

Environmental Impact Assessment Report

# Lairdmannoch Energy Park

Chapter 2: EIA Approach and Methodology

# Lairdmannoch Energy Park Limited **Wind2**

May 2025

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## Glossary of Terms

Term	Definition		
The Applicant	Lairdmannoch Energy Park Limited		
The Agent	Atmos Consulting Limited		
Environmental Advisors and Planning Consultants	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 (ElA Regulations)		
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations		
The Proposed Development	Lairdmannoch Energy Park		
The Proposed Development Site	The full application boundary as per Figure 1-1		

#### List of Abbreviations

Abbreviation	Description
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ECU	Energy Consents Unit
IEMA	Institute of Environmental Management and Assessment
NNR	National Nature Reserve
NTS	Non-Technical Summary
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest



# 2 EIA Approach and Methodology

# 2.1 Introduction

This Chapter of the EIA Report sets out the approach taken in carrying out the EIA for the Proposed Development to satisfy the requirements of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the 'EIA Regulations').

EIA is a systematic process that examines the likely significant effects (beneficial or adverse) on the environment resulting from the construction, operation and decommissioning of the Proposed Development.

The preparation of this EIA Report 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, 2017).

This EIA Report has also been informed by relevant best practice guidance on EIA, for example the Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment (IEMA, 2016) and NatureScot and Historic Environment Scotland (HES)'s Environmental Impact Assessment Handbook Version 5 (Nature Scot and HES, 2018).

On specific environmental subjects (for example noise, 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:

"(1) a generating station;"

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 acknowledged by the Applicant that the Proposed Development would likely result in significant environmental effects. The Applicant has therefore voluntarily undertaken an EIA of the Proposed Development. The Proposed Development is therefore deemed 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. And hence, the EIA sets out to assess whether or not significant effects result.

Furthermore, 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.

### 2.2.2 The Scope of the EIA Report (Scoping)

An EIA Scoping Opinion was requested from the Energy Consents Unit (ECU) in August 2023 through the submission of an EIA Scoping Report (Ref. ECU00004900). The EIA Scoping Report contained details of the Site baseline and the Proposed Development design. It also proposed which environmental factors and elements 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 in January 2024 (provided in **Technical Appendix 2-1** in **Volume 3** of this EIA Report).

In accordance with Regulation 5 (3) of the EIA Regulations, this EIA Report is based on the Scoping Opinion obtained from the ECU in January 2024 and the advice contained within it regarding assessment methodology, environmental factors 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 provided in **Technical Appendix 2-2** in **Volume 3** of this EIA Report.

# 2.3 Location of Information in the EIA Report

The EIA Regulations require a description and assessment 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 EIA Report of the information required for inclusion in accordance with Schedule 4 of the EIA Regulations.

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Required information (EIA Regulations)	Relevant Section of this EIA Report
<ol> <li>A description of the development, including in particular:</li> <li>(a) a description of the location of the development;</li> <li>(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;</li> <li>(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;</li> <li>(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 paraticular and paratices and emissions</li> </ol>	A description of the location of the Proposed Development and its characteristics during the construction and operation phases is presented in <b>Chapter 3.</b> The predicted materials and natural resources used and the expected residues and emissions of the Proposed Development are reported in <b>Chapters 5 to</b> <b>14.</b>
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;	<b>Chapter 3</b> 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 EIAR, <b>Chapters 5 to 14</b> .

