Technical Appendix 8.7: Assessment Methodology

Glentarken Wind Farm

SSE Renewables

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Basis of Report

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1.0 Introduction

SLR Consulting Ltd (SLR) was commissioned by SSE Renewables Services Ltd ('the agent) on behalf of SSE Generation Ltd (the 'Applicant'), to undertake an assessment of potential effects on geology (including soils and peat) and the water environment (hydrology and hydrogeology) for the proposed Glentarken Wind Farm (the Proposed Development). This document outlines the assessment methodology used in **Chapter 8: Geology, Peat, Hydrology and Hydrogeology (EIAR Volume 1).**

The significance of potential effects of the Proposed Development has been assessed by considering two factors: the sensitivity of the receiving environment and the potential magnitude of impact, should that effect occur.

The assessment methodology has also been informed by experience of carrying out such assessments for a range of wind farm and other developments, knowledge of the geology and water environment characteristics in Scotland and cognisance of good practice.

This approach provides a mechanism for identifying the areas where mitigation measures are required and for identifying mitigation measures appropriate to the significance of potential effects, such as detailed in the site-specific habitat management plan, peat management plan and peat landslide hazard risk assessment.

The criteria for determining the significance of effect are provided in **Table 1**, **Table 2**, and **Table 3**.

1.1 Sensitivity Criteria

The sensitivity of the receiving environment (i.e. baseline quality of the receiving environment) is defined as its ability to absorb an effect without a detectable change and can be considered through a combination of professional judgement and a set of pre-defined criteria which are set out in **Table 1.** Receptors in the receiving environment only need to meet one of the defined criteria to be categorised at the associated level of sensitivity.

Table 1: Criteria for Assessing Sensitivity of Receptor

Sensitivity	Definition
High	• soil type and associated land use is highly sensitive (e.g. unmodified blanket bog peatland); • SEPA Water Framework Directive (WFD) Water Body Classification: High-Good or is close to the boundary of a classification Moderate to Good or Good to High; • receptor is of high ecological importance or national or international value (e.g. Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), habitat for protected species) which may be dependent upon the hydrology of the Site; • receptor is at risk from flooding in the future (2080s) and/or water body acts as a current active floodplain or flood defence; • receptor is used for public and/or private water supply (including DWPAs); • groundwater vulnerability is classified as high; and • if a GWDTE is present and identified as being of high sensitivity.

Sensitivity	Definition
Moderate	• soil type and associated land use is moderately sensitive (e.g. arable, commercial forestry); • SEPA WFD Water Body Classification Poor to Moderate; and • moderate classification of groundwater aquifer vulnerability.
Low	• soil type and associated land use not sensitive to change in hydrological regime and associated land use (e.g. intensive grazing of sheep and cattle); • SEPA WFD Water Body Classification Poor or Bad; • receptor is at not at risk of flooding in the future (2080); and • receptor is not used for water supplies (public or private).
Not Sensitive	• receptor would not be affected by the Proposed Development, e.g., lies within a different and unconnected hydrological / hydrogeological catchment.

1.2 Magnitude of Impact

The potential magnitude of impact would depend upon whether the potential effect would cause a fundamental, material or detectable change. In addition, the timing, scale, size and duration of the potential effect resulting from the Proposed Development are also determining factors. The criteria that have been used to assess the magnitude of impact are defined in **Table 2**.

