

Appendix 9K
Habitat Management Plan

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Habitat Management Plan

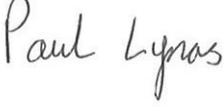
Derrygreenagh CCGT
Appendix 9K

Bord na Móna

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Quality Information

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1. Introduction

1.1 Background

AECOM was commissioned by Bord na Móna PLC to prepare a Habitat Management Plan (HMP) for a Proposed Development on lands within the Derrygreenagh Bog Group in Co. Offaly. The Proposed Development comprises a Power Plant Area (Combined Cycle Gas Turbine (CCGT) unit; an Open Cycle Gas Turbine (OCGT) unit and all associated infrastructure); and an Electricity Grid Connection (including substations and associated buildings, overhead line, underground cable and all associated infrastructure).

A Gas Connection Corridor will enable the Proposed Development to connect to existing infrastructure. The Gas Connection Corridor is not being included in the planning application for the Proposed Development (as it will be applied for by GNI under separate future consenting processes).

A detailed description of the Proposed Development and the Overall Project (which includes the Gas Connection Corridor) is presented in Chapter 5 of this EIAR (Volume I).

Within the lands associated with the Proposed Development (Power Plant Area and Electricity Grid Connection), there will be unavoidable loss of habitats, including areas of woodland and scrub. This Habitat Management Plan details the compensation measures which will minimise the impact of the Proposed Development on the biodiversity of the site as a result of tree loss. This HMP should be read in conjunction with Chapter 9 Biodiversity, of this EIAR (Volume I), Chapter 10 Landscape and Visual, Appendix 10B (EIAR, Volume II) and the Ballybeg and Derryarkin Cutaway Bog Decommissioning and Rehabilitation Plans (see Appendix 9J). For details of policy and guidance with respect to protecting and enhancing biodiversity, see Section 9.2 of Chapter 9 Biodiversity of the EIAR (Volume I).

1.2 Aims and Objectives

This HMP will outline:

- The proposed habitat creation and compensation and ecological management.
- References to the landscape mitigation plan.
- Methods and prescriptions of habitat creation and management.
- An outline programme of appropriate management and ongoing monitoring of habitats within the site.

1.3 Quality Assurance

This project has been completed in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, its quality as well as covering all aspects of environmental and Health and Safety management. All staff members are committed to establishing and maintaining our accreditation to the relevant international standards namely BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub consultants and contractors.

2. Habitat Management Plan

2.1 Baseline Habitats and Value

The Power Plant Area will be cleared to facilitate construction of the CCGT, OCGT and associated infrastructure. This will largely entail the removal of buildings and artificial surfaces associated with the existing Derrygreenagh works, but will also include the clearance of various habitats including dry meadows, grassy verges and cutover bog, as well as areas of bog woodland, mixed broadleaved woodland, a mosaic of scrub and immature woodland, treelines and scrub, in particular within the Peat Deposition Area. These woodland and scrub habitats are of higher ecological value than the other habitats which make up the majority of the Power Plant Area. Therefore, these woodland and scrub areas represent important habitat in the context of the Power Plant Area and are also of value to wildlife such as mammals, birds, and invertebrates.

Most of the land within the boundary of the Electricity Grid Connection area will be retained and unaltered by the development. However, areas of woodland habitats will require felling to facilitate the construction of the high voltage overhead line and pylons that will run from the 220kV substation in the north of the Electricity Grid Connection to the Line-Cable Interface Compound in the centre of the Electricity Grid Connection area. Areas of bog woodland are of the highest ecological value within the Electricity Grid Connection, which is dominated by heavily modified/degraded cutover bog.

2.2 Compensation Planting

In total, it is anticipated that c.15 ha of woodland and scrub habitats will be lost to facilitate the Proposed Development. Habitat loss will be kept to a minimum where possible, by only removing habitat required to facilitate the construction footprint, including working, storage areas and laydown areas etc. Where habitats are disturbed, removed, or damaged for temporary construction compounds, these will be reinstated naturally through succession and left unmanaged following construction.

