Breackerie Wind Farm

Environmental Impact Assessment Report
Volume 1
Chapter 2: EIA Methodology

October 2023

Contents

2 EIA METHODOLOGY

Introduction

2.1 This chapter of the Environmental Impact Assessment Report (EIA Report) provides a detailed account of the Environmental Impact Assessment (EIA) methodology. The following key information is included:

- Description of the EIA process;
- Approach taken to the assessment of the proposed development and the technical studies undertaken;
- Approach to determining scale and significance of effects, and the basis upon which predictions were made (e.g. professional knowledge and judgment, initial studies, desktop exercises, preliminary survey work);
- Guidelines, methods and techniques used in the process of determining significance of effects; and
- Subject specific methodology is outlined in each of the technical chapters; Chapters 6 through to 14.

EIA Process

2.2 EIA involves the compilation, evaluation and presentation of any potentially significant (both positive and negative) environmental effects resulting from a proposed development, to assist the decision-making authority (in this case the Scottish Ministers via the Energy Consents Unit) when considering and determining an application. Early identification of potentially adverse environmental effects also leads to the identification and incorporation of appropriate mitigation measures into the project design to avoid, reduce, and if possible, remedy identified significant adverse environmental effects.

2.3 The main activities in the EIA process can be summarised as follows:

- definition of the project to be assessed;
- description of the 'baseline' environment (i.e. the conditions that are likely to prevail before commencement of the project);
- definition of the scope of the assessment;
- scoping and consultation with interested parties;
- optimisation of the proposed development based on consultation and design;
- prediction of the likely environmental effects of the proposed development;
- evaluation of these effects in terms of their likely significance;
- description of the nature and effectiveness of measures / design evolution which could be adopted in order to mitigate likely significant adverse effects, and the way in which these measures are to be monitored to measure effectiveness;
- identification of residual effects;
- submission of EIA Report and publicity;

- review of adequacy of environmental information by Energy Consents Unit, Argyll and Bute Council and statutory consultees; and
- Determination of application based on the EIA Report content and other relevant documentation supporting the application.

2.4 The information that a developer is required to submit as part of the EIA process is specified in Regulation 5 and Schedule 4 of the EIA Regulations, and includes at least:

- a description of the development comprising information on the site, design, size and other relevant features of the development;
- a description of the likely significant effects of the development on the environment;
- 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;
- 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;
- a non-technical summary of the above information; and
- Any other information specified in schedule 4 relevant to the specific characteristics of the development and to the environmental features likely to be affected.

2.5 Regulation 5 states that in order to ensure the completeness and quality of the EIA Report,

> "*(a) the developer must ensure that the EIA report is prepared by competent experts; and*
>
> *(b) the EIA report must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts*".

2.6 A statement of competency, setting out the qualifications and experience of the lead EIA Report coordinators/chapter authors is provided in Chapter 1, and Chapters 6 to14.

2.7 The scoping, preparation and production of this EIA Report has been conducted in accordance with the latest Government Regulations and published good practice guidance including:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- Planning Circular 1/2017: Environmental Impact Assessment Regulations 2017;
- Environmental Impact Assessment Guide to Delivering Quality Development (Institute of Environmental Management and Assessment, 2016);
- Delivering Proportionate EIA (Institute of Environmental Management and Assessment, 2017);
- A handbook on environmental impact assessment: Guidance for Competent Authorities, Consultees and others involved in the Environmental Impact Assessment Process in Scotland, Version 5 (Scottish Natural Heritage and Historic Environment Scotland, 2018).

Approach to Technical Studies Undertaken

2.8 The EIA studies commenced at an early stage in the evolution of the proposed development. At the outset, with the objective of avoiding or minimising potential environmental effects, the findings of these baseline environmental studies played an important role in the design evolution of the Proposed Development (further details are contained within Chapter 4: Design Evolution). These studies defined the environmental sensitivities and constraints associated with the Proposed Development, the Site, and its surroundings.

2.9 The technical EIA studies have been undertaken in accordance with relevant guidelines and procedures. The majority of this guidance is specific to EIA topics and is therefore referenced within the individual assessment chapters as necessary.

2.10 The majority of assessments involved consultations with statutory and non-statutory bodies, desk-based research, site inspections and surveys, impact prediction and input of mitigation to the design, where appropriate.

2.11 The content and conclusions of the EIA Report, which includes a clear, reasoned description of any likely significant adverse or beneficial effects of the Proposed Development, are based on a comprehensive assessment undertaken with all information available at the time of writing. Further details of the structure and content of the EIA Report assessment chapters is presented below.