Table 2: Criteria for Assessing Magnitude of Impact

Magnitude of Impact	Criteria	Definition
Major	Results in loss of attribute	Long term or permanent changes to the baseline geology, hydrology, hydrogeology and water quality such as: • permanent degradation and total loss of soils habitat (including peat) and geology; • loss of important geological structure/features; • wholesale changes to watercourse channel, route, hydrology or hydrodynamics; • changes to the site resulting in an increase in runoff with flood potential and also significant changes to erosion and sedimentation patterns; • major changes to the water chemistry; and • major changes to groundwater levels, flow regime and risk of groundwater flooding.
Medium	Results in impact on integrity of attribute or loss of part of attribute	Material and short to medium term changes to baseline geology, hydrology, hydrogeology and water quality, such as: • loss of extensive areas of soils and peat habitat, damage to important geological structures/features; • some changes to watercourses, hydrology or hydrodynamics;

Magnitude of Impact	Criteria	Definition
		• changes to site resulting in an increase in runoff within system capacity; • moderate changes to erosion and sedimentation patterns; • moderate changes to the water chemistry of surface runoff and groundwater; and • moderate changes to groundwater levels, flow regime and risk of groundwater flooding.
Low	Results in minor impact on attribute	Detectable but non-material and transitory changes to the baseline geology, hydrology, hydrogeology and water quality, such as: • minor or slight loss of soils and peat or slight damage to geological structures/feature; • minor or slight changes to the watercourse, hydrology or hydrodynamics; • changes to site resulting in slight increase in runoff well within the drainage system capacity; • minor changes to erosion and sedimentation patterns; • minor changes to the water chemistry of surface runoff and groundwater; and • minor changes to groundwater levels, flow regime and risk of groundwater flooding.
Negligible	Results in an impact on attribute but if insufficient magnitude to affect the use/integrity	No perceptible changes to the baseline geology, hydrology, hydrogeology and water quality such as: • no impact or alteration to existing important soils (inc. peat) geological environs; • no alteration or very minor changes with no impact to watercourses, hydrology, hydrodynamics, erosion and sedimentation patterns; • no pollution or change in water chemistry to either groundwater or surface water; and • no alteration to groundwater recharge or flow mechanisms.

1.3 Significance Criteria

The sensitivity of the receiving environment together with the magnitude of impact determines the significance of the effect, which can be categorised into level of significance as identified in **Table 3**.

The table provides a guide to assist in decision making. In some cases, the potential sensitivity of the receiving environment or the magnitude of potential impact cannot be quantified with certainty and therefore professional judgement remains the most robust method for determining the predicted significance of a potential effect.

Table 3: Significance of Effect

Magnitude of Impact	Sensitivity of Receptor			
	High	**Moderate**	**Low**	**Not Sensitive**
Major	Major	Major	Moderate	Negligible
Medium	Moderate	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Effects of 'major' or 'moderate' significance, as outlined in **Table 3**, are considered to be 'significant' in terms of the EIA Regulations.

