



Chapter 5

Environmental Impact Assessment Report

Table of contents

5.1	Executive summary	1
5.2	Introduction	1
5.3	Requirements of the EIA Regulations	1
5.3.1	Legislation and guidance	2
5.4	EIA and the design process	2
5.5	Determining the scope of the EIA Report	3
5.6	Approach and methods	3
5.6.1	Introduction	3
5.6.2	Baseline conditions	3
5.6.3	Consultation	3
5.6.4	Assessment of effects	3
5.6.5	Sensitivity of receptors	3
5.6.6	Magnitude of effects	3
5.6.7	Mitigation	3
5.6.8	Monitoring	4
5.6.9	Statement of significance	4
5.6.10	Consideration of cumulative effects	4
5.6.11	Consideration of transboundary effects	4
5.6.12	Assumptions, limitations and technical difficulties	4
5.7	References	5



Chapter 5

Environmental Impact Assessment Report

5.1 Executive summary

- Under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations), the proposed Development is considered likely to have significant effects on the environment and must undergo the process of EIA and an EIA Report must be submitted with the application.
- Potential environmental effects have been assessed to identify any that may be significant in the context of the EIA Regulations. Mitigation is proposed where possible to prevent, reduce or offset significant effects. The general approach to how this is done is presented in this Chapter.
- In accordance with the EIA Regulations, the assessment has also considered 'cumulative effects'. By definition these are effects that result from incremental changes caused by past, present or reasonably foreseeable actions together with the proposed Development.

5.2 Introduction

- This Chapter discusses the need for EIA and sets out the approach to assessment taken in this EIA Report. This EIA Report has been prepared for the purposes of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (the EIA Regulations).
- The EIA Regulations define the proposed Development as “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 development that given the nature, location and characteristics of the proposed Development that an EIA would be required. It was, therefore, not considered necessary to seek a screening opinion and this EIA Report is submitted voluntarily as set out in Section 3.3.3 of the ECU EIA Guidance (Scottish Government, 2000).
- Establishing which aspects of the environment and associated issues are relevant for a project, is captured in the EIA scoping process. Scoping is the process of identifying those aspects of the environment and associated issues that need to be considered when assessing the potential effects of a particular development proposal. This recognises that there may be some environmental elements where there would be no significant issues or likely effects resulting from the proposed Development, and hence where there is no need for further assessment to be undertaken. The Scoping exercise for the proposed Development is detailed in **Chapter 6 Scoping and Consultation**.
- Following the identification of the scope of the EIA, individual environmental matters are subject to survey, investigation and assessment, and individual technical discipline Chapters are prepared for presentation in an EIA Report to accompany the application for a proposed development. The assessment methodologies are based on recognised good practice and guidelines specific to each discipline area.
- The EIA Regulations prohibit the Scottish Ministers from granting permission for EIA development unless they have taken the environmental information provided into consideration.

- This EIA Report has been prepared in order to be taken into consideration by the Scottish Ministers in the determination of an application under Section 36 of the 1989 Act for the proposed Development.

5.3 Requirements of the EIA Regulations

- The approach to this EIA has followed the requirements of the EIA Regulations.
- The EIA Regulations require a description of the likely 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.
- The EIA Report must identify, describe and assess the direct and indirect significant effects of the proposed Development and the interaction between those factors.
- The description 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.
- Schedule 4 of the EIA Regulations sets out the information that must be included in the EIA Report, summarised in **Table 5.1**. This also identifies where the corresponding information can be found in the EIA Report.

Required Information	Relevant Section in EIA Report
1. Description of the development, including in particular: <ul style="list-style-type: none"> (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; (b) a description of the main characteristics of the operational phase of the development for instance, energy demand and energy used, nature and quality of the materials and natural resources (including water, land, soil and biodiversity) used; (c) 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 location of the proposed Development is presented in Chapter 2 Site Description and Design Evolution . A description of the proposed Development and its characteristics is presented in Chapter 3 Proposed Development . The predicted individual emissions and residues of the proposed Development are reported in Chapters 7 to 15 .
2. A description of the reasonable alternatives studied by the developer, which are relevant to the proposed Development and its special characteristics, and an indication of the main reasons for this choice, taking into account a comparison of the environmental effects.	The alternatives considered are covered under Chapter 2 Site Description and Design Evolution .
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 assessment with reasonable effort on the basis of the availability of relevant information and scientific knowledge	This is described in the baseline section of each EIA assessment in the EIA Report (Chapters 7 to 16), where relevant.
4. A description of the factors specified in item 3 above likely to be significantly affected by the development: population, human health biodiversity, land, soil, water, air, climate,	Effects on population and human health are discussed in relation to visual/residential amenity impacts Chapter 7 Landscape and Visual Impact Assessment , traffic

