



Chapter 2

EIA Process & Methodology

Table of contents

2.1	Introduction	3
2.2	Legislation, Policy and Guidelines	3
2.3	Legal Framework for the EIA	5
2.3.1	Overall EIA Process	5
2.3.2	Screening	5
2.3.3	Scoping	5
2.4	The EIA Process	5
2.5	Scope of the EIA	5
2.5.1	Technical Scope	5
2.5.2	Spatial Scope	6
2.5.3	Temporal Scope	6
2.6	Assessment of Effects	6
2.7	Cumulative Effects	6
2.8	Mitigation Measures	7
2.9	Enhancement	7
2.10	Assumptions, Limitations & Uncertainty	7
2.11	Summary	7
2.12	References	8



Chapter 2

EIA Process & Methodology

2.1 Introduction

1. This chapter of the EIA Report sets out the broad approach taken to the Environmental Impact Assessment (EIA) of the proposed Development.
2. The EIA process assists the Scottish Ministers in their determination of the application by identifying where significant environmental effects are predicted. This assessment has taken account of contributions provided from consultation with statutory consultees, interested parties and the general public.
3. The structure of the EIA Report follows the requirements of Schedule 4 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017) and other relevant good practice guidance.

2.2 Legislation, Policy and Guidelines

4. During the EIA, several legislative and best practice documents have informed the process. Specific legislation and best practice guidance has also been referenced at the end of each technical chapter.
5. The main piece of legislation is the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017) (hereafter referred to as the 'EIA Regulations'). The proposed Development meets the Schedule 2, Category (a) criteria of the EIA Regulations, by nature of it being classified as a generating station which requires consent under Section 36 of the Electricity Act. The criteria for considering whether a Schedule 2 development requires the preparation of an EIA is set out in Schedule 3 of the EIA Regulations. Schedule 4 of the EIA Regulations provides details of the information to be included within the EIA Report.
6. In addition to the above, the following regulations and best practice guidance have been referred to:
 - The Electricity Act 1989;
 - The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended),
 - Planning Circular 1/2017 (Scottish Government, 2017b);
 - Scottish Planning Policy (Scottish Government, 2014);
 - Planning Advice Note (PAN) 1/2013 Environmental Impact Assessment (Scottish Government, 2017c);
 - Guidelines on the Environmental Impacts of Windfarms and Small-Scale Hydroelectric Schemes (Scottish Natural Heritage, 2002);
 - Guidelines for Environmental Impact Assessment, Institute of Environmental Management and Assessment (IEMA, 2006);

- A Handbook on Environmental Impact Assessment (V5) (Scottish Natural Heritage, 2018); and
- Assessing the Cumulative Impact of Onshore Wind Energy Developments, (Scottish Natural Heritage, 2012).

7. Technical guidance or specific regulations are also cited within Chapter 6-14.
8. **Table 2.2.1** below sets out how the information required under Schedule 4 'Information for inclusion in Environmental Impact Assessment Reports' of the EIA Regulations has been provided in this EIA Report.

Table 2.2.1 Information Required in the EIA Report

Required Information (EIA Regulations)	Relevant Reference within this EIA Report
<p>1. A description of the development, including in particular:</p> <p>(a) a description of the location of the development;</p> <p>(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;</p> <p>(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;</p> <p>(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.</p>	<p>The proposed Development is described in Chapter 4: Development Description of the EIA Report, including consideration of anticipated construction methods and the operation of the proposed Development.</p> <p>Figures 1.1 and 4.1 show the site location plan and the proposed Development layout respectively.</p> <p>The land use requirements during construction and operational phases are also described in Chapter 4: Development Description</p> <p>Expected residues and emissions are addressed, where relevant, in the appropriate technical chapters of this EIA Report.</p>
<p>2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.</p>	<p>Chapter 3: Site Selection & Design of the EIA Report describes the design iteration process and details how the proposed Development site was chosen, and the environmental constraints taken into consideration in the design process.</p>
<p>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.</p>	<p>A description of the existing environment is provided within each technical chapter.</p> <p>Evolution of the site in absence of the proposed Development (the "do-nothing scenario") is addressed in Chapter 3: Site Selection & Design.</p>