#### Table 2-1: Information Contained within the EIA Report



Required information (ELA Requiations)	Pelovant Section of this ELA Penort
A description of the fractor appointed in	Charters 5 to 14 discuss the factors likely to be
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 take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological 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.	Chapters 5 to 14 discuss the factors likely to be significantly affected by the Proposed Development. Effects on population and human health are considered in relation to visual aspects in Chapter 5, traffic aspects in Chapter 11, noise aspects in Chapter 5, socio-economic aspects in Chapter 12 and shadow flicker, telecommunications and aviation radar aspects in Chapter 14. 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 13. Effects on cultural heritage assets are considered in Chapter 10. Effects on landscape are considered in Chapter 5.
5 A description of the likely significant effects	The likely significant effects of the Proposed
of the development on the environment	Development are presented as residual effects after consideration of additional mitigation measures in <b>Chapters 5 to 14</b> .
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.	<b>Chapters 5 to 14</b> set out the specific methodologies and evidence used to assess likely 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 ( <b>Chapters 5 to 14</b> ) and summarised in <b>Chapter 15</b> in a tabular form in accordance with the request from the ECU within the Scoping Opinion ( <b>Technical Appendix 2-1</b> in <b>Volume</b> <b>3</b> ).
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 Site is not in a location which is considered to be at risk of natural disasters or major accidents 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 <b>Chapter 3</b> , the evolution of site design can be found in <b>Section 3.2.2</b> within this chapter. <b>Chapter 8</b> considers risks associated with flooding and peat landslide hazard.
9. A Non-Technical Summary of the	A Non-Technical Summary (NTS) accompanies this
intormation provided under points 1 to 8 above.	EIA Report as <b>Volume 1</b> .



# 2.4 EIA Methodology

The reporting of the assessment of likely significant environmental effects in **Chapters 5** to 14 of this EIA Report has been undertaken in a consistent, structured format, with reference to relevant technical standards, guidelines and legislation and consultation undertaken.

#### 2.4.1 Establishing Baseline Conditions

The baseline environment comprises the existing environmental characteristics and conditions, established through desk-based studies and field surveys undertaken.

The establishment of the environmental baseline is essential to assist with the comparison against future changes as a result of the Proposed Development and to assess the likely significant environmental effects of the Proposed Development.

Specific details of the approach taken to establishing baseline conditions are provided within **Chapters 5 to 14** of this EIA Report. Typically, baseline conditions have been established by:

- Site visit and surveys;
- Desk-based studies; and
- Modelling.

Schedule 4(3) of the EIA Regulations also requires consideration of the likely evolution of the current state of the environment (baseline scenario) in the absence of the Proposed Development, as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge (the 'future baseline').

Each individual chapter provides a description of the future baseline and the data sources that have informed it, where relevant.

#### 2.4.2 Assessment Phases

The assessment phases considered for the Proposed Development are as follows:

- Existing environmental baseline (without the Proposed Development) reported at the time that the baseline data have been collected;
- Future environmental baseline (without the Proposed Development) for comparison with the construction, operational and decommissioning phases of the Proposed Development;
- Construction (which includes site preparation and earthworks) of the Proposed Development is scheduled to commence in 2029 and last for 18 months. Where relevant, each individual assessment chapter has assessed the relevant 'worst case' construction scenario and where necessary, the relevant period or 'peak' of activity within the construction programme;
- Operation (which includes maintenance) of the Proposed Development. It is assumed that the Proposed Development will be operational and maintained for a duration of 40 years;
- Decommissioning of the Proposed Development will begin following the cessation of the operational Proposed Development and will take approximately 6 months.



## 2.4.3 Assessing Likely Significant Effects

The EIA process requires the identification of the likely significant environmental effects of the Proposed Development. The following criteria has been taken into account when determining significance:

- The receptors/resources (natural and human) which would be affected and the pathways for such effects;
- The geographic importance, sensitivity or value of receptors/resources;
- The duration (short-term, medium-term or long-term); permanence (permanent or temporary) and changes in significance (increase or decrease);
- Reversibility e.g., whether the change is reversible or irreversible, permanent or temporary;
- Environmental and health standards (e.g., local air quality standards) being threatened; and
- Feasibility and mechanisms for delivering mitigating measures (e.g., Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment).

The method for assessing significance of effects varies between environmental factors but, in principle, are based on the environmental sensitivity (or value / importance) of a receptor/resource and the magnitude of change from the baseline conditions.

