

Hill of Fare Wind Farm

Technical Appendix 8.5 - Outline Biodiversity Enhancement and Management Plan

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1. Introduction

1.1 Background

Following the submission of an EIA scoping request for the Hill of Fare Wind Farm (the 'Proposed Development') to the Scottish Government's Energy Consents Unit (ECU), NatureScot and Scottish Environmental Protection Agency (SEPA) recommended an Outline Biodiversity Enhancement Management Plan (OBEMP), or equivalent, be produced to demonstrate biodiversity enhancement measures that are to be implemented as part of the Proposed Development. The Proposed Development, which is shown on **Figure 1.1** of the Environmental Impact Assessment Report (EIAR), is located on the Hill of Fare, just off the B977, and to the north of Banchory, Aberdeenshire and has a central Ordnance Survey Grid Reference NJ 6953503040, hereafter referred to as 'the Site'.

The Site is formed primarily of heathland and mire habitats that is currently managed for walked up grouse shooting. It consists of 1,384 hectares (ha) and occupies a rise in the local landscape. The Site is predominately comprised of dry heath, blanket mire, bracken, and regenerating conifers seeded from adjacent forestry. An access track, connecting to the B977, bisects the Site from west to east. Both mature and regenerating conifers surround the Site, as well as improved grassland in the east and further moorland in the west.

The most common and widespread habitat making up the majority of the landscape is dry dwarf shrub heath (mostly H10 community, but with areas of both H9 and H12 elsewhere), reflecting the historical land use and management of grouse moor. In the west of the Site and 250m buffer, hereafter referred to as the 'study area', is a relatively large area (116.20 ha) of M19 blanket bog. On the steeper slopes mainly dry heath H10a and bracken dominated vegetation U20c occurs. Small instances of flush M4 and M21, and rush-pasture M23 are present, scattered throughout the study area.

1.2 Habitat Loss

Table 8.8 of **Chapter 8: Ecology Assessment** within the EIAR (ITPEnergised, 2023) details the habitat losses of the following National Vegetation Classification (NVC) communities within the Proposed Development, both temporary and permanent:

1.2.1 Blanket Bog

M19 (Calluna vulgaris – Eriophorum vaginatum blanket mire) – total loss of 0.59 ha and 0.51% of the total area of this NVC community within the study area.

1.2.2 Acidic Dry Dwarf Shrub Heath

- H9d (Calluna vulgaris Deschampsia flexuosa heath, Galium saxatile sub-community) total loss of 0.21 ha and 0.98% of the total area of this NVC community within the study area;
- H10a (Calluna vulgaris Erica cinerea heath, Typical sub-community) total loss of 13.98 ha and 1.38% of the total area of this NVC community within the study area.

1.2.3 Bracken

- U20c (*Pteridium aquilinum–Galium saxatile* community, Species poor sub-community) total loss of 0.22 ha and 0.13% of the total area of this NVC community within the study area.
- **1.2.4** Habitat loss from areas of the following non-NVC communities is proposed as below:
 - Conifer plantation total loss of 4.12 ha and 0.83% of the total area of this habitat within the ecological study area;
 - Recently felled woodland total loss of 2.49 hectares and 3.98% of the total area of this habitat within the study area;



Improved grassland – total loss of 0.16 ha and 0.32% of the total area of this habitat within the study area.

1.3 Aims and Objectives

This Outline BEMP sets out the proposed measures for habitat restoration and enhancement within the Site. The Site is the area within the red line boundary, as shown on **Figure 1**.

The design and implementation of the final, detailed BEMP will be managed by the Applicant in consultation with the landowner and statutory consultees. Detailed method statements will be developed for the specific measures of the final BEMP, such as:

- Restoration methods that would encourage the abundance of bog-moss on areas of deeper peat (i.e. >0.5m deep);
- Planting regimes, increase in deer management practices/cull rates and species lists for the purpose of tree planting to improve riparian habitats and slope stability;
- Timing schedules and target species for the manual removal and management of bracken and conifer self-seeded trees across the Site; and
- Detailing areas to implement heathland management practices, including heather swiping, and promotion of varied heathland age classes and structure.

