Glentarken Wind Farm

Ecological Impact Assessment Methodology

Technical Appendix 7.6

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CONTENTS

LIST OF TABLES

1 INTRODUCTION

MacArthur Green has prepared this Method of Assessment for the Ecology Chapter of the Environmental Impact Assessment Report (EIAR) on behalf of the Applicant in regard to the proposed Glentarken Wind Farm, referred to as the 'Proposed Development'.

2 METHOD OF ASSESSMENT

The assessment methodology, including criteria for assessing sensitivity of receptors, magnitude of change and cumulative effects, is outlined below.

The significance of the potential effects of the Proposed Development has been assessed by professional consideration of the sensitivity of the ecological features and the spatial and temporal magnitude of the potential effects.

The assessment method follows the process set out in The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[1], Chartered Institute of Ecology and Environmental Management (CIEEM) (2022)[2] and guidance on the implementation of the EU Birds and Habitats Directive (SERAD, 2001)[3] .

The assessment for wider countryside interests (i.e., unrelated to any Natura 2000 sites) involves the following process:

- identification of the potential ecological effects of the Proposed Development on ecological features, including both positive and negative;
- considering the likelihood of occurrence of potential effects;
- defining the nature conservation value and conservation status of the ecological features present to determine sensitivity;
- establishing the magnitude of change associated with the potential effect (both spatial and temporal);
- based on the above information, making a professional judgement as to whether or not the resultant effect is significant in terms of the EIA Regulations;
- if a potential effect is determined to be significant, measures to avoid, reduce, mitigate or compensate for the effect are suggested where required;
- considering opportunities for enhancement where appropriate; and
- confirming residual effects after mitigation, compensation or enhancement are considered.

[1] Scottish Government (2017d). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/ssi/2017/101/contents
[2] CIEEM (2022). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.
[3] SERAD (2001). European Protected Species, Development Sites and the Planning Systems: Interim guidance for local authorities on licensing arrangements.

2.1.1 Sensitivity of Ecological Features

The sensitivity of the baseline conditions, including the importance of ecological features on or near to the Site, or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and/or professional judgement.

Determination of the level of sensitivity of an Important Ecological Feature (IEF) is based on a combination of the feature's nature conservation value and conservation status. Nature conservation value is defined on the basis of the geographic context shown in **Table 2-1**, which follows the CIEEM (2018) guidance.

Attributing a value to an ecological feature is generally straightforward in the case of designated sites, as the designations themselves are normally indicative of an importance level. For example, the River Tay SAC is designated under the Habitats Directive and is therefore implicitly of European (international) importance. In the case of species, assigning value is less straightforward as contextual information about distribution and abundance is fundamental, including trends based on historical records. This means that even though a species may be protected through legislation at a national or international level, the relative value of the population on site may be quite different (e.g., the site population may consist of a single transitory animal, which within the context of a thriving local/regional/national population of a species, is therefore of local or regional value as opposed to national or international).

Determination of the level of importance of ecosystems, habitats and species is based on professional judgement and a combination of factors, such as level of protection, rarity, conservation status, population trends, and quality/extent of the feature in the study area. Published evaluation criteria (e.g., the SBL and JNCC (2022)) are used where relevant. Where appropriate, information regarding the particular ecological feature's conservation status is also considered to fully define its importance. This enables an appreciation of current population or habitat trends to be incorporated into the assessment.

In line with the CIEEM (2018) guidance, it is not necessary to carry out detailed assessment on features that are sufficiently widespread, unthreatened, and resilient to effects of the Proposed Development. However, those IEF affected by the Proposed Development are taken forward for assessment.

Table 2-1: Approach to Valuing Ecological Features

Value of Feature in Geographical Context	Description
International/European	An internationally designated site (e.g., SAC), or undesignated areas that meet the criteria for international designations, or qualifying species whose presence contributes to the maintenance of such a site.
	Species present in internationally important numbers (>1 % of biogeographic populations).
National (UK)	A nationally designated site (e.g., SSSI, or a National Nature Reserve ('NNR')), or sites meeting the criteria for national designation or qualifying species whose presence contributes to the maintenance of such a site.

Value of Feature in Geographical Context	Description
	Species present in nationally important numbers (>1 % of UK population).
Regional (Natural Heritage Zone or Local Authority Area)	Regionally significant and viable areas of key habitat identified in a regional Biodiversity Action Plan ('BAP').
	Species present in regionally important numbers (>1 % of Natural Heritage Zone ('NHZ') population).
	Areas of key habitat falling below criteria for selection as a SSSI (e.g., areas of semi-natural ancient woodland larger than 0.25 hectares (ha)).
Local	A site within the local area designated for nature conservation (e.g., Local Nature Reserves).
	Areas of semi-natural ancient woodland smaller than 0.25 ha.
	Areas of habitat or species considered to appreciably enrich the ecological resource within the local context, e.g., species-rich flushes or hedgerows
Negligible	Usually widespread and common habitats and species that do not meet the above criteria. Features falling below local value are not normally considered in detail in the assessment process.

