

# Appropriate Assessment Screening Report Rehabilitation of Derraghan Bog, Co. Longford.

DRAFT Technical Report

April 22

Project number: 2021s1589

## **Bord na Móna**

**Bord na Móna**

Boora  
Leabeg  
TULLAMORE  
Co Offaly

# JBA Project Manager

Patricia Byrne  
 Block 660, Unit 8  
 Greenogue Business Plaza  
 Greenogue Business Park  
 Rathcoole  
 DUBLIN

## Revision History

Revision Ref / Date Issued	Amendments	Issued to
S3-P01 / 22 March 2022	Draft	Bord na Móna
S3-P02 / 13th April 2022	Draft (following review and survey)	Bord na Móna
S3-P03 / 25th April 2022	Draft	Bord na Móna

## Contract

This report describes work commissioned by Doreen King, on behalf of Bord na Móna. Bord na Móna's representative for the contract was BNM Ecologist Sean Doyle. Mark Desmond, Hannah Mulcahy and Steven Heathcote of JBA Consulting carried out this work.

Prepared by ..... Mark Desmond BSc MSc  
 Assistant Ecologist

Hannah Mulcahy BSc MSc  
 Ecologist

Reviewed by ..... Dr Steven Heathcote BA(Hons) DPhil MCIEEM  
 Senior Ecologist

## Purpose

This document has been prepared as a Draft Report for Bord na Móna. JBA Consulting accepts no responsibility or liability for any use that is made of this document other than by the Client for the purposes for which it was originally commissioned and prepared. JBA Consulting has no liability regarding the use of this report except to Bord na Móna.

## Copyright

© JBA Consulting Engineers and Scientists Limited 2022

## Carbon Footprint

A printed copy of the main text in this document will result in a carbon footprint of 124g if 100% post-consumer recycled paper is used. These figures assume the report is printed in black and white on A4 paper and in duplex. JBA is aiming to reduce its per capita carbon emissions.

# Contents

- 1 Introduction ..... 1
- 1.1 Background ..... 1
- 1.2 Legislative Context ..... 1
- 1.3 Appropriate Assessment Process ..... 1
- 1.4 Methodology ..... 3
- 1.5 Limitations and constraints ..... 5
- 2 Project Description ..... 6
- 2.1 The 'Project' ..... 6
- 2.2 Site location and description ..... 6
- 2.3 Proposed project ..... 7
- 3 Existing Environment ..... 10
- 3.1 Habitats ..... 10
- 3.2 Annex listed species ..... 12
- 3.3 Breeding Bird Walkover 2022 ..... 13
- 4 Natura 2000 Sites ..... 15
- 5 Screening Assessment ..... 22
- 5.1 Surface water ..... 22
- 5.2 Groundwater ..... 23
- 5.3 Land and Air ..... 25
- 5.4 In-Combination Effects ..... 26
- 5.5 Summary ..... 26
- 5.6 Concluding Statement ..... 29
- Appendices ..... 30
- A Enhanced rehabilitation measures at Derraghan Bog ..... 30
- B Drawing of proposed rehabilitation measures ..... 31
- References ..... 32

## List of Figures

Figure 1-1: The Appropriate Assessment Process (DEHLG, 2009).....	2
Figure 1-2: Flow diagram of process for in-combination assessment (modified from Chapman & Tyldesley, 2012).....	5
Figure 2-2 Indicative drawing of drainage features of Derraghan Bog,.....	8
Figure 3-1: Habitat Map of Derraghan Bog, habitat survey and mapping carried out by BNM .....	11
Figure 3-1 Birds noted on Derraghan Bog 2022 .....	14
Figure 4-1: Natura 2000 sites and site location.....	16
Figure 5-1 Groundwater vulnerability in the vicinity of Derraghan Bog .....	24
Figure 5-2 Groundwater Bodies in relation to Derraghan Bog and European Sites .....	24

