

Appendix 10G

Habitat Loss Calculations



RWE Renewables UK Limited

EREDINE WIND FARM ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Appendix 10G: Habitat Loss Calculations



Report for

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1. Habitat Loss Calculations

1.1 Introduction

- 1.1.1.1 This technical appendix details the approach, assumptions and results of the process adopted to quantify habitat loss and disturbance/degradation as a result of the construction of Eredine Wind Farm ('the Proposed Development') for the ecological impact assessment presented in **Chapter 10: Ecology**.
- 1.1.1.2 Habitat loss, disturbance and potential degradation have been estimated using the Phase 1 habitat and National Vegetation Classification (NVC) survey results and the footprint of the Proposed Development. Where there is uncertainty in the design layout (dimensions, extent etc.) various assumptions have been made regarding the construction methodology to arrive at realistic 'worst case' estimates.
- 1.1.1.3 Direct habitat loss has been calculated by overlaying the GIS footprint of the Proposed Development on the NVC/Phase I Habitat map.

1.2 Approach

1.2.1 Estimating Habitat Loss/Potential Change

- 1.2.1.1 Habitat features may be affected during the construction and operational phase of the Proposed Development as follows:
- Direct habitat loss: to accommodate the Proposed Development infrastructure, such as the wind turbine foundations, internal wind farm tracks, crane hardstandings and grid connection infrastructure including substation. These losses are considered permanent in the context of this assessment.
 - Disturbance/temporary habitat loss: the effects of disturbance are variable in their extent, depending on the nature of the disturbance and sensitivity of the habitat feature. Some disturbance types (for example, temporary habitat loss for the creation of construction areas) result in medium to long-term disturbance which require extended recovery periods. In other cases (for example, installation of cables at the sides of access tracks, presence of a temporary construction compound and traversing of machinery) disturbance is short-term, and certain habitat types are able to recover quickly.
 - Indirect effects: these primarily relate to changes in hydrology of peatland and wetland habitats in the context of this Proposed Development, including dewatering of habitats, disruption to flow paths and changes to drainage regime.

1.2.2 Footprint Calculations

- 1.2.2.1 The dimensions and extents of the infrastructure elements for the Proposed Development are detailed in **Chapter 4: Description of the Proposed Development**; and are summarised in **Table 1.1** below. ["Temporary" refers to the area required during construction works, whilst "permanent" refers only to Proposed Development footprint post construction].

Table 1.1 Dimensions and Extents of the Proposed Development

Wind Farm Component	Nature of infrastructure	Number or Length (km)	Maximum Dimensions assumed (m)
Crane hardstandings and turbine foundations	Permanent	22	Crane hardstanding – 1,250m Turbine foundations – 25m diameter Primary crane foundation – 60m x 25m Auxiliary crane foundation – 20m x 12m
SPEN Substation Compound, Control Building and battery storage compound (BSC)	Permanent	3	Compound size 100m x 180m
Existing track	Permanent	19	Up to 6m on (wider on bends)
New access tracks	Permanent	22	
Permanent Anemometry Mast	Permanent	1	20m x 20m
Temporary construction compound 1 (TCC1)	Temporary/Permanent	1	100m x 50m
Temporary construction compound 2 (TCC2)	Temporary/Permanent	2	50m x 50m
Blade laydown areas	Temporary	22	83m x 12m
Borrow pit search areas	Temporary	9	All irregular shapes. Borrow pits will not necessarily take up the whole search area.

1.2.3 Zone of Influence for Temporary and Indirect Habitat Loss

Temporary habitat loss - Construction Disturbance

- 1.2.3.1 As well as direct habitat losses there will be areas within the Development Site subject to temporary physical disturbance (for example temporary laydown areas and temporary construction compound comprising plant traffic and excavations etc.). Temporary habitat losses will be defined as the following areas including a precautionary 4m buffer to allow machinery to work outwith these areas.
- Buffering blade laydown areas;
 - Temporary construction compound 2 – (TCC2); and
 - Borrow pits.
- 1.2.3.2 These areas would be subject to restoration and/or reinstatement, which would be detailed in a Construction Environmental Management Plan (CEMP) (likely to be a requirement subject to a planning condition). Additional areas of potential temporary disturbance may occur around permanent infrastructure including access track and crane pad hardstandings etc, however in order to avoid double counting, these areas are captured within the following 10m indirect effects buffer.