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

#### Receptor Sensitivity

Receptors are affected depending on their setting, size and importance (**Table 2-2**). 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.

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

#### Table 2-2: Receptor Sensitivity



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

#### 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	
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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.

#### Assessment of Significance

The significance of potential effects arising from the Proposed Development is categorised using a scale as follows:

- Neutral no effect;
- **Negligible** no discernible deterioration or improvement to the existing environment;
- **Minor** (adverse or beneficial) where the Proposed Development would cause a small improvement (or deterioration) to the existing environment;
- **Moderate** (adverse or beneficial) where the Proposed Development would cause a noticeable improvement (or deterioration) to the existing environment; and
- **Major** (adverse or beneficial) where the Proposed Development would 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 EIA, 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. Significance mains
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<b>Receptor Sensitivity</b>	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	

Effects that are classified as 'Major' or 'Moderate' are considered 'Significant'. Effects classified as 'Minor' or 'Negligible' are considered to be 'Not Significant'.

#### 2.4.4 Mitigation Measures

Mitigation can be relied on to reduce any likely significant environmental effects from the Proposed Development. The sequential steps of the mitigation are as follows:

- Avoidance take measures to avoid creating impacts from the outset;
- Minimisation measures taken to reduce the duration, intensity and extent of the impact if they cannot be avoided;
- Restoration measures taken to improve ecosystems following exposure to unavoidable impacts; and
- Offset measures taken to compensate for any residual impacts.

The Environmental Impact Assessment Guide to Shaping Quality Development (IEMA, 2016) refers to three distinct forms of mitigation:

- Primary an intrinsic part of the project design;
- Secondary typically described within the individual assessment chapters of the EIA Report, but often are secured through planning conditions and/or management plans; and
- Tertiary required regardless of any EIA, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices.

Wherever reasonably practicable, mitigation has been developed to ensure that no significant residual (adverse) environmental effects are predicted. A summary of mitigation measures proposed is presented in **Chapter 15** of this EIA Report.

#### 2.4.5 Cumulative and Combined Effects

In addition to the assessment of likely significant environment effects of the Proposed Development in isolation, an assessment (where appropriate) is also undertaken of the likely interrelationship and cumulative effects of the Proposed Development.

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



The EIA Regulations also require that the cumulative effects of the Proposed Development in combination with other existing or approved developments are also assessed.

In this EIA Report, nearby wind energy and solar energy schemes which are 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 likely significant landscape and visual effects. Therefore, **Chapter 5: Landscape and Visual Impact Assessment** of this EIA Report considers wind developments (operational, consented and in planning) within a 20km radius, and solar developments within a 5km radius of the Proposed Development Site.

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

- Single turbine developments within the 20km have been included where identified however none have been consented in the last ten years and have therefore been scoped out from further assessment; and
- No turbines of less than 50m blade tip height have been included as per NatureScot's guidance on cumulative landscape and visual impact assessments (CLVIA) (NatureScot, 2021).

It should be noted that not all developments within this radius will be relevant to each discipline and therefore, will be considered on a case by case basis in each individual assessment chapter.

For ornithology, NatureScot technical guidance for the discipline was followed (NatureScot, 2012) in that the cumulative area was taken as the Natural Heritage Zone (NHZ) encompassing the Proposed Development. For this Proposed Development the NHZ which constituted the search area was NHZ19 Western Southern Uplands and Inner Solway. NatureScot provided the regional database for cumulative wind developments; this was then reviewed for recent applications to ensure there was no more information available. **Chapter 7: Ornithology** presents a full methodology and results.

#### 2.4.6 Difficulties and Uncertainties

The EIA process is designed to enable good decision-making based on the best possible information about the likely significant effects 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 and therefore represent a reasonable 'worst case' scenario.



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 that are significantly worse than those that have been assessed in the EIA and reported in this EIA Report.



# 2.5 References

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