## List of Tables

Table 3-1: List of habitats recorded on site .....	10
Table 3-2 Species recorded within 2km and their likely present on bog during construction .....	12
Table 4-1: European Sites determining ZoI via potential source> pathways> receptor model .....	17
Table 4-2: Site briefs; Qualifying Interests; and project-relevant threats /pressures and their impacts and sources in relation to the Natura 2000 sites within the 15km ZoI (plus hydrological connectivity extension). .....	20

## Abbreviations

AA	Appropriate Assessment
BNM	Bord na Móna
CIEEM	Chartered Institute of Ecology and Environmental Management
CJEU	Court of Justice of the European Union
DoEHLG	Department of the Environment, Heritage, and Local Government
EC	European Community
EPA	Environmental Protection Agency
GSI	Geological Survey of Ireland
GWB	Groundwater Body
IROPI	Imperative Reason of Overriding Public Interest
NBDC	National Biodiversity Data Centre
NPWS	National Parks and Wildlife Service
PCAS	Peatlands Climate Action Scheme
QI	Qualifying Interest
SAC	Special Area of Conservation
SPA	Special Protection Area
WFD	Water Framework Directive
ZOI	Zone of Influence

# 1 Introduction

## 1.1 Background

JBA Consulting Engineers and Scientists Ltd. (hereafter JBA) has been commissioned by Bord na Móna to prepare an Appropriate Assessment Screening Report for the rehabilitation of Derraghan Bog, Co. Longford under the Peatlands Climate Action Scheme (PCAS).

Screening for appropriate assessment is intended to be an initial examination which must be carried out by a Competent Authority, in this case Bord na Móna. This screening is completed by JBA Consulting as independent experts, on behalf of the Competent Authority to show that likely significant effects have been considered in the project development and design, and where necessary progress with further assessment.

## 1.2 Legislative Context

The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) transposes into Irish law the European Union Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora, known as the 'Habitats Directive'. The Regulations provide legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 - 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000 sites. Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79 / 409 / EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans or projects affecting Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment:

*“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”*

Article 6(4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan/project will adversely affect a European site. Issues dealing with alternative solutions, imperative reasons of overriding public interest and compensatory measures need to be addressed in this case.

Article 6(4) states:

*“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

*Where the site concerned hosts a priority natural habitat type and / or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.”*

The requirements of Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of inter alia the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 / 2011) as amended.

## 1.3 Appropriate Assessment Process

Guidance on the Appropriate Assessment (AA) process was produced by the European Commission in 2002, which was subsequently developed into guidance specifically for Ireland by the Department of

Environment, Heritage and Local Government (DEHLG, 2009). These guidance documents identify a staged approach to conducting an AA, as shown in Figure 1-1.

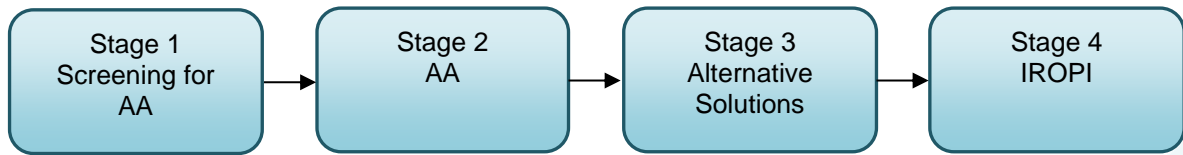


Figure 1-1: The Appropriate Assessment Process (DEHLG, 2009)

### 1.3.1 Stage 1 - Screening for AA

The initial, screening stage of the Appropriate Assessment is to determine:

- whether the proposed plan or project is directly connected with or necessary for the management of the European designated site for nature conservation
- if it is likely to have a significant adverse effect on the European designated site, either individually or in combination with other plans or projects

For those sites where, potential adverse impacts are identified, either alone or in combination with other plans or projects, further assessment is necessary to determine if the proposals will have an adverse impact on the integrity of a European designated site, in view of the site's conservation objectives (i.e., the process proceeds to Stage 2).