To compensate for the loss of trees as a result of the construction of the Proposed Development, five areas within the Electricity Grid Connection, totalling c.17.5 ha, will be replanted with trees, over five years. Figure 1 illustrates the location and extent of the replanting lands to compensate for woodland and scrub habitat loss.

The replanting areas in the Electricity Grid Connection currently support predominantly low value degraded cutover bog, therefore replanting will aim to create bog woodland, dominated by downy birch *Betula pendula*. This aligns with the Derryarkin and Ballybeg Cutaway Bog Decommissioning and Rehabilitation Plans (see Appendix 9J), which identifies naturally functioning semi-natural habitats as one of the critical success factors required to achieve successful rehabilitation of the bog.

True bog woodland is a rare woodland and bog habitat generally identified by stands of birch trees with extensive *Sphagnum* spp. and pleurocarpous moss carpets on the woodland floor and which has priority conservation status on the EU Habitats Directive (Habitat 91D0*) (Irish Peatland Conservation Council, 2023). Where bog woodland has colonised former non-woodland bog because of human impacts, the resulting woodland is considered secondary bog woodland, and although included in the definition of type 91D0*, generally has lower conservation priority than restoration of the original bog type (EC, 2013).

Given that it is not expected that the site has the potential to develop active raised bog analogous to the priority Annex I habitat within the foreseeable future (c. 50 years), bog woodland may be the climax community in degraded bog such as that present on site. According to Cross and Lynn (2013), “downy birch is the dominant species and typically there is a thin shrub layer consisting mostly of willows (*Salix aurita*, *S. atrocinerea*). *Pinus rotundata* and *Picea abies* do not occur on raised bogs in Ireland and alder buckthorn (*Frangula alnus*) is very rare. Scots pine (*Pinus sylvestris*) occurs locally, especially on raised bogs, but is not a constant species. Typical dwarf shrub species include ling heather (*Calluna vulgaris*), and typical herbs include purple moor-grass (*Molinia caerulea*), soft rush (*Juncus effusus*) and broad buckler-fern (*Dryopteris dilatata*). In contrast, the moss layer is well developed and is dominated by *Sphagnum* species, often also with an abundance of *Polytrichum commune*”.

Planting of birch and associated bog woodland species (see Section 2.3) within the degraded bog, may stabilise the bog, create native, species-rich habitat of elevated ecological value and provide opportunities that will additionally benefit wildlife, provided early management is carried out to ensure establishment of the woodland.

2.3 Habitat Creation

Unlike other woodland habitat, the artificial creation of new bog woodland is likely to be very difficult, although creation of the right hydrological conditions may encourage existing vegetation in the direction of bog woodland (Cross and Lynn, 2013). Creating new woodland habitat will be completed in stages. The first stage in each area is to plant trees. For areas of bog woodland, birch will be the dominant species, with other tree species to be planted as per Table 2.1 (depending on local availability, several species are proposed). Single species groups of 3, 5, or 7 should be planted at 3 m centres (i.e. trees should not overlap within 3 m of each other). Avoiding planting whips in a “grid” is preferable.

Ground flora species should only be planted within a created woodland whenever the woodland is at a stage which is mature enough to support them. Therefore, monitoring of the site is an essential element of the management. The results and outcomes of monitoring will inform the subsequent stages of management. Management and monitoring is discussed in Section 2.5.

Re-wetting of the bog is a key element of the Derryarkin and Ballybeg Bog Rehabilitation Plan, and implementation of appropriate hydrological conditions will allow for the development of the bryophyte understorey typical of bog woodland. This will be achieved primarily through drain-blocking to retain water within the bog.

Table 2.1: Recommended and positive indicator species of bog woodland.