Required Information	Relevant Section in EIA Report
material assets, cultural heritage, including the architectural and archaeological aspects, and landscape.	impacts in Chapter 12 Access, Traffic and Transport , noise impacts in Chapter 13 Noise air quality impacts Chapter 15 Other Issues , and socio-economic impacts in Chapter 14 Socio-economics, Recreation and Tourism . Effects on biodiversity are discussed in Chapter 8 and 9 Effects on land and soil are discussed in Chapter 10 Hydrology, Hydrogeology, Geology and Soils and 14 Socio-economics, Recreation and Tourism , Effects on material assets and archaeological aspects are discussed in Chapter 11 Archaeology and Cultural Heritage . Effects on landscape are discussed in Chapter 7 Landscape and Visual Impact Assessment .
5. A description of the likely significant effects of the development on the environment, resulting from: (a) the construction and existence of the development, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; and (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances and the disposal and recovery of waste; (d) the risks to human health, cultural heritage or the environment (for examples due to accidents or disasters); (e) 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; (f) the impact of the development on climate and the vulnerability of the development to climate change; (g) the technologies and the substance used; The description of the likely significant effects should cover the direct effects and any indirect, secondary, cumulative, transboundary, short, medium and long-term, permanent and temporary, positive and negative effects of the development.	Assumptions and limitations in the EIA process are reported as required in the relevant technical Chapters. The predicted significant effects of the proposed Development are reported as residual effects after relevant mitigation measures in each of the technical Chapters of the EIA Report (Chapters 7 to 15). The methods used to predict significant effects are explained in this Chapter and each individual Chapter as relevant. Effects have been predicted in relation to the project's construction and permanent use of the land. The operation and nature of these effects and their duration are reported.
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.	Assumptions and limitations in the EIA process are reported as required in the relevant technical Chapters.
7. A description of the measures envisaged to avoid, prevent, reduce and if possible offset any significant adverse effects on the environment and, where appropriate, of any monitoring arrangements. That description should explain the extent, to which significant adverse effects on the environment are	EIA Report (Chapters 7 to 16). The overall approach to mitigation is discussed in this Chapter. Specific mitigation measures are reported in each relevant technical Chapter and are summarised in Chapter 16 Schedule of Commitments .

Required Information	Relevant Section in EIA Report
avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	
8. A description of the expected significant adverse effects of the proposed Development on the environment deriving from the vulnerability of the Proposed Development to risks of major accidents and/or disasters which are relevant to the project concerned. Where appropriate, the 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 the proposed response to such emergencies.	The proposed Development is not located in an area of natural disasters, such as extreme weather events, and the construction of the operation of the proposed Development would be managed within the requirements of a number of health and safety regulations including the Construction (Design and Management) Regulations 2015. The issue of peat slide and flood risk are considered in Chapter 10 .
9. A non-technical summary of the information provided under points 1 to 8	A Non-Technical Summary (NTS) is presented as Volume 1 of this EIA Report.
10. A reference list detailing the sources used for the descriptions and assessments in the EIA report	Reference lists are provided in each Chapter (Chapters 7 to 15)

Table 5.1: EIA Report information

5.3.1 Legislation and guidance

13. The EIA has been completed in accordance with the latest regulations and advice on best practice, including the following:
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended);
 - Scottish Government Guidance on The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000;
 - Scottish Government Web Based Guidance Onshore wind turbines (first published in February 2011 and last updated in May 2014);
 - Planning Advice Note (PAN) 1/2013 Environmental Impact Assessment (2013);
 - Scottish Government Web Based Guidance Onshore wind turbines (first published in February 2011 and last updated in May 2014);
 - Scottish Planning Series Planning Circular 1/2017 Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017;
 - Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment; and
 - Scottish Natural Heritage (SNH) (2018) A Handbook on Environmental Impact Assessment: Guidance for Competent Authorities, Consultees and other involved in the Environmental Impact Assessment Process in Scotland (45h Edition).

5.4 EIA and the design process

14. The EIA was treated as an iterative process, rather than a one-off, post design environmental appraisal. This has allowed the findings from the EIA to be fed into the design process, to avoid, reduce and where possible, mitigate environmental effects. Where potentially adverse environmental effects were identified through preliminary investigations as part of feasibility work, or later in the detailed EIA, consideration was given as to how the project design could be modified to design out adverse environmental effects, or where this was not possible, to identify appropriate mitigation. This process is explained further in **Chapter 2 Site Description and Design Evolution**; and in the subsequent technical assessment Chapters (**Chapters 7 to 16**).