### 1.3.2 Stage 2 - AA

This stage requires a more in-depth evaluation of the plan or project, and the potential direct and indirect adverse impacts of them on the integrity and interest features of the European designated site(s), alone and in-combination with other plans and projects, taking into account the site's structure, function, conservation objectives, and best scientific knowledge in the field. Where required, mitigation or avoidance measures can be incorporated.

The Competent Authority can only grant consent for the plan or project after having ascertained that it will not adversely affect the integrity of the site(s) concerned. If this cannot be determined, then alternative solutions will need to be considered (i.e. the process proceeds to Stage 3).

### 1.3.3 Stage 3 - Alternative Solutions

Where adverse impacts on the integrity of Natura 2000 sites are identified, and mitigation cannot be satisfactorily implemented, alternative ways of achieving the objectives of the plan or project that avoid adverse impacts need to be considered. If none can be found, the process proceeds to Stage 4.

### 1.3.4 Stage 4 - IROPI

Where adverse impacts of a plan or project on the integrity of Natura 2000 sites are identified and no alternative solutions exist, the plan will only be allowed to progress if imperative reasons of overriding public interest can be demonstrated. In this case compensatory measures will be required.

The process only proceeds through each of the four stages for certain plans or projects. For example, for a plan or project, not connected with management of a site, but where no likely significant impacts are identified, the process stops at stage 1. Throughout the process, the precautionary principle must be applied, so that any uncertainties do not result in adverse impacts on a site.

### 1.3.5 Recent judgements of the Court of Justice of the European Union (CJEU) and how they are used in this assessment

The CJEU issued a ruling on the consideration of avoidance and reduction measures as a result of the case known as *People over Wind, Peter Sweetman v Coillte Teoranta* (Case C-323/17). This judgement stated that measures intended to reduce or avoid effects on a Natura 2000 site should only be considered within the framework of an Appropriate Assessment, and it is not permissible to take into account such measures at the screening stage. In practice, this means that any activities that are not integral to the project (i.e., the project could conceivably take place without them) and have the effect of avoiding or reducing an impact on a Natura 2000 site, cannot be considered at the screening stage.

The CJEU ruling in the case of *Grace & Sweetman* [2018] (C-164/17) clarified the difference between avoidance and reduction (mitigation) measures and compensation. Measures intended to compensate for the negative effects of a project cannot be taken into account in the assessment of the implications of a project, and instead are considered under Article 6(4). This means that any project where an effect on the integrity of a Natura 2000 site remains and can only be offset by compensation, would need to proceed under Article 6(4), demonstrating “imperative reasons of overriding public interest”.

The judgements referred to as the Dutch Nitrogen cases [2018] (C-293/17 and C-294/17) have important implications for projects that could potentially impact on sites that are exceeding critical thresholds for input of damaging ammonia (but could also reasonably apply where other nutrients are impacting Natura 2000 sites). The judgements state that the use of thresholds to exclude project impacts is acceptable in principle, and that strategic plans can be used as mitigation but only with consideration of the certainty (or otherwise) of the outcomes of those strategic plans. It clarifies that where the status of a habitat type is already unfavourable the possibility of authorising activities which increase the problem is necessarily limited.

The CJEU ruling in the case of *Holohan v An Bord Pleanála* (C-462/17) also clarified the importance in Appropriate Assessment of taking into account habitat types and species outside the boundary of the Natura 2000 site where implications of the impacts on those habitat and species may impact the conservation objectives of the Natura 2000 site. In this assessment functionally linked and supporting habitat for species outside of Natura 2000 sites are assessed where they could potentially impact the conservation objectives of any screened in Natura 2000 sites.