Scientific Name	Common Name	Scientific Name	Common Name
Trees and shrubs		<i>Eriophorum angustifolium</i>	Common cottongrass
<i>Betula pubescens</i>	Downy birch	<i>Juncus effusus</i>	Soft-rush
<i>Betula pendula</i>	Silver birch	<i>Vaccinium oxycoccus</i>	Cranberry
<i>Frangula alnus</i>	Alder buckthorn	<i>Agrostis canina</i>	Velvet bent
<i>Pinus sylvestris</i>	Scots pine	<i>Dryopteris dilatata</i>	Broad buckler-fern
<i>Salix cinerea</i>	Grey willow	<i>Dryopteris carthusiana</i>	Spinulose wood fern
<i>Salix pentandra</i>	Bay willow	<i>Carex rostrata</i>	Bottle sedge
<i>Salix aurita</i>	Eared willow	<i>Epilobium palustre</i>	Marsh willowherb
<i>Salix atrocinerea</i>	Large grey willow	<i>Sphagnum palustre</i>	Blunt-leaved bog-moss
<i>Corylus avellana</i>	Hazel	<i>Sphagnum fallax</i>	Flat-topped bog-moss
<i>Ilex aquifolium</i>	Holly	<i>Sphagnum frimbriatum</i>	Fringed bog-moss
Ground flora		<i>Aulacomnium palustre</i>	Bog bead-moss
<i>Calluna vulgaris</i>	Heather	<i>Eurhynchium praelongum</i>	Common feather-moss
<i>Empetrum nigrum</i>	Crowberry	<i>Scleropodium purum</i>	Neat feather-moss
<i>Molinia caerulea</i>	Purple moor-grass	<i>Polytrichum commune</i>	Common haircap moss
<i>Eriophorum vaginatum</i>	Hare's tail cottongrass		

2.4 Planting Specification

Details of the time of year to plant out trees and vegetation are summarised in **Table 2.2: Specification of plants to be used for replanting**. Table 2.2, along with the selected attributes required of the trees and plants to be used for replanting.

Table 2.2: Specification of plants to be used for replanting.

Factor	Specification
Time of Year	
Deciduous trees and shrubs	Late October to late March
Herbaceous plants (including bryophytes)	September / October or March / April.
Dried bulbs, corms, and tubers	September / October
Plant Attributes	
Condition	Materially undamaged, sturdy, healthy and vigorous.
Appearance	Of good shape and without elongated shoots.
Hardiness	Grown in a suitable environment and hardened off.
Health	Free from pests, diseases, discoloration, weeds, and physiological disorders.
Budded or grafted plants	Bottom worked.
Root system and condition	Balanced with branch system.
Standard	The National Plant Specification (HTA, 1997).
Species	True to name.
Origin / Provenance	Local provenance.

2.5 Habitat Management and Monitoring

Management and monitoring activities will be overseen and commissioned by the Client / site operator and will comprise commissioning of the relevant personnel (e.g. ecologist, arboriculturist, landscape contractor). Management actions which may be required as a result of monitoring include scrub removal, treatment of invasive species, tree pruning, and thinning trees to create a spacious woodland structure.

Deciduous trees are often vulnerable to diseases caused by fungi, bacteria, or viruses. Trees should be monitored for signs of disease, which may include visible fungi and patchy and discoloured leaves. Where it is suspected that a tree may be suffering from disease, advice should be sought from an arboriculturist, who may be able to diagnose the disease and recommend appropriate treatment. In some cases, it may be necessary to fell diseased trees, in order to prevent its spread; this should be carried out by an appropriately trained tree surgeon. Tree branches should only be removed by a professional tree surgeon. This will ensure that branches are removed safely but will also prevent harm to the tree itself.

Where small trees are planted and staked, ties will be checked regularly and loosened as the trunk expands. Stakes should be removed after the third winter, when the tree should be able to support itself. Small trees should also be protected with wire mesh cylinders or biodegradable casing where they may be vulnerable to damage, for example from rabbit and hare. These should be monitored for removal.

