – 13** set out the specific methodologies and evidence used to assess significant effects and describe assumptions and limitations as relevant.
7. A description of the measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.	Specific mitigation measures are reported in each relevant technical chapter (**Chapters 5-13**) and summarised in **Chapter 14** in a tabular form in accordance with the request from the ECU within the Scoping Opinion (Section 4.1).
8. 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. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	The Proposed Development Site is not in a location of natural disasters and construction will be undertaken in accordance with good construction practice and relevant health and safety regulations and requirements, The overall approach to construction is presented in **Chapter 3.** **Chapter 8** considers risks associated with flooding and peat landslide hazard.
9. A Non-Technical Summary of the information provided under points 1 to 8 above.	A Non-Technical Summary (NTS) accompanies this EIA Report as **Volume 5**.

2.4 EIA Methodology

The reporting of the assessment of environmental impacts in Chapters 5 to 13 of this EIAR has been undertaken in a consistent, structured format, with reference to relevant technical standards, guidelines and legislation and consultation undertaken.

The EIA Regulations refer to the requirement to report the significance of effects. A two-stage assessment has been undertaken whereby the potential effects have been identified and their significance assessed in relation to the setting.

The assessments have been split into the three development phases as each phase has the potential to give rise to different effects:

- **Construction;** generally temporary/short-term effects that occur during the construction of the Proposed Development;
- **Operation;** Effects resulting from the use of the site; and
- **Decommissioning;** Effects arising from the removal of infrastructure and restoration of the site.

In most of the chapters within this EIA Report, the significance of an effect is described as a function of magnitude of effects and receptor sensitivity.

Where best practice guidance exists, for example from a professional institution, some chapters follow slightly different methodologies (for example Landscape and Visual Effects have been established/assessed in accordance with industry guidance specifically for that subject and details are provided within that chapter and appendix).

General guidelines on the assessment methodology used within chapters are presented in the following sections.

2.4.1 Receptor Sensitivity

Receptors are affected depending on their setting, size and importance. Where appropriate, it may be necessary to relate the extent of the effects to the importance of the features, i.e. international, national and local standards and an appreciation of the relationship with relevant planning policy.

Additionally, consideration of the reversibility and duration of the predicted effect is required in order to determine significance.

Table 2.2: Receptor Sensitivity

Sensitivity	Importance	Feature Examples
High	National/ International	Residential (occupied) properties, Scheduled Ancient Monuments, Sites of schedulable quality, A-listed buildings or buildings of equivalent quality, some Conservation Areas, Sites of Special Scientific Interest (SSSI)/National Parks, Special Areas of Conservation (SAC) Ramsar designated sites, Special Protection Area (SPA), National Nature Reserve (NNR), National Marine Reserve, Habitat Directive sites, large or moderate water bodies of good ecological status, salmonid waters, primary/high productivity aquifer, properties at risk of flooding, public and private water supplies for human consumption.
Medium	Regional	B-listed buildings or buildings of equivalent quality, some Conservation Areas, archaeological remains of regional importance, Receptor of medium environmental importance or of local regional value, water bodies of good or moderate ecological status and/or Cyprinid waters, sites containing viable areas of threatened habitats listed in a Regional Biodiversity Action Plan, private water supplies for non-potable supply, moderate productivity or secondary aquifer.
Low	Local	C(s)-listed buildings or buildings of equivalent quality; archaeological remains of local importance, local nature reserve, water body of low environmental importance, low productivity aquifer.

Sensitivity	Importance	Feature Examples
No importance	Lesser/Unknown	Archaeological remains of lesser importance/unknown importance; greenfield; non-productive aquifer.

2.4.2 Magnitude of Effect

The extent of potential effect is based on the scale of the potential effect and will vary from site to site and location to location. Table 2.3 provides examples of the magnitude of the effect as used within the assessment of the Proposed Development.

Table 2.3: Magnitude of Effect

Magnitude of Effect	Definition
Substantial	Total loss of or major alteration to key elements or features of the pre-development conditions, such that the post-development character or composition of the feature will be fundamentally changed.
Medium	Loss of or alteration to key elements or features of the pre-development conditions, such that the post-development character of the feature will be partially changed.
Low	Minor alteration from pre-development conditions.
No change	No or unquantifiable change to pre-development conditions.

2.4.3 Assessment of Significance

In the determination of the significance of effect, the following criteria have been used:

- Extent (local, regional or national) and magnitude of the effect;
- Effect duration (whether short, medium or long-term);
- Effects nature (whether direct or indirect, reversible or irreversible, adverse, neutral or beneficial);
- Whether the effects occur in isolation, are cumulative or interactive;
- Performance against environmental quality standards;
- Sensitivity of the receptor; and
- Compatibility with environmental policies.