2. On-Site Priority Features for Management Action

2.1 Overview

Please note that full details of each of the vegetative communities discussed in this OBEMP can be found in the baseline assessment report for the NVC survey, **Technical Appendix 8.3**.

2.1.1 Blanket Bog and Peatland

The study area comprises an estimated 116.19 ha of NVC Community M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire, as detailed in **Table 8.9** of Chapter 8: Ecology Assessment of the EIAR. This habitat forms 5.95% of the total study area and is located within the west and north-west section of Site. Smaller areas of mire communities found within study area include M21 *Narthecium ossifragum – Sphagnum papillosum* valley mire, M23a *Juncus effusus/acutiflorus-Galium palustre* rush-pasture, *Juncus acutiflorus* sub-community, M23b *Juncus effusus/acutiflorus-Galium palustre* rush-pasture, *Juncus effusus* sub-community and flushes of M4 *Carex rostrata – Sphagnum recurvum* mire.

For the purposes of this OBEMP these NVC communities will be classed as blanket mire/bog, separate to the dry heath communities described in **Section 2.2.2** of this plan, despite some overlap and variation within the communities. This is due to the majority of the mire communities developing on more than 0.5 metres of peat, comparative to the dry heath communities which are found primarily on dryer, shallower peat of less than 0.5 metres depth.

The largest area of mire habitat found within the study area is within the north of the Site, to the west of the watercourse and is dominated by heather (*Calluna vulgaris*) with very wet areas dominated by bog asphodel (*Narthecium ossifragum*), hare's-tail cottongrass (*Eriophorum vaginatum*) and bog-mosses (*Sphagnum* spp.).

The area of blanket bog within the study area is considered to be of a reasonably good quality, although there was some work undertaken as part of a NatureScot Peatland ACTION grant to undertake ditch blocking within areas of deeper peat found here. Despite the work undertaken relatively recently, there remain some signs indicative of dewatering and degradation that would benefit from further follow-up measures.



2.1.2 Heath

The study area comprises an estimated 1,058.53 ha of NVC community H10a *Calluna vulgaris – Erica cinerea* heath, Typical sub-community, as described in **Table 8.9** of Chapter 8: Ecology Assessment of the EIAR. This habitat encompasses 51.64% of the total study area and encompasses the majority of the eastern and central regions within the Site boundary and wider Study Area buffer, with some areas near the western Site boundary, west of the areas of the M19 blanket bog habitat. Smaller areas of dry heath found within the study area include H9 *Calluna vulgaris – Deschampsia flexuosa* heath, H9d *Calluna vulgaris – Deschampsia flexuosa* heath, Galium saxatile sub-community and H12a *Calluna vulgaris-Vaccinium myrtillus* heath, *Calluna vulgaris* sub-community.

The heathland within the Site shows signs indicative of previous moorland management practices, including burning and grazing, which may have historically reduced the overall botanical diversity, removed Sphagnum mosses from areas of deeper peat and facilitated a more dominant heather (*Caluna vulgaris*) cover.

2.1.3 Bracken

The study area comprises an estimated 168.72 ha of bracken dominated habitat (as detailed in Table 8.9 of Chapter 8 of the EIA Report (ITPEnergised, 2023)). This habitat encompasses around 8.64% of the total study area with large swathes of the U20 NVC community recorded around the edges of the heathland, bordering the conifer plantations. In addition, some small pockets were present in the east, in amongst the heath, as shown in **Technical Appendix 8.3 – Figure 2: National Vegetation Classification Survey** Results from the EIAR (National Vegetation Classification Survey Report, 2023).