2.1.2 Magnitude of Effect

The magnitude of potential effects refers to changes in the extent and integrity of an ecological feature. The following definition of ecological 'integrity' is found within Scottish Executive circular 6/1995 (updated by Scottish Executive (2000)): "The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified". Although this definition is used specifically regarding European level designated sites (e.g., an SAC), it is applied to wider countryside habitats and species for the purposes of this assessment.

The magnitude of potential effects will be identified through consideration of the Proposed Development, the degree of change to baseline conditions predicted as a result of the Proposed Development, how the ecological features are likely to respond to the Proposed Development, the duration and reversibility of an effect and the application of professional judgement, best practice guidance and legislation. This change can occur during construction or operation of the Proposed Development, and effects can be beneficial, neutral or adverse.

Effects are determined in terms of magnitude in space and time. There are five levels of spatial effects and five levels of temporal effects, described in **Table 2-2** and **Table 2-3**.

Table 2-2: Definition of Spatial Effect Magnitude upon the IEFs

Magnitude of Effects	Definition
Very High	Would cause the loss of the majority of a feature (>80 %) or would damage a feature sufficiently to immediately affect its integrity.
High	Would have a major effect on the feature or its integrity, for example more than 20 % habitat loss or damage.
Medium	Would have a moderate effect on the feature or its integrity, for example between 10 and 20 % habitat loss or damage.
Low	Would have a minor effect upon the feature or its integrity, for example, less than 10 % habitat loss or damage.
Negligible	Minimal change on a very small scale; effects not dissimilar to those expected within a 'do nothing' scenario.

Table 2-3: Definition of Temporal Effect Magnitude upon the IEFs

Magnitude of Effects	Definition
Permanent	Effects continuing indefinitely beyond the span of one human generation (taken here as >30 years), except where there is likely to be substantial improvement after this period in which case the category Long Term may be more appropriate.
Long Term	Between 15 years up to (and including) 30 years.
Medium Term	Between 5 years up to (but not including) 15 years.
Short Term	Up to (but not including) 5 years.
Negligible	No effect.

2.1.3 Significance of Effect

The significance of potential effects is determined through a standard method of assessment based on professional judgement and available evidence, considering the sensitivity (nature conservation value and conservation status) of the IEF, and the nature and magnitude of effect, in a reasoned way.

A 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for IEFs or for biodiversity generally. Broadly, significant effects include those which result from impacts on the structure and function of defined sites, habitats or ecosystems, and the conservation status of habitats and species (including extent, abundance and distribution).

Table 2-4 sets out the significance criteria used to assess the potential effects of the Proposed Development.

Table 2-4: Significance Criteria

Magnitude of Effects	Definition
Major	Significant effect, as the effect is likely to result in a long term significant adverse effect on the structure and function of defined sites, habitats or ecosystems or on the conservation status of habitat and species.
Moderate	Significant effect, as the effect is likely to result in a medium term or partially significant adverse effect on the structure and function of defined sites, habitats or ecosystems or on the conservation status of habitats and species.
Minor	Not a Significant effect, the effect is likely to adversely affect the feature at a low level by virtue of its limited duration and/or extent, but there will probably be no effect on the structure and function of defined sites, habitats or ecosystems or on the conservation status of habitats and species.
Negligible	No material effect. The effect is assessed to be Not Significant.

Using these definitions and the four categories above, it must then be decided whether there would be any effects which would be sufficient to adversely affect the IEF to the extent that its conservation status deteriorates from that which would be expected should baseline conditions remain (i.e., the 'do nothing' scenario).

Major and moderate effects are considered to be significant within the context of the EIA Regulations.

Where significant adverse effects are identified, additional[4] mitigation and/or compensation is required to reduce or offset effects where possible, including avoidance or reduction through implementation of and compliance with best practice guidance and protected species legislation. Effects that are not significant would be expected to be avoided or reduced through compliance with best practice guidance and protected species legislation.

Residual effects are characterised as either adverse, neutral or beneficial and either significant or not significant, taking additional mitigation proposals into account.

2.1.4 Cumulative Assessment

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated to a particular location. As such, NatureScot guidance (2021[5]) sets out that cumulative effects require the assessment of the effects of the

[4] In addition to mitigation through design or practise (embedded).

[5] NatureScot (2021). Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments (update to 2012 guidance). [Online] Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments.

Proposed Development together with other developments, projects or activities. In the interests of focusing on the potential for significant effects, this assessment considers the potential for cumulative effects with other onshore wind farm EIA developments in the vicinity of the Proposed Development[6]. The context in which these effects are considered is heavily dependent on the ecology of the features assessed. For example, for water voles it may be appropriate to consider effects specific to individual catchments, should the distance between neighbouring catchments be sufficient to assume no movement of animals between them, whereas for blanket bog, the region or Natural Heritage Zone (NHZ) may be the relevant spatial scale. Therefore, where it is considered necessary, an assessment of cumulative effects will be made for each feature, appropriate to its ecology.

[6] This includes - Existing development, either built or under construction; Approved development, awaiting implementation; and Proposals awaiting determination within the planning process with design information in the public domain.