Required Information (EIA Regulations)	Relevant Reference within this EIA Report
<p>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.</p>	<p>The receptors potentially affected by the proposed Development are detailed within each of the technical chapters. This is based on the Scoping Opinion and consultation feedback.</p> <p>Impacts on the water environment are covered in Chapter 7: Hydrology, Hydrogeology, Geology & Soils.</p> <p>Material assets are addressed through the assessment of cultural heritage effects and other chapters as appropriate.</p>
<p>5. A description of the likely significant effects of the development on the environment resulting from, inter alia:</p> <p>(a) the construction and existence of the development, including, where relevant, demolition works;</p> <p>(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;</p> <p>(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;</p> <p>(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);</p> <p>(e) the cumulation of effects with other existing and/or approved development, considering any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;</p> <p>(f) the impact of the development on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the development to climate change;</p> <p>(g) the technologies and the substances used.</p> <p>The description of the likely significant effects on the factors specified in regulation 4(3) should cover 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 development. This description should consider the environmental protection objectives established at Union or Member State level which are</p>	<p>The predicted potential significant effects arising from the construction and operation of the proposed Development have been reported, along with the measures required to mitigate these and the predicted significant residual effects, in each of the technical chapters of the EIA Report.</p> <p>Effects have been predicted in relation to each of the construction and operational phases of the proposed Development, including the nature of these effects and their duration.</p> <p>Cumulative effects are considered within each technical chapter.</p> <p>The overall approach and methods used in the assessment of environmental impacts are discussed in this Chapter. Impact methods specific to each technical assessment are summarised within each technical chapter of the EIA Report.</p>

Required Information (EIA Regulations)	Relevant Reference within this EIA Report
<p>relevant to the development including in particular those established under Council Directive 92/43/EEC3 and Directive 2009/147/EC.</p>	
<p>6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.</p>	<p>An overview of the methodology of the assessment is provided in Chapter 2: EIA Process & Methodology, while the individual technical chapters provide details of each technical assessment.</p>
<p>7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases</p>	<p>The overall approach to mitigation is discussed in Section 2.8 of this EIA Report. Specific mitigation measures are reported in each relevant technical chapter and in the schedule of committed mitigation measures presented as part of Chapter 15: EIA Summary.</p>
<p>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. Relevant information available and obtained through risk assessments pursuant to legislation of the European Union such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments may be used for this purpose provided that the requirements of this Directive are met. 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.</p>	<p>Consideration of major accidents and/or disasters have been included within Chapter 14: Other Issues.</p>
<p>9. A Non-Technical summary of the information provided under points 1 to 8.</p>	<p>A Non-Technical Summary is presented as a stand-alone document.</p>
<p>10. A reference list detailing the sources used for the descriptions and assessments included in the EIA report.</p>	<p>References are provided at the end of each chapter of the EIA Report.</p>

2.3 Legal Framework for the EIA

2.3.1 Overall EIA Process

22. In order for the EIA process to be as effective as possible it should be used as an iterative process throughout the design stage, rather than a single assessment performed once the design is finalised.
23. The findings of the EIA are presented in this EIA Report, which has been prepared in accordance with the EIA Regulations 2017.
24. The broad approach which has been followed in undertaking the EIA is presented in this chapter and an overview of the methodology adopted for each technical study is provided within the respective EIA Report technical chapters (Chapters 6 to 14).

2.3.2 Screening

25. Screening is the process by which it is determined whether an EIA should be conducted for the proposed Development.
26. The proposed Development falls within Schedule 2 of the EIA Regulations. Schedule 3 of the EIA Regulations sets out the criteria that should be considered in determining whether a Schedule 2 development is likely to have significant environmental effects and hence require a formal EIA.
27. A formal screening opinion was not sought from the Scottish Ministers. The Applicant acknowledges that the proposed Development is likely to have significant environmental effects and has therefore voluntarily undertaken an EIA.

2.3.3 Scoping

28. The EIA scoping process is undertaken to identify the potentially significant environmental impacts that should be considered when assessing the potential effects of the proposed Development. Whilst not mandatory, an EIA Scoping Opinion may be obtained from the planning authority (in the case of the proposed Development, the Scottish Government's Energy Consents Unit (ECU)) which would set out the matters that should be considered through the EIA. In reaching its EIA Scoping Opinion, the ECU consults statutory and non-statutory stakeholders for their respective opinions regarding EIA scope.
29. The scope of the EIA report has been established through a combination of informal Scoping consultation with various stakeholders, and an EIA Scoping process that culminated in the preparation of a Scoping request to Scottish Ministers.
30. A Scoping Report was submitted to the ECU in March 2019, requesting a formal Scoping Opinion. The Scoping Opinion was received from the ECU in May 2019 and is included in **Technical Appendix 5.1**.
31. The scoping and consultation process undertaken is documented in **Chapter 5: Scoping and Consultation** of this EIA Report. This EIA report addresses the points collated during the Scoping process and are referred to where appropriate in each Chapter. A summary table is also included as **Technical Appendix 5.2 to Chapter 5: Scoping and Consultation**.