Areas dominated by bracken are often species-poor with occasional herbs and moss species surviving within the ground layer. Therefore, areas encompassed within the NVC community of U20c are considered in poor condition in terms of biodiversity. This community is very widespread, occurring usually on deeper, well-aerated though often quite moist soils, base-poor to circumneutral, up to moderate altitudes in mountains (Rodwell, 1991).

The areas of bracken cover are considered likely to increase within the Site due to this plant species being poisonous to many herbivorous species including deer, enabling proliferation and domination of the hillside compared to other plant species and habitats offering more ecological benefits, which are heavily grazed by both deer.

2.1.4 Riparian Habitats

Due to current felling operations and planting/felling plans within the wider areas of commercial forestry there are little to no native trees associated with riparian habitat within the Site and 250m buffer. Commercial coniferous plantation is currently active within much of the surrounding area, and the activities associated with operating a commercial forest can have detrimental effects on water quality and resilience of existing watercourses.

As identified within the Dee District Salmon Fishery Board and River Dee Trust Fisheries Management Plan for 2020 - 2025 (Dee District Salmon Fishery Board and River Dee Trust, 2020), one of the primary objectives within the River Dee catchment is to increase riparian tree cover for the benefit of water quality, nutrient levels, protection against erosion/contamination of the wider catchment as well as to help keep water temperatures low during times of climate change.

2.1.5 Commercial Plantation – Natural Regeneration

Coniferous plantation woodland is the second most prevalent vegetation community within the site. It constitutes 493.53ha or 25.26% of the study area, 12.69% of which consists of felled plantation woodland.

Large areas of mature coniferous woodland plantation surround the heathland to the north and south of the Site. The species within this woodland comprise largely of Sitka Spruce (*Picea sitchensis*) with Scots Pine (*Pinus sylvestris*), Corsican Pine (*Pinus nigra*), European Larch (*Larix decidua*), Hybrid Larch (*Larix × marschlinsii*), Norway Spruce (*Picea abies*) and occasional Rowan (*Sorbus aucuparia*).An area of felled coniferous woodland (recently re-stocked) was noted at the centre of the study area adjacent to the eastern access track within the buffer area. Recently felled woodland has limited species diversity and ecological value and is not a conservation priority.



Regeneration of commercial plantation forestry species can be problematic for native species and habitats and t can become dense and dominate the landscape if left to spread. This is considered an issue for most of the habitats within the study area, but particularly for the dry heath and the area of unnamed woodland listed on the Ancient Woodland Inventory located to the south of the Site, where regen conifer species were identified during the baseline surveys.

2.2 Management Recommendations

2.2.1 Blanket Bog and Peat

2.2.1.1 Methods

Restoration and enhancement of areas of mire will focus on stabilising bare peat, including exposed faces, and stemming water flow from within the peat. This will be achieved through a variety of measures, which will be agreed with key stakeholders and following best practice methods, but are likely to including the following:

- Bare peat in flat or gently sloping (<35°) areas:</p>
 - Use of geotextiles to stabilise the surface, where seeding is considered unlikely to achieve this on its own.
 - Seeding with blanket mire species of regional genetic provenance. The potential need for a nurse crop will be agreed with key stakeholders post consent.
 - Development and agreement of a Deer Management Plan detailing increased cull rates to facilitate habitat recovery, to be informed through detailed deer assessment, as required.
- Peat workings:
 - Re-profiling to reduce slopes and/or peat faces to <35° using low ground pressure diggers, with excavated material placed at the bottom of the slope.
 - Seeding and/or surface stabilisation with geotextiles of bare peat surfaces similar to the approach for bare peat above.
 - Development and agreement of a Deer Management Plan detailing increased cull rates until the habitat is considered to have recovered sufficiently to tolerate impacts from poaching and grazing pressures.
- Gullies and ditches:
 - Use of dams (where appropriate) to block gullies and ditches where practicable (i.e. approaches taken are dependent on width and depth as well as the nature of the erosion, such as whether the mineral layer is exposed).
 - Re-profiling to reduce slopes to <35° using low ground pressure diggers, with excavated material placed at the bottom of the slope.
 - Seeding and/or surface stabilisation with geotextiles of bare peat surfaces similar to the approach for bare peat above.
 - Development and agreement of a Deer Management Plan detailing increased cull rates until the habitat is considered to have recovered sufficiently to tolerate impacts from poaching and grazing pressures.