## 1.4 Methodology

The Screening for Appropriate Assessment has been prepared having regard to the Birds and Habitats Directives, the European Communities (Birds and Natural Habitats) Regulations 2011-15 as amended and relevant jurisprudence of the EU and Irish courts. The following documents have also been used to provide guidance for the assessment:

- DEHLG (2009 rev 2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government (DEHLG, 2009).
- Office of the Planning Regulator (2021) OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management (OPR 2021).
- European Communities (EC) (2018) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission (European Commission 2000).
- EC (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission (European Commission et al. 2002).
- EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission (European Commission 2007).
- CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater, and Coastal, Second Ed. (Chartered Institute of Ecology and Environmental Management, 2016)
- Fossitt, J, (2000). A Guide to Habitats in Ireland. The Heritage Council, Kilkenny (Fossitt 2000)

### 1.4.1 Desktop study

A desktop study was conducted of available published and unpublished information, along with a review of data available on the NPWS and National Biodiversity Data Centre (NBDC) web-based databases, in order to identify key habitats and species (including legally protected and species of conservation concern) that may be present within ecologically relevant distances from the project as explained below. A baseline habitat assessment was performed using satellite imagery of the site. The data sources below were consulted for the desktop study:

- Aerial photography available from [www.osi.ie](http://www.osi.ie) and Esri World Imagery.



- Fossitt, J. (2000). A Guide to Habitats in Ireland. The Heritage Council, Kilkenny (Fossitt 2000).
- NPWS website ([www.npws.ie](http://www.npws.ie)) where site synopses, Natura 2000 data forms and conservation objectives were obtained along with Annex 1 habitat distribution data and status reports.
- NBDC Biodiversity Maps ([maps.biodiversityireland.ie](http://maps.biodiversityireland.ie))
- Environmental Protection Agency Maps (<https://gis.epa.ie/EPAMaps>)
- Geological Survey Ireland website map viewer (<https://dcenr.maps.arcgis.com>)

#### 1.4.2 Reporting and surveys

To inform this AA Screening the following reports and drawings, supplied by Bord Na Móna, were referenced:

- Derraghan bog Cutaway Bog Decommissioning and Rehabilitation Plan (Bord na Mona 2021a)
- Derraghan Drainage Management Plan (RPS 2021)
- Derraghan Engineering report (Bord na Móna 2021)

An ecological site survey was carried out by Bord na Móna on a site visit in July 2010 with follow up surveys by BNM in September 2011, September 2021 and October 2021. The GIS data for habitat mapping has been supplied to JBA.

A site walkover to look for evidence of bird breeding was carried out by JBA Ecologist Hannah Mulcahy on 6th April 2022.

#### 1.4.3 In-combination Assessment

The in-combination assessment followed the process for in-combination set out by the DTA Handbook (Tyldesley and Chapman, 2013). The in-combination impacts are considered only after the assessment of the project alone. If the result of this is that the project will have no effect at all on a European site, then no in-combination assessment would be necessary. However, where there is no adverse effect on site integrity, but some adverse effect an assessment of this adverse effect in-combination with other plans or projects is carried out. Other plans or projects were searched for using the National Planning Application Database, EIA portal and Myplan.ie databases all accessed online. If no other plans or projects are identified, then the assessment is complete. Where other plans or projects are identified then initially a review is made of its AA screening, or AA, and if the Competent Authority for the plan or project has made a final determination of no effect on the integrity of any European site, either alone or in-combination, this determination is used in this assessment. Where there is not a full AA, or the findings are unclear or out of date, the plan or project documentation is checked for credible evidence of real (not hypothetical) risk to a European site. Where these are identified then a detailed assessment is carried out. A summary of the approach is presented in Figure 1-2.

