Fred. Olsen Renewables

Chapter 3

Approach to EIA

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Glossary

Term	Definition
Baseline	The existing conditions that prevail against which the effects of the Proposed Development are compared
EIA Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
Environmental Impact Assessment	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to of the likely significant environmental effects arising from a proposed development
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5
The Applicant	Fred. Olsen Renewables Limited
The Proposed Development	The Proposed Windy Standard I Repower Wind Farm
The Proposed Development Area	The area shown delineated by the red line boundary shown on Figure 1.2

Term	Definition
The Windy Standard Complex	The 'Windy Standard Complex' refers collectively to the operational existing Windy Standard I Wind Farm, Windy Standard II Wind Farm and the consented Windy Standard III Wind Farm

List of Abbreviations

Abbreviation	Description
AM	Amplitude modulation
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
DGC	Dumfries and Galloway Council
IEEM	Institute of Ecology and Environmental Management
IEMA	Institute of Environmental Management and Assessment
PAC	Pre-Application Consultation

3.1 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

Overview of the EIA Process

3.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) outlines the process and methodology regarding the application of Environmental Impact Assessment (EIA) used during the preparation of this EIAR to guide the specific elements of site assessment and design.

3.1.2 The EIA is prepared in compliance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations). The EIA Regulations outline the process of an EIA and the criteria that would determine if an EIA is necessary or not, the relevant environmental studies and statements, how the information is evaluated by the Scottish Ministers, Planning Authority and consultative bodies, and how this is implemented through consent under Section 36 of the Electricity Act 1989. Under the EIA Regulations, the Proposed Development is classed as a Schedule 2 development and the Applicant determined that an EIA was required, following an internal screening process.

3.1.3 The key stages of the EIA process and methodology, following site selection and the definition of the development characteristics, are explained in more detail in the following sections of this chapter.

3.2 SCOPE OF THE EIAR

3.2.1 The nature of environmental and social effects can be divided into a number of categories. First, there are categories of environmental and human receptors that may be affected such as:

- Breeding birds;
- Migrating birds;
- Ecological habitats;
- Cultural and archaeological sites and artefacts;
- Human settlements; and
- Noise sensitive properties;
- Landscape and Visual; and
- Hydrology.

3.2.2 Secondly, there are the various stages and components of the Proposed Development which may have differing characteristics with relation to the environment (e.g. the construction, operation and decommissioning stages, including the turbines, tracks and power cables). For more details on these characteristic see Chapter 5: Project Description.

3.2.3 A scoping exercise was undertaken to identify the environmental effects that might result from a development with the characteristics defined during the early stages of the development process. An essential part of this involved identifying the sensitive environmental receptors of the Proposed Development and its surroundings.

3.2.4 In defining types of environmental effects, the lead consultancy, The Natural Power Consultants Ltd (Natural Power), and its technical associates, has extensive experience in carrying out EIA for onshore wind farm proposals. A list of the consultants involved, and the topics assessed are set out in Chapter 1: Introduction of the EIAR. In addition, reference was made to guidance documents issued by government agencies and non-government organisations. Specific guidance documents which have been referred to for individual elements of the EIA are detailed in the relevant chapters within the EIAR. The EIAR is based on the Scoping Opinion adopted by the Scottish Ministers. The Scoping Opinion received from the Scottish Government is also included in Appendix 1.2 in Volume 4 of the EIAR. Dumfries and Galloway Council (DGC) did not provide a consultation response to the Scottish Ministers but have continued to be consulted by the Applicant throughout the duration of the application process for the Proposed Development.