5.5 Determining the scope of the EIA Report

15. The EIA Report is the applicant's statement on the proposed Development, its likely significant environmental effects, and the measures proposed to avoid, reduce and where possible mitigate adverse effects.
16. The scope of the EIA Report has been established through informal Scoping consultation with various stakeholders, and the EIA Scoping process that culminated in the preparation of a Scoping request to Scottish Ministers. The Scoping Report was submitted to the Energy Consents Unit in April 2019. A Scoping Opinion was received from the Energy Consents Unit in June 2019 with responses from consultees included as annexes. This EIA Report has been prepared in accordance with the Scoping Opinion received from the ECU.
17. The Scoping consultation undertaken as part of the EIA process is detailed in **Chapter 6 Scoping and Consultation**, of this EIA Report. The responses of all consultees collated during the Scoping process, are addressed in this EIA Report and referred to as appropriate in each technical EIA Report Chapter.

5.6 Approach and methods

5.6.1 Introduction

18. The assessments that have been undertaken as part of the EIA have been based upon the Site and relevant study areas. The Site is the area contained within the redline application boundary shown on **Figure 1.2**.
19. The EIA Regulations require a description of the likely significant effects on the factors specified in Section 5.2.
20. Full details of the assessment methodology used by topics in this EAI Report are provided in each chapter (**Chapter 7 to 15**). In general terms, assessment criteria have been used to evaluate environmental effects. Significance is generally determined through a combination of the sensitivity of a receptor to an effect and the magnitude of the change. This process is outlined as follows:
 - identification of baseline conditions of the Site and its environs, including the sensitivity of receptors which may be affected by changes in the baseline conditions;
 - consideration of the magnitude of potential changes in the environmental baseline;
 - assessment of the significance of effect taking account sensitivity of receptors and magnitude of effect;
 - identification of appropriate mitigation measures; and
 - assessment of significance of residual effects taking account of any mitigation measures.
21. Where significant environmental impacts are predicted in the EIA process, then the EIA Report provides measures which would be employed to eliminate or ameliorate the impact to acceptable levels. Mitigation measures can be in the form of changes to operational practice, or changes/additions to the design.
22. The above approach does not apply to all disciplines addressed in the EIA Report, and alternative approaches are described and justified in the relevant EIA Report chapters. In most cases these differences are based on guidance from technical discipline industry bodies and institutions.

5.6.2 Baseline conditions

23. A fundamental aspect of the EIA is to determine the baseline environmental conditions prevailing at the Site. These form the benchmark against which predicted changes resultant from the proposed Development are assessed to determine the magnitude of any impact. The baseline conditions have been determined by a number of different methods, including desktop studies, Site surveys, use of analytical models and the acquisition of data from third parties.
24. The assessment of each environmental parameter was undertaken in comparison to baseline conditions. This describes the existing environmental conditions at the Site (and in the wider area as pertinent to the particular environmental parameter).

25. The sensitivity of the baseline conditions has been defined according to the relative sensitivity of existing environmental features on or in the vicinity of the Site, or by the sensitivity of receptors which would potentially be affected by the proposed Development. Criteria for the determination of sensitivity or importance have been established based on prescribed guidance, legislation, statutory designation and/or professional judgement. The criteria for each environmental parameter are outlined in the EIA Report according to the technical subject area.
26. Relevant windfarms that are under construction, operational and consented are considered to be part of the baseline for the purposes of this EIA Report, unless specifically stated otherwise within relevant topic Chapters.

5.6.3 Consultation

27. Consultation has formed an integral part of the EIA process and both the EIA team and SPR have contacted a number of statutory and non-statutory consultees to determine their views on the proposed Development, collected baseline information and refined survey methodologies. Replies received in response to Scoping are detailed within the relevant technical Chapters of the EIA Report. Consultation has been undertaken with the relevant consultees for the technical disciplines and is reported in **Chapter 6 Scoping and Consultation**, and in the topic specific Chapters of the EIA Report.
28. Engagement with the local community was undertaken through public information days held on 17, 18 and 19 June 2019 and between SPR and Community Councils as well as special meetings arranged with South Knapdale and West Kintyre Community Councils. Further details on this can be found in **Chapter 2 Site Description and Design Evolution** and in the Pre-Application Consultation (PAC) Report submitted as part of the application for consent for the proposed Development.

