Planning and Environmental Consultants

Biodiversity Management Plan

Derrinlough Wind Farm HMP

DOCUMENT DETAILS

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1. INTRODUCTION

1.1 General Introduction

The Habitat Enhancement Plan has been prepared as an Appendix to the Environmental Impact Assessment Report for the proposed Derrinlough Wind Farm development. The biodiversity management measures described in this management plan focuses on measures that will be implemented as part of the proposed Derrinlough Wind Farm. The measures have been designed to offset loss of woodland and scrub habitat to the proposed development footprint as well as incorporating biodiversity net gin measures that go above and beyond the those described in the draft *Rehabilitation Plans* prepared for both Congawny and Drinagh Bogs. The measures are focused on biodiversity enhancement measures that would not otherwise be implemented within the site.

The proposed development, which will comprise 21 No. wind turbines, a 110 kV substation and grid connection, and all associated infrastructure, is located on Clongawny and Drinagh Bogs which are part of the Boora bog group in Co. Offaly. The closest settlements to the site are Cloghan which is located approximately 2km to the north and Fivealley which is located approximately 2.5km to the south.

The proposed development will result in loss of approximately 7.24 hectares of birch dominated woodland/scrub occurring in an intimate mosaic with other secondary habitats which have established on the cutover bog i.e. poor fen. This equates to approximately 2.5% of the overall woodland/scrub habitat within the site. These secondary habitats that occur on site have revegetated in recent years since commercial peat production by Bord na Móna has ceased within parts of the site. Other extensive areas of the proposed development site remain dominated by bare peat due to recent peat extraction. The overall site at Derrinlough covers an area of 2,360 hectares and the construction footprint has been specifically chosen to avoid the large wetlands and most ecologically sensitive parts of the site. The development has been deliberately and specifically designed to avoid all negative effects on the uncut high bog areas around the peripheries of the site as well as sensitive aquatic features that are also important for local bird species.

The habitat enhancement and management measures that are included in this document are designed to offset the loss of habitats within the proposed development footprint as well as aiming to increase the overall biodiversity value of the site. This has been achieved through the following measures:

- The replacement of any loss of woodland and scrub habitat associated with the proposed development footprint and associated woodand management measures.
- The avoidance of any negative effects on marsh fritillary butterfly and the creation of additional suitable habitat for the species.
- The creation of breeding lapwing habitat through the revegetation of bare peat and some scrub clearance/control. Such measures will also benefit local biodiversity including pollinators and other ground nesting birds.
- The placement of the proposed amenity infrastructure away from sensitive habitats and the promotion of biodiversity awareness/education.

The below subsections provide a description of the main management measures incorporated into the proposed development as well as providing a summary of other species specific management plans prepared for the proposed development.

1.2 Statement of Authority

This report has been prepared by David McNicholas (BSc., MSc., MCIEEM) of MKO with input from the Bord na Móna Ecology Team. David McNicholas has over 9 years' professional ecological consultancy experience and is a full member of the Chartered Institute of Ecology and Environmental

Management (CIEEM). This report has been reviewed by Pat Roberts (BSc., MCIEEM). Pat has over 14 years' professional ecological consultancy and management experience. Bord na Móna has over 65 years of experience with peatland restoration, rehabilitation and development of after-uses on industrial cutaway peatland.

2. HABITAT MANAGEMENT ACTIONS

The following sections provide a description of the main habitat management and enhancement measures incorporated into the proposed development for biodiversity. The measures aim to offset the loss of habitats to the development footprint as well as providing additional measures to achieve biodiversity net gain for the project.

Although draft *Rehabilitation Plans* have been prepared for the site as part of the IPC licence (BNM, 2020a[1] and BNM, 2020b[2]), the below measures are not proposed as part of that plan and as such provide for habitat enhancement above and beyond those already proposed as part of Bord na Mónas obligations as part of Bord na Mónas obligations under the IPC licence. The draft *Rehabilitation Plans* are provided Appendix 6.8 of the accompanying EIAR.

2.1 Replacement of Woodland and Scrub

In order to facilitate the proposed development footprint it is proposed to fell and remove approximately 7.24 hectares of non-Annex I birch dominated woodland/scrub occurring in an intimate mosaic with other secondary habitats which have established on the cutover bog i.e. poor fen. This woodland and scrub have been the subject of detailed botanical survey and assessment, which is fully described in a habitat valuation that is provided in Appendix 6-4 of the EIAR. None of the woodland and scrub to be lost corresponds to the EU Habitats Directive Annex I priority habitat *Bog Woodland* (91D0).