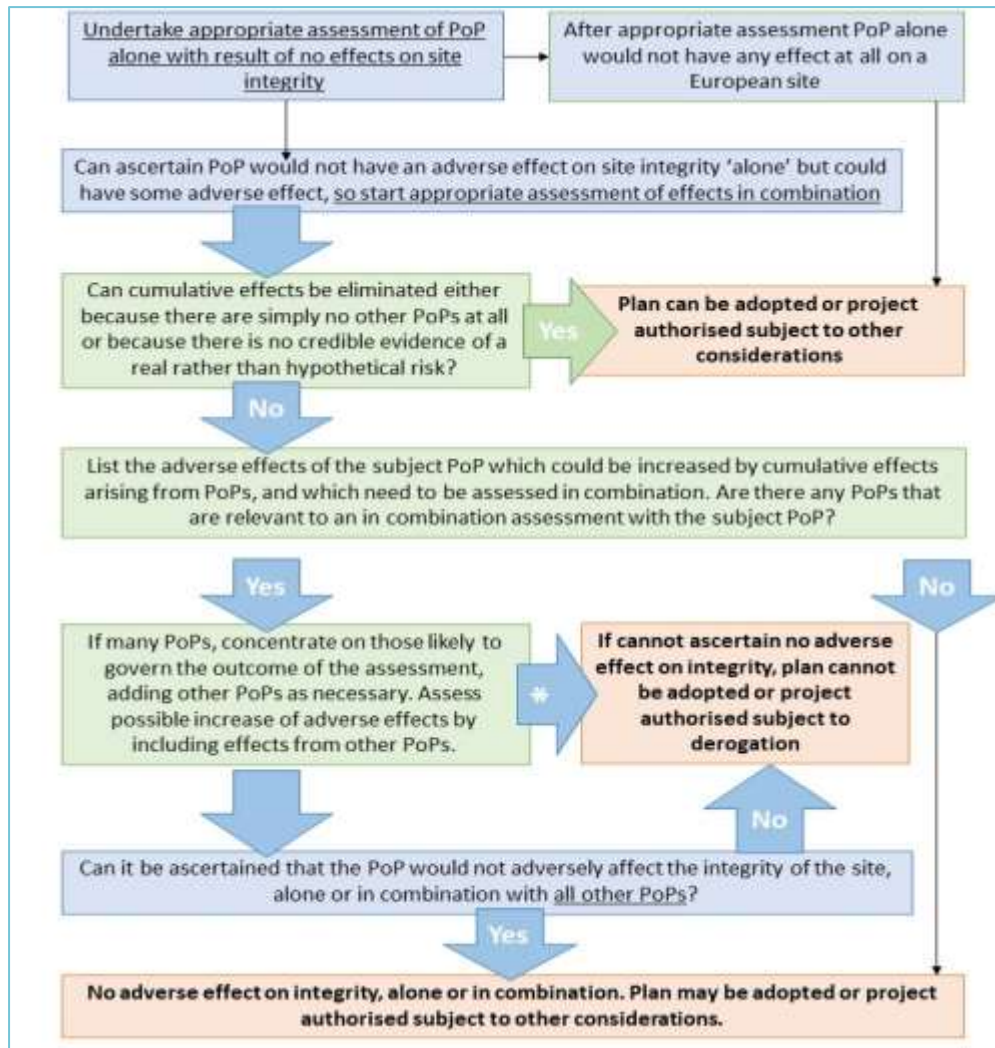


Figure 1-2: Flow diagram of process for in-combination assessment (modified from Chapman & Tyldesley, 2012)

Potential sources of cumulative impacts were identified based on the ecology of valued ecological features only for features where this is a residual or non-significant impact. Potential sources of cumulative impacts were sought within area where there is the potential for a significant impact on relevant Natura sites identified in Section 4.