2.4 The EIA Process

32. EIA is the systematic process of compiling, assessing and presenting all the significant environmental effects of a proposed development. The assessment is designed to inform the decision-making process by way of setting out the likely environmental profile of a project. Identification of potentially significant adverse environmental effects then leads to the design and incorporation of appropriate mitigation measures into both the design of the scheme and the way in which it is constructed. The process is explained further in **Chapter 3: Site Selection and Design**.

33. Throughout the assessment, a distinction has been made between the term 'impact' and 'effect'. The EIA Regulations 2017 refer to the requirement to describe the "likely significant effects on the environment". An impact is defined as the likely change to the characteristics/nature of the receiving environment, as a result of the proposed Development (e.g. noise from turbines), whereas the 'effect' relates to the significance of the impact (e.g. a significant residual noise effect on residential properties). These terms have been adopted throughout this EIA to present a consistent approach to the assessment and evaluation of effects and their significance.
34. The exception to this is the Landscape and Visual Impact Assessment which classifies the level of change to the receiving environment as the "magnitude of change" in line with the recommendations of the Guidelines for the Landscape and Visual Impact Assessment (V3) (Landscape Institute, 2013). However, this terminology should be considered interchangeable with "magnitude of impact".
35. The main steps in the EIA assessment process for the proposed Development have been:
 - Baseline surveys (where appropriate and possible) to provide information on the existing environmental character of the proposed site and the surrounding area.
 - Consideration given to the possible interactions between the proposed Development and the existing and predicted future site conditions. These interactions or effects are assessed using stated criteria based on accepted guidance and best practice.
 - Using the outline design parameters for the proposed Development, prediction of the likely environmental effects, including direct effects and any indirect, secondary, short, medium and long-term, permanent and temporary, positive and negative effects.
 - Identification of mitigation measures designed to avoid, prevent or reduce or, if possible, off-set adverse effects as well as enhancement measures that could result in beneficial effects.
 - Assessment of alterations to the design and the reassessment of previously proposed mitigation to establish suitable mitigation for the proposed Development.
 - Assessment of the significance of any residual effects after mitigation, in relation to the sensitivity of the feature impacted upon and the magnitude of the effect predicted, in line with the methodology identified below (refer to **Section 2.8**).
 - Identification of any uncertainties inherent in the methods used, the predictions made, and the conclusions drawn during the course and the assessment process.
 - Reporting of the results in this EIA Report.
36. The EIA process is an iterative process where its findings have informed the design evolution of the proposed Development.

2.5 Scope of the EIA

2.5.1 Technical Scope

37. The technical scope of the assessment will cover the issues raised in **Table 2.2.1** and are reported in the relevant sections of this EIA Report.
38. Each environmental issue has been considered to the appropriate level of detail in the EIA Report, using the information collated during Site survey and through consultation. For each impact the baseline condition has been described, with the receptor sensitivity identified. The potential effects have been predicted and assessed for their significance. Where possible and applicable, mitigation measures have been identified and considered with the potential residual environmental effects assessed.

2.5.2 Spatial Scope

39. The spatial scope of the EIA, alternatively defined as the geographical coverage of the assessment undertaken, has taken account of a number of factors, in particular:

- the extent of the proposed Development (refer to **Figure 1.1**);
- the nature of the baseline environment, sensitive receptors and the likely impacts that could arise; and
- the distance over which predicted effects are likely to remain significant and the existence of pathways which could result in the transfer of effects to a wider geographical area than the extent of proposed physical works.

2.5.3 Temporal Scope

40. For the purposes of the EIA, construction is assumed to commence in 2022/2023. There is no proposed limit on the operational life for the proposed Development, therefore it will operate in perpetuity.

41. For construction effects, the assessment also considers the time of day that works are likely to be undertaken, for example if any night time working is required to minimise disruption to road users.