This loss of woodland and scrub will be fully mitigated through the planting of native woodland within the site boundary. It is proposed to plant approximately 13 hectares of native woodland to offset that lost as well as achieving biodiversity net gain, as such habitat would constitute a high local biodiversity value. The areas chosen for the planting of woodlands, to replace those lost, were chosen because they do not currently support woodland, are dominated by bare peat and are among the drier areas of the cutover peatlands within the site. Such areas have limited pioneer vegetation and are unlikely to be successfully rewetted in the future due to their elevated topography. The woodland areas to be lost and those to be replanted are shown in Figure 2.1. The development of this woodland would complement the general objectives of the draft *Rehabilitation Plans* of environmental stabilisation through the development of natural habitats that complement the underlying environmental conditions.

Planting and establishment will follow the recommendations and specifications of the native woodland scheme, which recommends the species composition and woodland types to be planted.

The Native woodland scheme recommends the establishment of pioneer Birch woodland (Scenario 5, highly modified peats and peaty podzols) (Cross, J.R. & Collins, K.D. 2017). Scenario 5 stipulates planting Downy birch (45%) and rowan (10%) in pure groups. Scots pine (20%) and pedunculate oak (15%) also in pure groups, on free-draining areas. Minor species (10%) to comprise *at least two of the following*, positioned between the above groups and at edges: holly, hawthorn and hazel. Where wetter conditions occur locally within the replanting areas, these should be planted with: Downy birch (50%) and grey willow (30%), planted in pure groups. Minor species (20%) to comprise of *at least two of the following*, positioned between the above groups and at edges: rowan, hazel and alder, and pedunculate oak. In addition, there is potential to plant a small amount of Alder buckthorn, which is a native species and would increase the biodiversity value of the new woodlands. Alder buckthorn would benefit a variety of invertebrate species.

It is not proposed to undertake any drainage to facilitate the planting of the woodlands in this area, with the species chosen tailored to the prevailing conditions on the site. While the overall targeted area is relatively dry, small wetland features or areas with impeded drainage will be retained within these future woodland areas. However, there may be some requirement for localised application of fertiliser to aid

[1] BNM, 2020a, *Draft Rehabilitation Plan - Clongawny Bog.*
[2] BNM, 2020b, *Draft Rehabilitation Plan – Drinagh Bog.*

Map Legend

EIAR Site Boundary

Woodland and scrub habitat loss within the development footprint

- Cutover bog (PB4), Bog woodland (WN7)
- Cutover bog (PB4), Scrub (WS1), Dry grassland (GS1) mosai
- Cutover bog (PB4), Scrub (WS1), Poor fen and flush (PF2) mosaic
- Cutover Bog (PB4), Dry Heath (HH), Poor fen (PF2), Scrub (WS1) mosaic
- Cutover Bog (PB4), Dry Heath (HH), Scrub (WS1) mosaic
- Scrub (WS1)
- Scrub (WS1), Dry grassland (GS2), Poor fen and flush (PF2)
- Scrub (WS1), Poor fen and flush (PF2) mosaic
- Scrub (WS1), Wet grassland (GS4) mosaic

Proposed tree planting areas

25ha Lapwing Enhancement Area

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MAP TITLE: **Habitat Management Areas**		MAP NO.: **Figure 2.1**	SCALE: **1:28,000**
PROJECT TITLE: **171221 - Derrinlough Wind Farm EIAR**			DATE: **05-02-2020**
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establishment where necessary and following the Management Guidelines for Ireland's Native Woodlands (Cross, J.R. & Collins, K.D. 2017).

Where future drain blocking on site is proposed as part of the draft *Rehabilitation Plan*, this may result in wetter conditions within some areas of woodland planting over time. However, such conditions will result in a more varied understory within the woodland habitat which will further benefit biodiversity.

2.1.1 Monitoring

The woodland planting will be surveyed on an annual basis for the first five years following establishment and any areas where trees have failed or where specific management is required, will be identified and reported upon to Bord na Móna and Offaly County Council. Any actions resulting from the woodland monitoring will be addressed as deemed necessary.