Hydrological Change - Indirect effects

- 1.2.3.3 Potential impacts on the hydrology of surface waters are addressed in detail in **Chapter 12: Geology, Hydrology and Hydrogeology**.
- 1.2.3.4 This assessment focuses on wetland and peatland habitats that are considered to be particularly sensitive to changes to surface water or groundwater hydrology resulting from construction activities associated with the Proposed Development. Although there may be some construction disturbance experienced by the surrounding drier habitats, such habitats are expected to recover in the short term and, as such, no indirect drainage effects are expected to impact or alter the quality of composition of dry habitats.
- 1.2.3.5 Some habitats adjacent to the zone of physical construction disturbance, particularly those sensitive to changes in surface hydrology such as blanket mire, wet heath and flush communities, may be indirectly affected due to hydrological changes associated with the permanent footprint. Hydrological changes can occur through the excavation of soil and bedrock during the construction of cable trenches, where localised disruption to groundwater flow can occur. This can impact on associated groundwater abstractions (especially shallow sources, i.e. springs and wells) or on potential Ground Water Dependent Terrestrial Ecosystems (GWDTEs). Discharge of groundwater/surface water contaminated during excavation may cause physical or chemical contamination to terrestrial habitats and nearby watercourses. An example of this is when blanket bog has new drainage ditches created adjacent to it, resulting in a lowering in the water level and losses of bog specialist plant species being replaced by species that can tolerate drier conditions. This change over time is regarded as an indirect loss or degradation of habitat.
- 1.2.3.6 For the purposes of this assessment a 10m hydrological disturbance zone has been assumed around all permanent infrastructure comprising crane hardstandings and turbine foundations, access tracks, substation compound, control building and anemometry mast.
- 1.2.3.7 Effects would be further minimised through the implementation of good practice environmental measures (**Section 10.8** and **Table 10.9, Chapter 10: Ecology**), including proposals for full habitat re-instatement or restoration of temporarily disturbed habitat.

1.3 Results

1.3.1 Habitat Loss - Direct, Temporary and Indirect

1.3.1.1 **Table 1.2** provides the total estimated direct, temporary and indirect habitat loss from the construction of the Proposed Development based on NVC classification.

1.3.1.2 **Table 1.3** provides the total estimated direct, temporary and indirect habitat loss from the construction of the Proposed Development based on peatland condition criteria.

Table 1.2 Predicted Effects to habitats from Project Infrastructure – NVC communities

Phase 1 habitat type	NVC communities	Total areas of habitat within Study Area (Ha)	Direct Habitat Loss (Ha)	Temporary habitat loss /disturbance (Ha)	Indirect habitat modification (Ha)	Total area of habitat affected (Ha)	% of total habitat in footprint affected by construction
Wet heath	M15b	12.2	0.02	-	0.01	0.03	0.3%
	M15c	177	0.67	0.27	2.16	3.1	1.8%
	M15d	542	1.34	3.33	5.1	9.77	1.8%
Blanket bog/Wet modified bog/Bog pool	M17a	126.8	0.48	-	2	2.48	2%
	M19a	104.9	0.08	-	0.35	0.43	0.4%
	M25a/b	150.2	0.2	0.12	1.1	1.42	1%
	M20	1.94	0.003	-	-	0.003	0.2%
Acid flush	M6b	4.79	-	-	0.1	0.1	2.1%
	M29	0.36	0.003	0.03	0.08	0.14	38.9%
Base-rich flush	M10	0.08	-	-	-	-	-
Acid grassland	U4a/e	10.96	-	-	-	-	-
Recently felled coniferous plantation	-	243	3.56	1.6	n/a	5.16	2.1%
Coniferous plantation	-	1632	12.94	13.96	n/a	26.90	1.6%
Bare ground	-	27.9	0.57	0.49	n/a	1.06	3.8%

Table 1.3 Predicted Effects to Peatland Condition Criteria Areas

Peatland Condition	Total areas of habitat within Study Area (Ha)	Direct Habitat Loss (Ha)	Temporary habitat loss /disturbance (Ha)	Indirect habitat modification (Ha)	Total area of habitat affected (Ha)	% of total habitat in footprint affected by construction
Near Natural	0	0	0	0	0	-
Modified/ Near Natural	0.56	0	0	0	0	-
Modified	1,334	2.1	1.6	10.2	13.9	1%
Drained	0	0	0	0	0	-
Eroding	59	0.33	0.16	1.5	2	3.4%