## 1.5 Limitations and constraints

The screening assessment necessarily relies on some assumptions, and it was inevitably subject to some limitations. These would not affect the conclusion, but the following points are recorded in order to ensure the basis of the assessment is clear:

- This assessment is based on the methodology for proposed rehabilitation activities as described in this report. Where changes to methodology occur, an ecologist will need to be consulted to determine if the changes need reassessment
- No SAC/SPA sites were visited and the assessment of effects on these sites is based on the desk study. Where necessary the precautionary principle is applied in determining the likely distribution of mobile species that can use habitats outside the designated site boundaries.
- The potential response of birds to disturbance is based on the best available scientific evidence, which is drawn from a wide range of sites. However, birds can show site-specific responses, often as a result of typical background levels of disturbance in their local area. The assessment uses a precautionary approach to potential bird disturbance where necessary.

## 2 Project Description

### 2.1 The 'Project'

The proposed rehabilitation activities meet the criteria of a 'Project' as defined in the Habitats Directive and is not directly connected with or necessary to the management of any European site. Therefore, the Project is subject to the requirements of the Appropriate Assessment process.

Bord na Móna will carry out enhanced decommissioning and rehabilitation of Derraghan Bog under the Peatlands Climate Action Scheme on peatlands previously used for energy production.

### 2.2 Site location and description

Derraghan Bog is a large cutover bog (289 Hectares) located in Co. Longford, approximately 6km west of Keenagh and approximately 7km southeast of Lanesborough. The bog can be accessed via the L1155 from the R392.

The bog is dissected in two parts by a BnM rail line that runs in an east west orientation through the site, resulting in a northern and southern section. The majority of the site is out of production and is revegetating with scrub and birch woodland. An ash land-fill site, managed by the ESB, is located close to the middle of the site and this facility is used to store ash that was produced from the nearby power station in Lanesborough. The southern third of the site was in active peat production until recently and is bare peat. There are some small areas to the east and west of the site that were initially developed for milled peat production but have never been put fully into production and now have re-vegetated or have some remnant vegetation. These areas are rapidly developing Birch and Pine scrub and Heather. The northern section has been out of production since 1995, apart from some fields running along the eastern side of the site. These areas were used to produce mini-sod peat until recently. The majority of the northern section of the site is best described as a transition between scrub and bog woodland (WN7).

Derraghan is one of the bogs proposed to be developed in partnership between Bord na Móna, local communities and Longford County Council as the Mid Shannon Wilderness Park (a tourist initiative) and the bog railway which crosses through the site is proposed to form the route of part of the Mid Shannon Wilderness Park Greenway. Site location is shown in