2.2.1.2 Locations

The majority of deep peat, mire and blanket bog is located in the western section of Site. Following discussion, this OBEMP proposes focusing peatland management to compliment the previous treatments with an aim of improving bog conditions on the north western region of deep peat and seeking to expand upon peat forming ground conditions. The focal area of habitat management can be seen in Figure 1: Proposed BEMP Areas.



2.2.2 Heath

2.2.2.1 Methods

Ensuring management of heathland to allow varied age classes of heather to develop, through methods utilising low impact and low-pressure vehicles to conduct heather swiping and flailing to enable the botanical diversity and bryophyte layer to reestablish. This regeneration may provide improved cover for ground nesting species such as grouse (*Lagopus sp.*), hen harrier (*Circus cyaneus*) and merlin (*Falco columbarius*) as well as invertebrates. Heather swiping enables heath management whilst ensuring some of the more sensitive upland species, including juniper (*Juniperus communis*), may become established.

2.2.2.2 Locations

- Due to the coverage of heathland and dry heath and the current management practices undertaken by landowners within the Site in relation to the heathland, specific locations for any recommendations within this management plan will not necessarily be required.
- If low impact management practices cannot be implemented, then areas will need to be selected following consultation with landowners in order to introduce more intensive deer management efforts through the proposed deer management plan.

2.2.3 Bracken

2.2.3.1 Methods

- Primary methods of bracken control including cutting/strimming, pulling and rolling of bracken stands during specific growth periods, to reduce photosynthesis, will be undertaken intensively a minimum of three times during the year. This method would possibly be more effective alongside secondary methods such as overwintering livestock to poach the remaining stands and break up the underground rhizomes, however if this is not possible then primary methods may need to be implemented over more than one year in succession to prove effective.
- These approaches would enable creation of microhabitat variations within the transitional areas between those dominated by bracken and heather. The reduction of bracken coverage will enable other species to establish.

2.2.3.2 Location

- The substantial areas of bracken form 168.72ha (8.64%) of the study area are located between the Site boundary and 250m buffer along the western edge of Site and adjacent to the Site boundary along the south-western and southern Site boundary, with a smaller stand of bracken lying to the north-west of Site, north-east of the area of blanket bog habitat, and smaller sporadic bracken to the east of Site.
- The current proposed areas for bracken management can be seen in Figure 1: Proposed BEMP Areas and consist of a large stretch of land running horizontally through the centre of the Site, south of the proposed peat/bog management area, to the north-east of Site.
- Other areas of bracken to be prioritised for management include areas within the proposed peat/bog management area, which will further benefit the habitats and biodiversity of the area, preventing bracken proliferation which would hinder the maturation and establishment of key bog species, preventing photosynthesis below the bracken canopy.
- The final priority area for bracken management is in the south and south-western region of Site. This region of bracken has established alongside and throughout the coniferous plantation woodland and will be managed alongside the non-native coniferous species including Sitka Spruce in this area.