3.2.5 The responses referred to in the scoping opinion are summarised in Appendix S 'Gate Check Report' of the Pre-Application Consultation (PAC) Report of this EIAR. Having considered the Scoping Opinion, topics that have been scoped out of the EIAR are:

- Designated sites: there are no statutory sites with a designation for ecological features within the Zone of Interest (ZoI) of the Proposed Development;
- Designated areas: there are no designated areas within the Proposed Development boundary or within a 3 km buffer;
- Protected mammal species: there is no evidence to suggest that high densities of protected mammal species are using the habitats within the Windy Standard Complex;
- Bat roosts: low numbers of early or late calls recorded by the detectors supports the justification that due to the lack of suitable locations present within the site there are unlikely to be maternity roosts at the Proposed Development;
- Black grouse: Black grouse lek locations were recorded during baseline surveys for Windy Standard III in 2010, but no breeding black grouse have been recorded within a zone of influence of Windy Standard I since this date;
- Breeding Raptors: No adverse impacts on breeding raptors have been predicted or recorded from any of the developments in the Windy Standard Complex. This indicates that the Windy Standard Complex is not of particular importance to any Schedule 1 raptor species;
- Breeding upland birds: significant impacts on their populations due to disturbance and/or displacement due to the proposed development are highly unlikely;
- Geology: Construction will have no significant impact on solid geology due to the uniformity underlying the site. No specific geological features have been identified;
- Air defence radars: there are no air defence radars within 130 km of the Proposed Development;
- Meteorological Office radars: there are no Meteorological Office radars within 30 km of the Proposed Development;
- Licensed or certificated aerodromes: there are no licensed or certificated aerodromes within 30km of the Proposed Development;
- Aeronautical radio navigation aids: there are no aeronautical radio navigation aids within 20 km of the Proposed Development;
- Secondary surveillance radars: there are no secondary surveillance radars within 20 km of the Proposed Development;
- Aerodromes or launching sites: there are no unlicensed aerodromes or launching sites within 15 km of the Proposed Development;
- Eskdalemuir seismic array: the Proposed Development is 65 km from the Eskdalemuir seismic array;
- Decommissioning noise assessment: given the distances between residential receptors and the Proposed Development, noise levels from construction and decommissioning activities are anticipated to be very low;
- Vibration assessment: the risk of ground borne vibration impacting on residential receptors is considered very low due to the relative distances from residential receptors;
- Low frequency noise assessment: there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines;
- Amplitude modulation (AM): at time of writing there is no agreed methodology which can be used to predict the occurrence of AM or an agreed methodology which can be used to determine whether the effects of AM, should it occur, are likely to be significant;
- Shadow Flicker: there are currently no residential properties identified within 10 rotor diameters of the nearest turbines;
- Ice Throw: the turbines will have sensors on them to detect the build-up of ice and automatically prevent the turbines spinning when ice has developed on them, thus preventing the ice being thrown; and
- Lightning: the danger to human or animal life from lightning strike via a turbine is rare since lightning is directed down the turbine to the earth and all modern turbines have lightning conductors.

3.3 IDENTIFICATION OF THE BASELINE ENVIRONMENT

Data Collection

3.3.1 A number of existing data sources were collected and reviewed prior to the initial survey work targeted directly on gathering data for the EIA of the Proposed Development. It was understood that existing data sources would, in most cases, be unlikely to provide sufficient data alone to use in the EIA but would provide a valuable initial stage with which to form methodologies for further survey.

3.3.2 Details of existing data sources and coverage are presented within the relevant chapters of the EIAR.

Baseline Surveys

3.3.3 Baseline surveys were carried out by specialist consultants in a number of different study areas. These were aimed at gathering sufficient data to form a picture of the current status of the environmental and human elements on the site and in the vicinity of the Proposed Development Area. The ultimate aim was to allow the description of the potential effects of the Proposed Development. Baseline survey methodologies and coverage are described in detail in the relevant assessments and chapters of the EIAR.

3.4 SITE DESIGN, ASSESSMENT OF POTENTIAL EFFECTS AND MITIGATION

Site Design and Identification of Effects

3.4.1 The consultation process, baseline studies and surveys identified technical constraints and any potentially more sensitive environmental receptors within the Proposed Development site. The overarching aim was to design a wind farm within the boundaries of technical and economic constraints that would avoid any unacceptable effects on the natural and human environment.

3.4.2 In order to minimise significant adverse environmental effects, the assessment and design of the Proposed Development followed an iterative approach. Within this type of approach, potentially significant adverse effects are identified during the assessment process and the design of the Proposed Development is modified in order to avoid, reduce or mitigate these effects as far as is reasonably practical.