2.6 Assessment of Effects

42. Within the EIA Report, the assessment of effects for each environmental topic considers the environmental impacts of both the construction and operational phases of the proposed Development and the environmental impacts should the proposed Development not be consented (the do-nothing scenario).

43. Should the proposed Development as described in **Chapter 4: Development Description** not be consented (the do-nothing scenario), it is anticipated that the proposed Development Site will not alter from the current baseline described in Chapter 3 and within Chapters 6 to 14.

44. In order to determine whether or not the potential effects of the proposed Development are likely to be 'significant' a number of criteria are used. The significance criteria vary between topics but generally consider the following:

- international, national and local designations or standards;
- relationship with planning policy;
- sensitivity of the receiving environment;
- magnitude of impact;
- reversibility and duration of the effect; and
- inter-relationship between effects.

45. Effects that are likely to be significant, prior to mitigation, are identified within the EIA Report. The significance attributed to the resultant effect is informed by professional judgement, as to the sensitivity of the affected receptor(s) and the nature and magnitude of the predicted changes/impacts. For example, a major adverse change/impact on a feature or site of low importance will have an effect of lesser significance than the same impact on a feature or site of high importance. **Table 2.6.1** below is used as a guide to the relationship between the sensitivity of the identified receptor and the anticipated magnitude of an impact/change. Professional judgement is however equally important in establishing the suitability of this guiding 'formula' to the assessment of the significance of each individual effect.

Table 2.6.1 Guide to the Inter-Relationship Between Magnitude of Impact and Sensitivity of Receptor

		Sensitivity of Receptor/Receiving Environment to Change			
		High	Medium	Low	Negligible
Magnitude of impact/change	High	Major	Moderate to Major	Minor to Moderate	Negligible
	Medium	Moderate to Major	Moderate	Minor	Negligible
	Low	Minor to Moderate	Minor	Negligible to Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

46. The following terms are used in the EIA Report, unless otherwise stated, to determine the level of effects predicted to occur:

- major beneficial or adverse effect – where the proposed Development would result in a significant improvement (or deterioration) to the existing environment;
- moderate beneficial or adverse effect – where the proposed Development would result in a noticeable improvement (or deterioration) to the existing environment;
- minor beneficial or adverse effect – where the proposed Development would result in a small improvement (or deterioration) to the existing environment; and
- negligible – where the proposed Development would result in no discernible improvement (or deterioration) to the existing environment.

47. Using professional judgement and with reference to the Guidelines for the Environmental Impact Assessment (IEMA, 2004), the majority of the assessments within this EIA Report consider effects of moderate and greater significance to be significant, while those of minor significance and less to be non-significant. If there are deviations from this these will be clearly stated within the individual technical chapters.

48. Summary tables that outline the predicted effects associated with an environmental issue, the appropriate mitigation measures required to address these effects and subsequent overall residual effects are provided at the end of each technical chapter of the EIA Report. Distinction has also been made between direct and indirect, short and long term, permanent and temporary, beneficial and adverse effects.

2.7 Cumulative Effects

49. Part 5 of Schedule 4 of The EIA Regulations sets out the matters that require to be incorporated within EIA Reports. The EIA Regulations state that EIA Reports should include an assessment of "the cumulation of effects with other existing and/or approved development, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources".

50. Cumulative effects are those which result from incremental changes caused by past, present or reasonably foreseeable future actions resulting from the introduction of the Proposed Development. These cumulative effects cover the combined effect of individual impacts from the Proposed Development and combined impacts of several developments, as noted within the guidance provided by SNH in the document "Assessing the Cumulative Impact of Onshore Wind Energy Developments" (2012). Developments considered in addition to the Proposed Development are existing and other proposals, covering all developments, including other wind farms (SNH, 2012).
51. Cumulative effects have been considered in detail within the Landscape and Visual, Noise, and Archaeology and Cultural Heritage impact assessments. These are numbered **Chapters 6, 10 and 11** respectively.

2.8 Mitigation Measures

52. The EIA Regulations require the EIA to present a description of the measures proposed to avoid, reduce and, if possible, offset significant adverse effects. Wherever reasonably practicable, mitigation measures are proposed for each significant environmental effect predicted, and can take various forms including:
- changes to the scheme design;
 - physical measures applied on site; and
 - measures to control particular aspects of the construction or operation of the scheme.
53. Where none of the above are deemed practicable, the detailed proposed Development design will be required to include measures to offset any significant adverse effects.
54. Mitigation measures are presented as commitments in order to ensure a level of certainty as to the environmental effects of the proposed Development. There are various ways in which a level of certainty can be ensured, such as through the use of planning conditions.
55. A schedule of all of the mitigation measures proposed in this EIA Report is presented within **Chapter 15: EIA Summary**.