1.4 Cumulative Effects

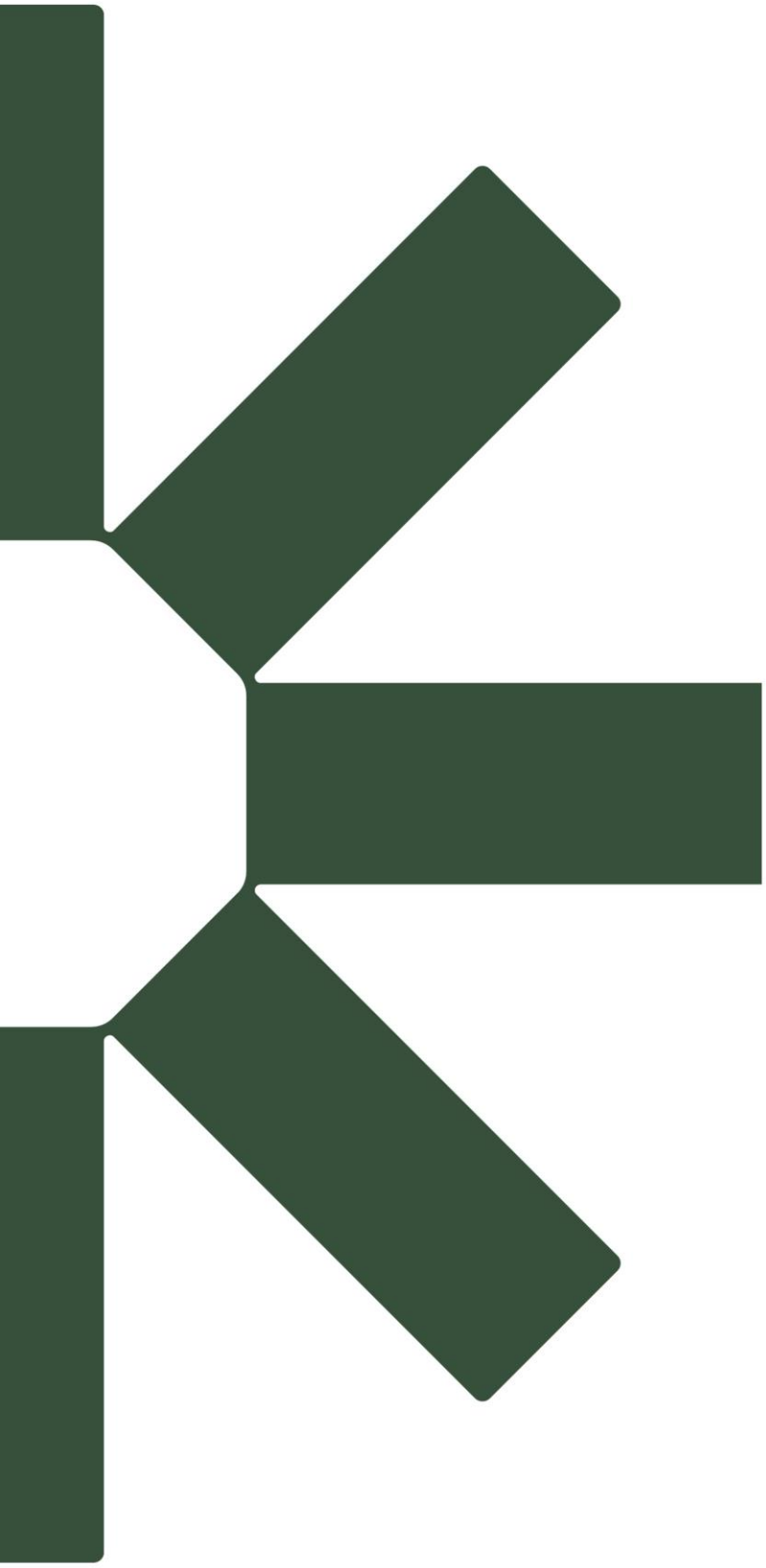
The assessment also considers potential cumulative effects associated with other material developments within 5 km of the nearest element of the Proposed Development and in the same surface water catchments as the Proposed Development. A cumulative effect is considered to be the effect on a hydrological, hydrogeological or geological receptor arising from the Site in combination with other developments which are likely to affect soils or geology, surface water and groundwater.

1.5 Mitigation

Any potential effects of the Proposed Development on geology or the water environment identified by the assessment have been addressed and mitigated by the design and the application of good practice guidance to be implemented as standard during construction and operation to prevent, reduce or offset effects where possible. As such a number of measures would form an integral part of the construction process and these have been taken into account prior to assessing the likely effects of the Proposed Development (embedded mitigation). Where appropriate, tailored mitigation measures have been identified prior to determining the likely significance of residual effects.

Good practice measures would be applied in relation to pollution risk, sediment management, peat management and management of surface runoff rates and volumes. This would form part of the CEMP to be implemented for the Proposed Development which would be secured by a planning condition and would be prepared prior to construction commencing.

The final CEMP would include details and responsibilities for environmental management onsite for environmental aspects and would outline the necessary surface water management, oil and chemical delivery and storage requirements, waste management, traffic and transport management and would specify monitoring requirements for wastewater, water supply and all appropriate method statements and risk assessments for the construction of the Proposed Development. An Outline CEMP is provided as **TA 2.1 (EIAR Volume 4).**



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