Where it has not been possible to quantify effects, qualitative assessments have been carried out, based on available knowledge and professional judgment. Where any uncertainty exists, this has been noted in the relevant technical chapter in the Limitations section.

The significance of potential effects arising from the Proposed Development has been categorised throughout this EIA Report using the scale as follows:

- **Negligible** – no discernible deterioration or improvement to the existing environment;
- **Minor** (positive or negative) – where the Proposed Development will cause a small improvement (or deterioration) to the existing environment;
- **Moderate** (positive or negative) – where the Proposed Development will cause a noticeable improvement (or deterioration) to the existing environment; and
- **Major** (positive or negative) – where the Proposed Development will cause a substantial improvement (or deterioration) to the existing environment.

To enable consistent understanding of the EIA findings, standard terms are used wherever possible to classify effects throughout the ES (major, moderate, minor and negligible), and effects are also described as being adverse, neutral or beneficial.

Where the quality standards for each technical discipline result in deviations in the standard assessment methodology, these are described in the relevant chapters as applicable.

In general, the classification of an effect is based on the magnitude of the effect and sensitivity or importance of the receptor, using the matrix shown at Table 2.4.

Where there are deviations away from this matrix (due to the technical guidance for a specific assessment topic), this is highlighted within the relevant technical chapter and the reason for the variation explained.

Table 2.4: Classification of Effects

Receptor Sensitivity Importance	Magnitude of Effects			
	Substantial	Medium	Low	No Change
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
No importance	Minor	Negligible	Negligible	Negligible

Significant Effects are only considered to be classified as 'Major' or 'Moderate'. Effects classified as 'Minor' or 'Negligible' are considered to be Non-Significant.

2.4.4 Mitigation Measures

Mitigation measures have been considered for each significant adverse effect identified. These measures can include:

- Changes to the Proposed Development design;
- Physical measures applied on site; and
- Measures to control particular aspects of the construction or operation of the Proposed Development.

Wherever possible, mitigation has been developed to ensure that no significant residual (negative) environmental effects are predicted. A summary of mitigation measures proposed is presented in Chapter 14 Schedule of Mitigation.

2.4.5 Cumulative and Combined Effects

In addition to the assessment of direct effects of the Proposed Development, an assessment (where appropriate) is also undertaken of the likely interrelationship and cumulative effects of the development proposal.

The assessment of interrelationship effects is required by the EIA Regulations and refers to the interaction between the different environmental aspects, for example water and ecology.

The EIA Regulations also require that the cumulative effects of the Proposed Development in combination with other existing or approved projects is taken into account.

Under cumulative effects, adjacent wind energy schemes either operational, consented or in planning are considered in conjunction with the Proposed Development in order to assess whether the resulting effect of all developments is of greater significance than that of the individual constituents.

This is of particular importance when considering potential landscape and visual effects. Therefore Chapter 5: Landscape and Visual of this EIAR considers developments (operational, consented and in planning) within a 40km radius of the Proposed Development.

The general criteria for the inclusion of developments in the assessment of cumulative landscape and visual effects are as follows:

- Only wind energy generation developments have been included;
- No single turbine developments have been included; and
- No turbines of less than 50m blade tip height have been included.

This is explained further in Chapter 5: Landscape and Visual Impact Assessment.

It should be noted that not all developments within these radii will be relevant to each discipline and therefore, will be considered on case by case basis in the relevant cumulative impact sections.

2.4.6 Assumptions and Limitations

The EIA process is designed to enable good decision-making based on the best possible information about the environmental implications of a proposed development. However, there will always be some uncertainty inherent in the scale and nature of the predicted environmental effects.

This uncertainty arises because of the level of detailed information available at the time of the assessment, the potential for minor alterations to project designs following completion of the EIA Report and/or due to the limitations of the prediction process. Where specific assumptions have been made in relation to the technical environmental assessments, these are reported in the relevant chapters of this EIA Report.

The environmental effects identified in this EIA Report and the level of mitigation described effectively set the minimum standard which will be achieved by the Proposed Development.

The Applicant has a commitment to ensuring that, where details of the Proposed Development differ from those assessed in the EIA Report, the Proposed Development will not have adverse environmental effects which are significantly worse than those which have been assessed in the EIA and reported in this EIA Report.

2.5 References

Institute of Environmental Management and Assessment (IEMA) (2016). Environmental Impact Assessment Guide to: Delivering Quality Development.

Landscape Institute & IEMA (2013). Guidelines for Landscape and Visual Impact Assessment. Third Edition.

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