5.6.4 Assessment of effects

29. The assessment of potential effects, using a range of appropriate methodologies, will take into account the construction and operation of the proposed Development in relation to the Site and environs. Methodologies for predicting the nature and magnitude of any potential environmental impacts vary according to the technical subject area. Numerical or quantitative methods of assessment are used to predict values which can be compared against published thresholds and indicative criteria contained in relevant guidance and standards.
30. Not all technical subject areas are capable of being assessed numerically or quantitatively, and thus qualitative assessments are used in certain cases. Such assessments rely on previous experience of similar projects, environments and professional judgement.

5.6.5 Sensitivity of receptors

31. Criteria for the determination of sensitivity (e.g. 'high', 'medium', or 'low') or of importance (e.g. 'international', 'national', 'regional' or 'authority area') have been established based on prescribed guidance, legislation, statutory designation and/or professional judgement. The criteria for each environmental parameter are provided in the relevant Chapter of the EIA Report.

5.6.6 Magnitude of effects

32. The magnitude of effects on environmental baseline conditions is identified through detailed consideration of the proposed Development, taking due cognisance of any legislative or policy standards or guidelines, and / or the following factors:
 - the degree to which the environment would be affected, e.g. whether the quality is enhanced or impaired;
 - the scale or degree of change from the baseline situation;
 - whether the effect is temporary or permanent, indirect or direct, short term, medium term or long term;
 - any in-combination effects; and
 - potential cumulative effects.

33. In some cases, the likelihood of effect occurrence may also be relevant, and where this is a determining feature of the assessment this will be clearly stated.

5.6.7 Mitigation

34. Mitigation is considered as an integral part of the overall design strategy for the proposed Development, including 'embedded' mitigation (e.g. altering and refining the proposed Development to reduce landscape and visual impact, watercourse crossings or avoid sensitive species and habitats) rather than relying solely on 'add-on' measures to prevent or reduce significant environmental effects. SPR adopts an iterative approach whereby mitigation is assessed and considered at all stages of the project. The final design of the proposed Development has evolved over the project life time as demonstrated in **Chapter 2**

Site Description and Design Evolution, paragraph 2.3, systematically being optimised during the EIA process in response to increasing knowledge of the Site and potential environmental effects.

35. Some of the measures described within **Chapters 7 to 16** of this EIA Report do not relate only to likely significant adverse effects, but have been included as good practice to reduce the level of adverse effects, or enhance the level of beneficial effects, of the proposed Development. Where relevant, these 'good practice measures' are described in the topic Chapters.
36. Where significant environmental effects are predicted in the EIA process, the EIA Report provides measures which would be employed to eliminate or ameliorate the effect to acceptable levels. Mitigation measures are envisaged through the consideration of alternatives, changes/additions to the design of the proposed Development, project management or operation to prevent, reduce or, where possible, offset any adverse significant effects.
37. In some cases, environmental mitigation through compensation may be appropriate to provide replacement features or assets (e.g. habitat to replace that which has been disturbed or lost due to the construction of the proposed Development). However, compensation may not initially be effective at remedying effects, as compensation may take time to mature sufficiently to enable the effect of the disturbance or loss to be offset.
38. Where complete avoidance of potential effects is not feasible during refinement of the Site design, additional measures are identified to reduce effects. These include a range of mitigation proposals such as the use of construction methods, avoidance of sensitive habitats, landscaping and Site operation activities. Mitigation measures follow standard techniques and best practice, and are, therefore, considered to be effective for the purposes of assessment.

5.6.8 Monitoring

39. Also incorporated, where appropriate, are monitoring measures to ensure that the proposed Development and any mitigation measures perform as required.
40. The EIA Report sets out details of any post-consent monitoring which is proposed. This includes, where appropriate, proposals to measure the effectiveness of the identified mitigation measures.

5.6.9 Statement of significance

41. Assessing the significance of effects relies, at least in part, on value judgements including placing weight or value on the environment likely to experience the change. The significance of effects at the assessment stage relates back to the effects deemed to be significant at the Scoping stage.
42. The significance of an effect is derived from an analysis of:
- the sensitivity of the receiving environment or receptor to change, including its capacity to accommodate the kinds of changes the proposed Development may bring about;
 - the amount and type of change, often referred to as the impact magnitude which includes the timing, scale, size and duration of the impact;
 - the likelihood of the impact occurring - which may range from certainty to a remote possibility;
 - comparing the impacts on the environment which would result from the proposed Development with the changes that would occur without the proposed Development - often referred to as the "do nothing" or "do minimum" comparison; and
 - expressing the significance of the effects of the project, usually in relative terms, based on the principle that the more sensitive the resource, the more likely the changes and the greater the magnitude of the changes, compared with the do nothing comparison, the greater would be the significance of the effect.