3.4.3 This section provides the general method of how this EIAR has been approached, then each chapter will explain its own specific methodology on how they assess potential effects.

3.4.4 Further details of the site design decision making process are discussed in Chapter 4: Site Design and Design Evolution, of the EIAR.

Determining Significant Effects

3.4.5 The outline methodology for assessing significance was developed after consideration of relevant guidance and regulations including:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;

- Environment Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland (2018) published by Historic Environment Scotland and NatureScot;
- Guidelines for Landscape and Visual Impact Assessment 3rd Edition: E & FN Spon (2013) published by the Institute of Environmental Management and Assessment and the Landscape Institute; and
- Environmental Impact Assessment Guide to: Delivering Quality Development (2016), (IEMA) [1].

3.4.6 In determining the significance of potential residual effects, the magnitude of change arising from the Proposed Development is correlated with the 'sensitivity' of the particular environmental attribute under consideration. An effect is defined as the consequences of an impact of an EIAR development. An impact is a change resulting from an action. Magnitude of change is evaluated in accordance with the definitions set out in Table 3.1.

Table 3.1: Example definitions of 'magnitude' of change

Magnitude	Definition of 'magnitude' of change
High	Total loss or major alteration to key elements/features of the baseline (e.g. pre-development conditions)
Medium	Partial loss or alteration to one or more key elements/features of the baseline (e.g. pre-development conditions)
Low	Minor shift away from baseline (e.g. pre-development conditions)
Negligible	Very slight change from baseline (e.g. pre-development conditions)

3.4.7 Where applicable, in carrying out individual assessments, a scale of increasing 'sensitivity' of the environmental or social receptor is defined. This may be defined in terms of quality, value, rarity or importance to other elements, and can be classed as low, medium or high. Table 3.2 provides an example table to illustrate this concept.

Table 3.2: Example of Sensitivity

Sensitivity	Example of Sensitivity
High	Elements of international/national importance generally designated for protection through national legislation/policy
Medium	Elements of regional/local importance that are not designated but are generally protected by local policy
Low	Elements of local value that can generally tolerate change

3.4.8 For certain assessment areas, guidance can be taken from the value attributed to elements through designation or protection under law (i.e. landscapes, cultural heritage or ecological resources)). Where assessment of this nature has taken place, the correlation of magnitude of change against 'sensitivity' determines a qualitative expression for the significance of the effect. This is shown in the example significance matrix in Table 3.3.

Table 3.3: Example of Sensitivity Matrix

	Level of Significance		
MAGNITUDE OF CHANGE			
High	Moderate	Moderate/Major	Major
Medium	Minor/Moderate	Moderate	Moderate/Major
Low	Minor	Minor Moderate	Moderate
Negligible	Negligible/Minor	Minor	Minor/Moderate
	Low	**Medium**	**High**
	SENSITIVITY OF RECEPTOR		

3.4.9 Those effects highlighted in Table 3.3 indicated as 'Major' and 'Moderate/Major' are regarded as being equivalent to 'significant effects' when discussed in terms of the EIA Regulations[2] for the purposes of this EIAR. LVIA consultants may take a slightly different approach, and consider that effects identified as "moderate" should also be regarded as significant in EIA terms. This is a matter of professional judgement.

3.4.10 Following the iterative design process adopted during the design of the Proposed Development, the significance of each effect would be confirmed or reassessed at each stage of the design process. This includes considering how the significance of an effect may also be affected by its duration (e.g. the length of the construction period) and by its reversibility (i.e. the degree to which a site could be returned to its baseline conditions following decommissioning).

3.4.11 Each of the impact assessments detailed in the relevant chapters of this EIAR have been generally formulated in a similar way, giving an evaluation of the baseline conditions, the magnitude, sensitivity and significance of impacts. This is followed by the residual impacts, following the implementation of the stated mitigation measures.