2.2 Marsh Fritillary Habitat Creation and Management

Derrinlough contains a number of areas of marsh fritillary habitat, particularly within the Clongawny landholding, see Figure 1.1, Appendix 6-6 of the EIAR. The lands within the Drinagh bog were not found to contain as many areas of suitable habitat and no larval webs were recorded within this part of the study area. This is largely due to the extent of birch scrub/woodland establishment and the large areas of both wetlands and milled peat.

The National conservation status of marsh fritillary has been assessed as 'Vulnerable'[3]. As such the proposed development has been designed to avoid areas of suitable habitat, particularly where breeding colonies have been identified during surveys in both 2018 and 2019. In consultation with Butterfly Conservation Ireland, a management plan has been developed to reduce and/or avoid effects on butterfly species. The plan also provides for measures for the creation of additional areas of suitable habitats on site for these species where possible. A detailed Lepidoptera Management Plan (LMP) is provided as Appendix 6-6 of the EIAR.

The LMP contains all the measures necessary to ensure that Lepidopteran species are adequately protected during both construction and operation of the proposed development. The following paragraphs provide a summary of the management measures incorporated within the Lepidoptera Management Plan:

- Where suitable marsh fritillary habitat occurs in close proximity to the proposed infrastructure, side casting of material will be to the opposite side of the proposed infrastructure to where the suitable habitat occurs. This will ensure that there is no potential for direct or indirect impacts on marsh fritillary habitat. This measure will also protect existing suitable habitat for other Lepidoptera/pollinator species of local importance.
- Where shallow peat occurs along the infrastructure footprint and sub peat material comprises calcareous mixed gravels and till such substrate will be used during the site reinstatement, along the infrastructure corridor. Such material will facilitate the establishment of calcareous plant species that have been recorded on spoil heaps and sub peat material within the study area. The establishment of such vegetation will benefit pollinator species generally as well as providing a food source for adult marsh fritillary. Birds-foot Trefoil readily naturally colonises this substrate and is a key foodplant for both Common Blue and Dingy Skipper. In addition, such material, in combination with the surrounding peat substrate can also create a suitable substrate for the natural colonisation of devils-bit scabious in certain conditions and thus marsh fritillary breeding habitat.
- Re-vegetation along the construction corridor will be facilitated through the establishment of semi-natural grassland along the infrastructure corridor using a wildflower pollinator-friendly seed mix and/or by using 'Green Hay' in combination with fertiliser and/or lime and a nursery crop as required. Any species mix will comprise of a variety of plant species that will grow on peatland habitats found in the Derrinlough/Boora Bog Complex and contribute to an enhancement in biodiversity. It is proposed to use a seed mix comprising of red fescue (*Festuca rubra*) and bent, (*Agrostis* spp.) that will allow for a rapid revegetation, while not resulting in a coarse/dense sward preventing other wildflower species from establishing.
- Any management approach needs to be flexible and be tailored to the specific on-site environment where there will be a variety of peat depths, hydrological conditions and nutrient status. Management (e.g. mowing) should not be uniform. Different actions in different places should enhance the natural diversity of habitats already developing on site.

Regan, E.C., Nelson, B., Aldwell, B., Bertrand, C., Bond, K., Harding, J., Nash, D., Nixon, D., & Wilson, C.J. (2010) Ireland Red List No. 4 – Butterflies. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland.

- The proposed tree planting areas within the study area have been located away from areas of suitable marsh fritillary habitat, see Figure 2.2 (proposed tree planting areas) and Figure 1.1 (distribution of marsh fritillary habitat and larval webs), Appendix 6-6 of the EIAR. This will ensure that there is no loss of potentially suitable habitat for the species.

2.2.1 Marsh Fritillary Monitoring Actions

The monitoring programme that is set out in the Lepidoptera Management Plan will be carried out by a suitably qualified Ecologist. The construction phase of the proposed project will be monitored by a suitably qualified ecologist to ensure the protection of the species. A Derrinlough Wind Farm habitat and biodiversity monitoring report will then be submitted by Bord na Móna to Offaly County Council in years 1, 3 & 5 and every five years thereafter for the lifetime of the proposed project. This report will initially document the establishment of vegetation along the site access track and the distribution of the species at the site. Following this the report will allow remedial action to be taken if specific issues develop in the future i.e. scrub encroachment or the establishment of noxious weeds. Any additional management measures will also be undertaken in consultation with Butterfly Conservation Ireland (BCI).