43. As the significance of effects would differ depending on the context and the 'receptors' affected by the proposed Development, there is no general definition of what constitutes significance. In EIA, the term significance reflects both its literal meaning of 'importance' and its statistical meaning where there is an element of quantification. This combination of judgemental/subjective and quantifiable/objective tests has become the standard approach to understanding and applying the test of 'significance'.

44. Significant effects are defined in each of the topic specific Chapters. Any effects associated with the proposed Development are considered to be negative except where it is stated that they are positive.

5.6.10 Consideration of cumulative effects

45. In accordance with the EIA Regulations, the assessment has considered 'cumulative effects'. These are effects that result from incremental changes caused by past, present or reasonably foreseeable projects, together with the proposed Development. Likely cumulative effects have been defined as the likely effects that the proposed Development may have in combination with other renewable energy developments in the local area which are at application stage, consented, under construction or operational (i.e. the incremental effects resulting from the proposed Development if all other developments are assumed to be constructed/operated). The extent to which the potential combined effects through that co-existence is considered, is described as appropriate throughout **Chapters 7 to 16** of this EIA Report.
46. The study area for considering cumulative effects varies per technical discipline. In general, most specialisms have considered cumulative effects to approximately 15 km from the Site which includes the following schemes detailed in **Table 5.2**. The cumulative cut-off date is 31 July 2019.
47. Further information regarding each scheme is provided in **Chapter 7 Landscape and Visual Impact Assessment**.

Name	Status
Operational and Consented	
Freasdail	Operational
Gartnagrenach Farm	Operational
Cour	Operational
Deucheran Hill	Operational
Gigha and Extension	Operational
Eascairt	Consented
Kilchamaig Farm	Consented
Proposals (with submitted/validated Planning Applications or at Appeal)	
High Constellation	Proposed
Airigh	Proposed
Killean	Proposed
Clachaig Glen	Proposed

Table 5.2: Cumulative windfarms 15 km

5.6.11 Consideration of transboundary effects

50. In accordance with the EIA Regulations, the assessment has considered 'transboundary effects.' Regulation 29 of the EIA Regulations refers to development with significant transboundary effects as being "*Development in Scotland likely to have significant effects in an EEA State other than the United Kingdom*". The nature of the proposed Development and the location of the Site are such that significant transboundary effects are not predicted for the proposed Renewable Energy Development.

5.6.12 Assumptions, limitations and technical difficulties

51. The EIA Process is designed to enable good decision-making based on the best possible available information about the environmental implications of a proposed Development. A number of assumptions have been made during preparation of the EIA Report, which are set out here. Assumptions specific to certain environmental aspects are discussed in the relevant Chapters of the EIA Report.
52. Assumptions made during the EIA include:

- the principal land uses adjacent to the Site would remain as they are at the time of the EIA Report submission. In the case of nearby projects with permission or consent granted for development these are included in the cumulative effects assessment.; and
- information provided by third parties, including publicly available information and databases is correct at the time of publication.

53. The assessment has been subject to the following limitations:

- baseline conditions have been assumed to be accurate at the time of the physical surveys but, owing to the dynamic nature of the environment, conditions may change during the Site preparation, construction and operational phases; and
- the assessment of cumulative effects has been reliant on the availability of information on other developments.

5.7 References

IEMA (2017). Guidelines for Environmental Impact Assessment.

Scottish Government (2017). Scottish Planning Series Planning Circular 1/2017: Environmental Impact Assessment Regulations 2017, Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

Scottish Government (2014). Web Based Guidance Onshore wind turbines (first published in February 2011 and last updated in May 2014).

Scottish Government (2013). Planning Advice Note (PAN) 1/2013 Environmental Impact Assessment (2013).

Scottish Government (2000). Scottish Government Guidance on The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000. Available at: <http://www.gov.scot/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Guidance/EIA-Guidance>

SNH (2018). *A Handbook on Environmental Impact Assessment: Guidance for Competent Authorities, Consultees and other involved in the Environmental Impact Assessment Process in Scotland* (5th Edition).

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended).

ScottishPower Renewables
320 St Vincent Street
Glasgow
G2 5AD

T +44 (0)141 614 0451

sheirdrimrenewables@scottishpower.com



www.scottishpowerrenewables.com