2.2.4 Riparian Habitats

2.2.4.1 Methods

- Following the fish habitat survey undertaken in 2023 (Wildlife Consulting Ltd, 2023), riparian habitats were identified as potential areas for biodiversity enhancement through tree and shrub planting along sections of embankments adjacent to the on-site waterways. This would include planting of broadleaved species of local provenance, such as aspen (*Populus tremula*), oak (*Quercus* spp.), alder (*Alnus glutinosa*), hazel (*Corylus avellana*), rowan (*Sorbus aucuparia*), willow (*Salix* spp.) and birch (*Betula* spp.).
- Planting regimes should be utilised to ensure sections of waterways are shaded and cover is provided for fish species, without creating overshading, to improve suitable habitat for fish migration, sheltering and breeding opportunities. Planting will be considered complimentary to the existing stands of trees.
- Areas of tree planting should proceed with planting of small, localised groupings of saplings of the same species to enable symbiotic relationships to for emulating natural regeneration whereby seeds disperse and germinate normally within the vicinity of the seed-producing tree. The general approach would be gradual and species groupings chosen based on micro habitats, such as selection of rowan in and around banksides with low or reduced structural integrity.
- Any broadleaf planting will require intensive deer management efforts which will be facilitated with the implementation of the deer management plan aiming to reduce deer numbers and, hence, browsing pressure.
- Following finalisation of a detailed BEMP in line with work commencement, a Tree Planting Plan should be produced in order to detail specific details of tree planting in terms of location, timing and frequency.
- Several areas of riparian habitat comprised woody debris within waterways. Targeted removal of woody debris from watercourses would benefit fish migration opportunities and so should be implemented where possible. In order to carry out removal of this debris from the watercourse, any instream works should be undertaken following a fish rescue exercise, whereby a section of the watercourse is netted off and fish are removed from the works area using an electrofishing exercise. Nets should be left in situ and the watercourse over pumped with works then undertaken in the dry section of channel. Once instream works are completed, the nets should be removed immediately to enable continuation of fish passage.

2.2.4.2 Location

- The location of riparian habitat management is to be determined following consultation with the Dee District Salmon Fishery Board, the River Dee Trust, and agreement from Landowners. Suitable areas for undertaking woody debris removal from water courses should primarily focus on the Burn of Corrichie and Headwaters as detailed in the fish habitat survey report (Wildlife Consulting Ltd, 2023).
- It may be suitable to introduce broadleaf planting of areas surrounding the water courses which are currently dominated by bracken, however consideration as to timescales of bracken removal and increased cull efforts of deer will be required due to the potential impacts of deer grazing which may hinder broadleaf tree growth following planting.
- Other proposed areas detailed specifically for riparian tree planting are along the banks of Landerberry burn to the east of Site.
- Areas of off-site riparian planting have been identified, including surrounding tributaries of the River Dee around c.5 km north-east of Site. Such works could follow on from the recent removal of the Garlogie Dam, and form part of a wider plan to improve riparian habitat of the tributaries in order to further benefit the salmon and wildlife now able to traverse these waterways.



2.2.5 Coniferous Plantation including Non-native Sitka Spruce

2.2.5.1 Method

- Pulling of young saplings and felling of self-seeded young conifer trees by hand, followed by removal from Site to prevent regeneration.
- Cutting and felling of more mature non-native conifers, , followed by root plate flipping to prevent regeneration. Root plate flipping will be utilised to reduce potential damage to peat from removal of the tree stumps and involves peeling the stump off any peat, to minimise peat disturbance. The stumps will then be flipped over and compressed into the furrow created.
- Whilst there is management of self-seeded conifers, there is riparian planting proposed, see Section 2.2.4. In addition, an area within the site on Brown Hill has been identified as suitable for compensatory tree planting. This area of compensatory planting has a mix of ground conditions and tree species will be selected as appropriate. Whilst there will be a mix of conifers, native broadleaf species will be favoured on the western and southern edges thus developing a more "feathered" treeline or edge to the extant commercial plantation.
- Due to the presence of protected species, the removal of trees may potentially result in negative impacts. As such, areas considered for tree removal within mature stands of woodland with suitable habitat for protected species may require further surveys such as a protected species. These surveys are considered as part of the pre-construction surveys (and detailed in the proposed species protection plans).

2.2.5.2 Location

> The management of conifer self-seeding trees on Site is proposed within the wind farm array and elsewhere within the Site where practicable to do so.



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