When the saplings are sufficiently mature, during routine pruning of limbs or, in the worst-case scenario, its removal for health and safety reasons, the tree must be surveyed for its suitability to support bat roosts and / or nesting birds prior to any works being carried out. The removal of trees and hazardous branches should avoid the main breeding bird season which is between March and August inclusive (for most species). Should this not be possible, then appropriate mitigation measures should be implemented in the form of a survey by a suitably experienced ecologist for the presence of

nesting birds and avoidance of vegetation removal until chicks have fledged and cease to return to the nest.

When the woodland is considered mature enough (advice from an ecologist can be sought) ground flora species can be planted which may allow for a more diverse woodland floor. These should be native species as recommended in Table 2.1.

As mentioned, monitoring will be key to provide advice on future management of created woodland. Monitoring for habitat condition and need for additional planting must be conducted within the site in Years 1, 3, 5, 10, and 20 to ensure best results for woodland succession. Replanting areas will also be monitored for invasive species of medium or high impact, as well as scheduled species. If any invasive species are identified, these will be removed immediately.

2.6 Summary of Habitat Management Actions

Table 2.3: Summary of management actions.

Responsible Party	Task
Landscape Contractor	<p>Habitat Creation</p> <ul style="list-style-type: none"> • Planting of trees: <ul style="list-style-type: none"> – Whips of canopy and understorey species of native trees – Single species groups of 3, 5, or 7 at 3 m centres. – Avoid planting whips in a “grid” is preferable. • Planting of ground flora: <ul style="list-style-type: none"> – Plugs, corms, or bulbs of native, positive indicator species. – To be carried out after woodland becomes more established.
Site Operator	<p>Overall Management</p> <ul style="list-style-type: none"> • Annual inspection of trees to ensure in a safe and healthy condition especially after stormy or inclement weather conditions. • Ensure all relevant legislation is adhered to during the implementation of the final HMP and any habitat management activities. • Ensure management tasks are undertaken at the optimal time of year. • Where external agents are contracted, ensure that they are qualified and properly briefed regarding the work they must undertake and their associated responsibilities. • Devise an appropriate records system for habitat checks. This should include date, management activity and any follow up action required.
Site Operator / Landscape Contractor / Ecologist	<p>Monitoring in Years 1, 3, 5, 10, and 20 should be conducted within the site by an ecologist to inform timing of management activities including:</p> <ul style="list-style-type: none"> • Scrub removal. • Tree pruning. • Thinning trees to create a spacious woodland structure. • Planting of ground flora. • Treatment of invasive species.
Arboriculturist	<p>Inspections</p> <ul style="list-style-type: none"> • Annual inspections to ensure trees are in a safe and healthy condition. • Diagnose any diseases on site and recommend appropriate treatment.
Qualified Tree Surgeon	<p>Maintenance</p> <ul style="list-style-type: none"> • Pruning of limbs. • Tree felling.

3. References

Cross, J. and Lynn, D. (2013) *Results of a monitoring survey of bog woodland*. Irish Wildlife Manuals, No. 69. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

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Horticultural Trades Association (1997). *National Plant Specification*. Didcot, UK.

Irish Peatland Conservation Council (2023). *Bog Woodlands* (online). Available at: <https://www.ipcc.ie/a-to-z-peatlands/bog-woodlands/>. Accessed 11 January 2024.



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PROJECT
Proposed Derrygreenagh Power Project

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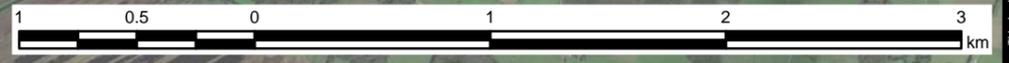
- LEGEND**
- Power Plant Area Boundary
 - Electricity Grid Connection Boundary
 - Proposed Replanting Area

NOTES
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ISSUE PURPOSE
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FIGURE TITLE
Proposed Replanting Areas

FIGURE NUMBER
Figure 1

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