2.9 Enhancement

56. Similar to the reporting of mitigation measures, where opportunities for environmental enhancement are proposed, these have been included in the summary of environmental commitments reported at the end of each technical chapter and within **Chapter 15: EIA Summary**.

2.10 Assumptions, Limitations & Uncertainty

57. The EIA process is designed to enable informed decision-making based on the best available 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 because of the level of detailed information available at the time of assessment, the potential for minor alterations to the proposed Development following completion of the EIA Report and/or the limitations of the prediction processes.
58. A number of assumptions were made during the EIA process and are described below:

- the developments included within the cumulative assessment are based on those identified prior to September 2019;
- the principal land uses adjacent to the site remain unchanged during the course of the proposed Development's lifetime; and
- information provided by third parties, including publicly available information and databases are correct at the time of submission.

59. Specific assumptions may also have been made with regards to the individual technical disciplines, which are described within each chapter.
60. The main limitation has been that while baseline conditions have been assumed to be accurate at the time of surveying, due to the dynamic nature of the environment, these conditions may change during site preparation, construction and operation.
61. There is also the potential for a degree of uncertainty as certain aspects of the proposed Development may be subject to change until a detailed design has been finalised. This uncertainty can come in the forms of:
- turbine selection;
 - foundation and infrastructure design; and
 - micro-siting of the turbines which may change due to investigation findings or implementation of mitigation measures.
62. Any limitations to the EIA are summarised in each technical chapter, where relevant, together with the means proposed to mitigate these.
63. Figures for land take and habitat loss should be considered as approximate and could vary slightly once the detailed design is developed.
64. Information on the proposed Development construction has been developed by the project team based on professional judgement and outline design works, on the most likely methods of construction, plant, access routes and working areas etc. for the purposes of the EIA. The final choice on construction methods will rest with the contractors and may differ from those used in this assessment, and any such uncertainty is stated in **Chapter 15: EIA Summary**.

2.11 Summary

65. This chapter has detailed the methodology used to conduct the EIA and produce the EIA Report for the Proposed Development. An overview of the relevant legislation and guidance documents has been provided with the main legislative document being The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended). Following this, the EIA process and the scope of the assessment are detailed. General assumptions, limitations and uncertainties are also stated.

2.12 References

Institute of Environmental Management and Assessment (2006). Guidelines for Environmental Impact Assessment.

Scottish Government (2014). Scottish Planning Policy. Available at: <http://www.gov.scot/Topics/Built-Environment/planning/Policy>

Scottish Government (2017a). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: <http://www.legislation.gov.uk/ssi/2017/101/contents/made>

Scottish Government (2017b). The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011 (as amended), Planning Circular 1/2017. Available at: <https://beta.gov.scot/publications/planning-circular-1-2017-environmental-impact-assessment-regulations-2017/pages/16/>

Scottish Government (2017c). Planning Advice Note (PAN) 1/2013 Environmental Impact Assessment. Available at: <http://www.gov.scot/Resource/0052/00521028.pdf>

Scottish Natural Heritage (2002). Guidelines on the Environmental Impacts of Windfarms and Small Scale Hydroelectric Schemes. Available at: <http://www.snh.org.uk/pdfs/publications/heritagemanagement/Guidelines%20Windfarms%20Hydroelectric%20Schemes.pdf>

Scottish Natural Heritage (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments. Available at: <https://www.nature.scot/sites/default/files/2017-09/A675503%20-%20Assessing%20the%20cumulative%20impact%20of%20onshore%20wind%20energy%20developments.pdf> Scottish Natural Heritage (2018). A Handbook on Environmental Impact Assessment. Available at: <https://www.nature.scot/handbook-environmental-impact-assessment-guidance-competent-authorities-consultees-and-others>

Clauchrie Windfarm Project Team

ScottishPower Renewables
9th Floor Scottish Power Headquarters
320 St Vincent Street
Glasgow
G2 5AD

clauchriewindfarm@scottishpower.com