Structure of EIA Report Technical Chapters

2.12 Each technical EIA Report chapter follows the sub-heading structure set out below where possible to ensure that the final document is transparent, consistent and accessible:

- Introduction and overview;
- Legislation (where relevant), Policy and Guidance;
- Stakeholder Consultation (where relevant);
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Identification and Evaluation of Key Effects;
- Cumulative Effects and Interaction of Effects;
- Mitigation Measures and Monitoring;
- Residual Effects;
- Summary; and
- References
- Each chapter sub-heading is explained in further detail below.

Introduction and Overview

2.13 This introduces the assessment discipline and explains its purpose in the context of the proposed development, the nature of receptors to be considered, and how the proposed development might cause changes to baseline conditions.

2.14 The introduction includes a statement of competence from the author of the chapter.

Legislation, Policy and Guidance

2.15 This section includes a brief summary of policies of relevance to the environmental discipline and assessment. Where applicable, relevant legislation and assessment guidance is summarised.

Consultation

2.16 A wide range of stakeholders have been consulted on the proposed development, and the feedback received has been incorporated into the iterative design process described in Chapter 4: Design Evolution. Further information can be found in the relevant chapters.

Assessment Methodology & Significance Criteria

2.17 This section provides an explanation of the methods used in undertaking the assessment with reference to published standards, guidance and best practice.

2.18 The application of significance criteria used is discussed within this section.

2.19 Assessment limitations are also set out within this section.

Baseline Conditions

2.20 This section includes the following:

- a description of the environment as it currently is and as it is expected to change if the Proposed Development were not to proceed (i.e. 'do-nothing' scenario);
- baseline conditions set in context and that of the surroundings of the particular subject area to be affected; and
- A description addressing the projected climate change and how likely the baseline is to change as a consequence of climate change.

Identification and Evaluation of Key Effects

2.21 The candidate turbine is the Siemens Gamesa SG155 at 200m to tip, with 122.5m hub height. The turbine and associated infrastructure requirements have been used as a candidate in the assessments. The final turbine chosen will be dependent upon what is available within the maximum parameters assessed in the EIA Report.

2.22 The EIA Regulations require consideration, throughout assessments, of all likely significant environmental effects; direct / indirect; secondary; cumulative; positive / negative; short / medium / long-term; or permanent / temporary. In terms of how likely these potential significant environmental effects are to arise, the following is considered:

2.23 Direct effects are readily identified because of the physical connection between some element of the Proposed Development and an affected receptor;

2.24 Indirect effects require some additional pathway for the effect to arise, for example, a listed building may not be directly affected by any elements of a development, but, if a proposed development changed the hydrology of the surrounding area, this may affect the archaeological preservation of the listed building, and therefore would be considered an indirect effect;

2.25 Secondary effects would typically require pathway connections, for example, an effect on receptor population A could have a secondary effect on receptor population B, if B was itself dependant on A in some way, as, for example, a food source; and

2.26 Cumulative effects would be those that the Proposed Development may have in combination with other wind farms which are at application stage, consented, under construction or operational (i.e. the incremental effects resulting from the Proposed Development if all other wind farms are assumed to be constructed/operated). These are commonly known as 'inter' cumulative effects. Interrelated effects (otherwise known as 'intra' cumulative effects) are separate discrete effects which may interact and combine to affect a single receptor i.e. noise and dust.

2.27 Likely significant environmental effects are considered in terms of their character, either beneficial (representing environmental gain) or adverse. There may also be cases where it is appropriate to identify the occurrence of change, but to note that the potential change is either neutral, and neither specifically beneficial nor adverse. The likelihood of the effect occurring is also considered, being unlikely, uncertain or likely to occur.

2.28 Likely significant environmental effects are also considered in terms of their duration. Effects can typically be:

- Temporary – these effects are likely to last for a period of a few days to a few months; they will be related to a particular activity and will cease immediately or soon after the activity ceases;
- Short-term – this would normally be considered to be between a period of a few months to a few years depending on the effect being discussed and the environment's ability to recover from an effect;
- Long-term – this would typically be a period of between a few years and the life of the Proposed Development; and
- Permanent – this would typically mean an effect resulting in an irreversible change in the environment.

2.29 It is important that levels of effect are clearly defined on the basis of their significance. The approach taken in this EIA Report emphasises the use of professional judgement within a structure that combines receptor sensitivity (or importance) with magnitude of change arising from the Proposed Development to define significance of effect.

2.30 The EIA Regulations recognise that developments will affect environmental elements to differing degrees and not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that have 'potential to be significantly affected by the development (Schedule 4(4)). Those that are not deemed to have an effect can therefore be scoped out of the assessments.

2.31 The EIA Regulations do not define significance and it is, therefore, necessary to state how this will be defined for the proposed development. In certain circumstances it is possible for disciplines to use quantitative assessment methodology to predict effects / values that can be compared against published thresholds or indicative criteria. However, it is not always possible to use quantitative measurements/values and such some assessments rely on professional judgement, past experience or other evidence. This could be reference to the development description, available information about potential changes that are expected to be caused by the proposed development, and the receptors that may be affected.