3.4.12 A view on the acceptability of the Proposed Development in policy terms is provided in the accompanying Planning Statement to the Application. With regards to this, it must be noted that a significant effect does not mean a proposal should be found unacceptable in policy terms. In addition, significant effects can also be positive as well as negative. Each chapter within this EIAR assesses impacts related to each stage of development where scoped in: thus the construction, operation and decommissioning stages have been considered.

Cumulative Assessment

3.4.13 The EIA Regulations require the likely cumulative impacts of the Proposed Development to be assessed as part of an EIAR. These can be broadly defined as impacts that result from incremental change caused by other developments, plans, or projects together with the Proposed Development. The EIA Regulations state that all likely significant cumulative effects resulting from the existence of the development, use of natural resources, the emission of the pollutants, the creation of nuisances and the elimination of waste should be considered in the EIAR.

3.4.14 The proposed methodology for assessing cumulative impact throughout the EIAR follows the guiding principles outlined in the *European Commission Guidelines for the Assessment of Indirect and Cumulative impacts*[3] and

[1] IEMA (2016)Environmental Impact Assessment Guide Available at: https://www.iema.net/myiema/login?redirect=resources/iema-essential-reading#sts=Delivering%20quality%20development (last accessed 22/09/2021)

[2] IEMA (2012) EIA Quality Mark Article, EIA and the Search for Significance in EIA. Available: https://transform.iema.net/article/eia-and-search-significance (last accessed 27/09/2021).

[3] European Commission (1999) Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, available at: http://ec.europa.eu/environment/archives/eia/eia-studies-and-reports/pdf/guidel.pdf (accessed on 07/05/2018)

NatureScot's *"Assessing the Cumulative Impact of Onshore Wind Energy Developments*[4]. The detailed approaches to cumulative assessment are varied according to each specific EIAR chapter and are defined within these chapters. Appropriate spatial scales are also defined within these chapters and are defined following their particular methodologies, which follow current available guidance.

Mitigation by Design (Embedded Mitigation)

3.4.15 Measures envisaged to prevent or reduce any significant adverse effects were identified and incorporated into the design as environmental and visual assessments were developed. The design process continued until it was considered by the Applicant and consultants involved in the production of the EIAR that the most appropriate wind farm design had been derived. In this way, the Proposed Development presented here can be seen to have embedded measures, to prevent or reduce significant adverse effects directly into the design process (mitigation by design) and the findings and conclusions of the environmental assessment reflect the incorporation of those measures.

3.4.16 The EIA Regulations require *"a description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development*."[5]

3.4.17 Unless qualified elsewhere, the following interpretation is applied with regard to effects. Short term effects are those which extend over a short period only and, in the context of a wind farm, are typically those associated with the construction or decommissioning periods or other limited period. Other temporary effects which persist for less than the life of the wind farm are described as medium term, with those extending to the full lifetime of the wind farm described as long term. Any effects which persist beyond the life of the wind farm are considered permanent. Effects with duration of up to long term are considered reversible, whereas permanent effects are considered irreversible. Where any effect is identified, its duration is described within the EIAR chapters.

Impact Mitigation

3.4.18 Measures which are envisaged to prevent, reduce or offset significant adverse residual effects unavoidable through design were also identified in the EIA process. Residual effects are those impacts that remain following the implementation of mitigation measures. The process of assessment will identify the likely effects of the Proposed Development. Measures to apply best practice and guidance recognised within the industry to reduce environmental effects will be applied as described in each relevant chapter.

3.4.19 Summary tables that outline the predicted effects associated with an environmental impact, the appropriate mitigation measures required to address these effects and subsequent overall residual effects will be provided at the end of each technical chapter of the EIAR. There will also be a table of conclusions within Chapter 17: Synergistic Effects, Summary of Mitigation and Residual Effects, of the EIAR summarising all significant effects identified mitigation measures, residual effects, and future requirements.

[4] NatureScot (2021) Assessing the Cumulative Impact of Onshore Wind Energy Developments, available at: https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments (accessed on 18/10/2021)

[5] UK Government (2017) The Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Schedule 4 Regulation 18(3). Information for inclusion in Environmental Statements.