The Derrinlough Wind Farm habitat and biodiversity monitoring programme will specifically monitor:

- Marsh fritillary butterfly (presence and distribution) using NBDC and NRA (2009[4]) guidelines.
- Marsh fritillary butterfly habitat (condition) using NBDC guidelines[5].
- Record any other subsequent rare or threatened species to establish a detailed understanding of the additional biodiversity benefits of the management measures. During the surveys, other butterflies and moths will also be recorded to further establish both the biodiversity value of the habitats and inform any future alterations to the vegetation management.

2.3 Habitat Management for Bat Species

Where tree/scrub removal is required to facilitate the proposed turbines, a minimum of 50m buffer from the blade tip to the nearest woodland, as recommended by the Natural England (2014) and SNH (2019) guidelines, shall be implemented. These vegetation-free areas will be maintained during the operational life of the development to minimise the collision risk for bat species present at the proposed development site.

Following the buffer calculation (as seen in section 6.1.3, Bat report, Appendix 6-2 of the EIAR), using a number of hub height vs. blade length scenarios, the largest buffer width achieved was 85m. This was conservatively rounded up to 100m and applied as a design constraint to all areas of commercial forestry or native woodland.

These vegetation-free areas will be maintained during the operational life of the development. They will be monitored concurrently during marsh fritillary surveys and habitat assessment (i.e. during years 1, 3, 5 and every 5 years after for the lifetime of the proposed project).

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[4] *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*
[5] *NBDC, 2020, Habitat Condition Assessment for Marsh Fritillary, Online, Available at: http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Marsh-Fritillary-Habitat-Condition-Form.pdf, Accessed, 15 January 2020*

2.4 Amenity Development

The proposed Derrinlough wind farm development includes an amenity aspect which is described in Chapter 4 of this EIAR. Disturbance to wildlife was considered as part of the development of amenity proposals for the as outlined in the following section. This will ensure that wildlife disturbance from amenity users will be minimised.

2.4.1 Amenity development actions

- The amenity pathways identified by Bord na Móna as part of the proposed development has been chosen to allow access through the site as well as limiting potential disturbance to wildlife from walkers, dog-walkers, cyclists etc. The amenity pathway has been designed to avoid particularly sensitive parts of the proposed development site.
- Dog control management (dogs on leads) will be included on all signage, as required.
- The amenity pathways will avoid areas identified as suitable for marsh fritillary and construction activities will be supervised by the ecological clerk of works, ensuring minor micro-siting as required.
- The amenity pathways will include educational signage regarding the habitats, species and general biodiversity of Clongawny and Drinagh Bogs and the habitat enhancement work being undertaken by Bord na Móna on the site.
- A small bird hide will be installed close to the Drinagh wetlands within the east of the site, just off the proposed amenity trail.

2.5 Other Management Opportunities

Several other specific habitat enhancement measures will be carried out around the site. These include:

- The management of 25ha of cutover bog as wet grassland habitat for breeding lapwing, see Appendix 7-8, of the EIAR. This area and will be managed by the removal of scrub and the establishment of a mosaic of semi-natural grassland and poor fen mosaic, which is more preferable to breeding Lapwing. The establishment of semi-natural grassland on areas of bare peat and scrub will also benefit a diverse range of pollinators and other ground nesting bird species as well as stabilising the bare peat. This will contribute to an overall biodiversity net gain associated with the proposed development given the size of the areas identified for semi-natural grassland creation (in excess of 25ha).
- Erection of 12 Barn Owl and 12 Kestrel nesting boxes at suitable locations around the site. This will be carried out in consultation with BirdWatch Ireland Offaly branch. All bird and bat boxes will be numbered and grid reference taken for monitoring of occupancy.
- Erection of 20 Bat boxes at suitable locations close to the woodland edge and wetland habitats around the peripheries of the site, thereby locating them away from the proposed infrastructure and in close proximity to hedgerow and woodland that provide connectivity to the wider landscape. Mature trees will be targeted for the placement of these bat boxes. Bat boxes will be erected at least 3 metres off the ground and at different aspects. All bat boxes will be numbered for monitoring of occupancy.
- Bord na Móna are committed to consulting and working with stakeholders interested in the longer-term biodiversity management of Derrinlough Bog.

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