2.32 Professional judgement (in combination with any published guidance) is used to assess the interaction of a receptor's sensitivity to change, and the magnitude of potential changes caused by the development to identify a level of effect. The Assessment methodology and Significance Criteria section within each Chapter provides an overview of how the assessment has been conducted for each discipline, and where any deviations from the methodology described above occurs.

2.33 For some of the topics that are assessed in this EIA Report there is published guidance about significance evaluation. Where such topic-specific guidance exists (even in draft) it will be used to inform the development of the significance evaluation methodologies used. For other topics, a **major or moderate** level of effect is generally of most importance to the decision-maker and these effects are usually considered **significant** in terms of the EIA Regulations. Where the level of effect is **minor or less**, these are generally **not significant** in terms of the EIA Regulations.

2.34 The temporal scope of the EIA will cover the period from commencement of the first phase of development (construction), through to operational phase (operation), up to the completion of operations and restoration of the Site (decommissioning). For ease of reporting the temporal scope will generally be considered in relation to the following key stages of the development:

- Construction – effects may arise from the construction activities themselves or from the temporary occupation of land. The effects are often temporary and of limited duration, although, there is the potential for construction activities to create permanent change;
- Operation – effects are typically long-term (subject to any future decommissioning), though may also be related to operational emissions or effects that will stop if the operation stops; and
- Decommissioning – effects may arise from the decommission activities themselves or from the temporary occupation of land. The effects would often be temporary and of limited duration and additional permanent change (unless associated with restoration) would normally be unlikely.

2.35 In its broadest sense, the spatial scope of an EIA is the area over which changes to the environment may occur as a consequence of the development. In practice, the EIA focuses on those areas where these changes may result in likely significant effects on the environment.

2.36 As such, the spatial scope varies between the environmental topics assessed. For example, effects upon the landscape resource and visual effects are assessed within a much larger zone from the site boundary when compared to ecological related effects.

2.37 As part of the application, a micrositing allowance of 100m will be sought to allow all turbines and infrastructure to be moved within a 100m radius should ground conditions or other factors justify this. For completeness, each assessment has given consideration as to the likely effects of moving onsite infrastructure to this extent.

Cumulative Effects and Interaction of Effects

2.38 As required by the EIA Regulations, it is also important to consider the possible effects that a proposal may have in combination with existing, consented or other proposed developments or activities. Likely cumulative effects have been defined as the likely effects that the Proposed Development may have in combination with other wind farms which are at application stage, consented, under construction or operational (i.e. the incremental effects resulting from the proposed development if all other wind farms are assumed to be constructed/operated).

2.39 Where relevant the approach to the cumulative effect assessments varies across technical disciplines and a rationale as to the scope of this assessment is provided in each chapter.

2.40 For the purposes of the EIA Report, the potential effects of the Proposed Development are considered in terms of effects on each of the discrete topic areas. In reality, topics areas such as ecology and hydrology are interrelated, and could combine to result in a significant effect on a given receptor. Schedule 4 of the EIA Regulations states that the EIA Report should include an assessment of "*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*", and these are addressed within each of the EIA report chapters where relevant.

Mitigation Measures and Monitoring

2.41 There is much debate amongst practitioners and legal reviewers regarding pre-mitigation and post-mitigation assessments of effects. One crucial point of discussion is whether changes in design constitute mitigation or not. The approach taken here is that the pre-mitigation assessment of effects takes account of scheme design changes that relate to the number / location and scale of scheme elements and it also takes account of the adoption of standard guidelines. The post-mitigation assessment takes further account of specific / additional controls on the method of construction or operation. In most cases these should only relate to circumstances where a potentially significant effect is being reduced.

2.42 The development of mitigation measures to avoid, reduce or compensate for significant adverse environmental effects of a project is an intrinsic part of the EIA process. These measures can relate to site construction or the completed development i.e. measures to be undertaken during the operation of the development through appropriate site management or through the introduction of specific design elements.

2.43 This section of the EIA Report chapter describes the measures which would be implemented to avoid or ameliorate likely adverse effects and enhance the likely beneficial effects of the proposed development.

2.44 In many cases mitigation measures are inherent within the proposed development (either through design or operation), whereby likely significant adverse effects are avoided. However, not all effects can be avoided and there are mitigation measures to reduce these. Standard good practice measures employed during construction, for example, may also be considered to provide in-built mitigation and this is stated in the topic assessments where relevant. Any further survey requirements and monitoring required to gauge the effectiveness of proposed mitigation measures will be included where relevant. In such instances, these are proposed within the relevant technical chapter.

Residual Effects

2.45 This section describes the remaining effects of the Proposed Development assuming implementation of the proposed mitigation measures.