Figure 2-1

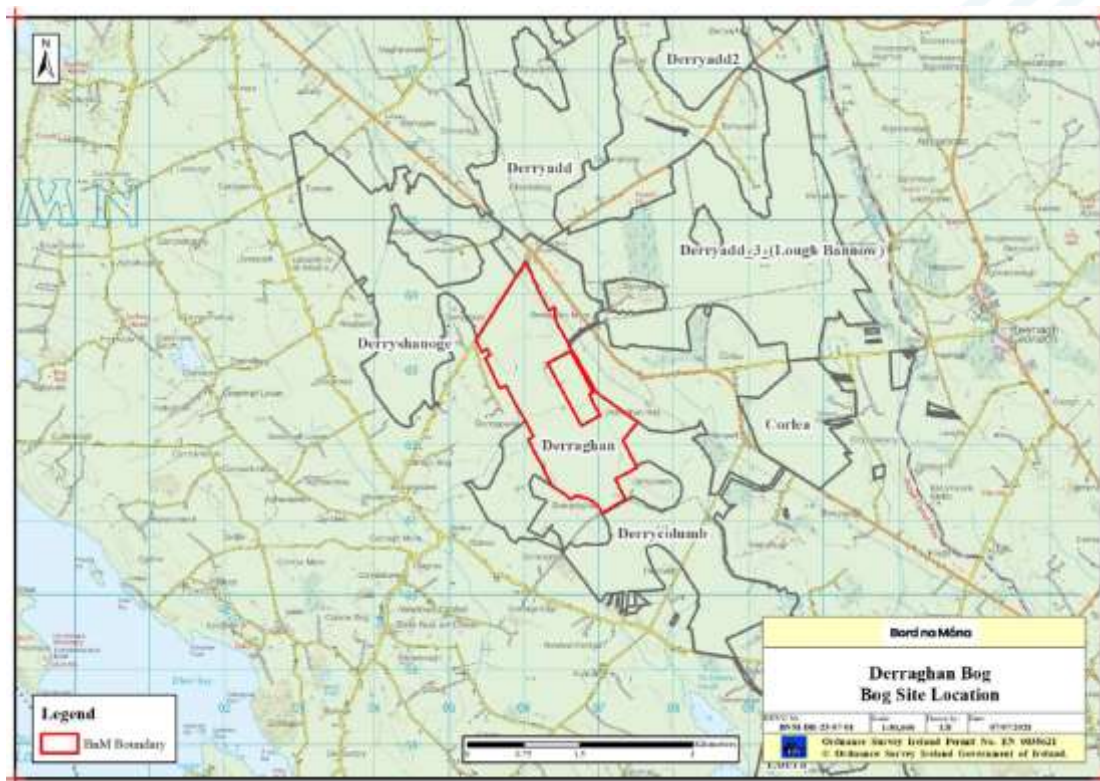


Figure 2-1: Site location (Image provided by Bord na Móna)

### 2.3 Proposed project

The aim of the proposed project is to rehabilitate Derraghan Bog by the rewetting of peat through a combination of PCAS measures. The distribution of these measures is summarised in Appendix A and provisionally outlined in drawing of the proposed rehabilitation measures in Appendix B. These measures correspond to methodologies set out in the PCAS Methods for Peatland Rehabilitation (Bord na Móna, Civil Engineering Office 2021a). Further details specific to Derraghan Bog are set out in the Derraghan Bog - Cutaway Bog Decommissioning and Rehabilitation Plan (Bord na Móna, 2021b).

The rewetting of peat requires the management of water-levels close to the surface of the peat for most of the year. Hydrological constraints and management measures are set out in a Drainage Management Plan for Derraghan Bog (RPS, 2021). Keeping water levels close to the surface of the bog encourages the development of Sphagnum-rich vegetation communities.

In summary, the rehabilitation measures proposed for Derraghan Bog are as follows:

- Hydrological management will look to optimise summer water levels to maximise the development of wetland vegetation (by looking to set water depths at < 0.5 m, where possible. It is inevitable that some sections will naturally have deeper water due to the topography at this site). Water-levels will be adjusted at outfalls and by adjusting piped drainage. More sustainable permanent gravity drainage solutions will be examined. Some targeted bunding may be required. It is expected that a natural seasonal regime of water fluctuation will develop, with water-levels fluctuating in association with levels in the nearby River Shannon.
- Deep Peat measures including field re-profiling, bunding and drain-blocking, resulting in banded wetlands suitable for Sphagnum inoculation, on deeper peat;
- Intensive drain blocking around shallow peat areas / modelled depressions on little or no peat to create/promote the spread of wetland habitats.
- Modifying outfalls, and management of water levels with overflow pipes and blocking of internal outfalls; Measures include the blocking of outfalls, management of water levels and transplanting reeds and other rhizomes
- Regular drain blocking (3/100) on dry cutaway along with the blocking of outfalls and management of water levels;
- Intensive drain blocking (7/100) in areas to develop wetlands in areas of shallow peat. Measures include the blocking of outfalls, management of water levels and transplanting reeds and other rhizomes;
- Berms and field re-profiling (45m x 60m cell) in deep peat areas, along with blocking outfalls and managing overflows with a controlled weir outfall, includes drainage channels for excess water and
- Targeted fertiliser applications to accelerate vegetation establishment on areas of bare peat on headlands and high fields, and within certain areas of dry cutaway. Areas where vegetation has established do not need fertiliser application.
- Seeding of vegetation and inoculation of Sphagnum will be undertaken where required.

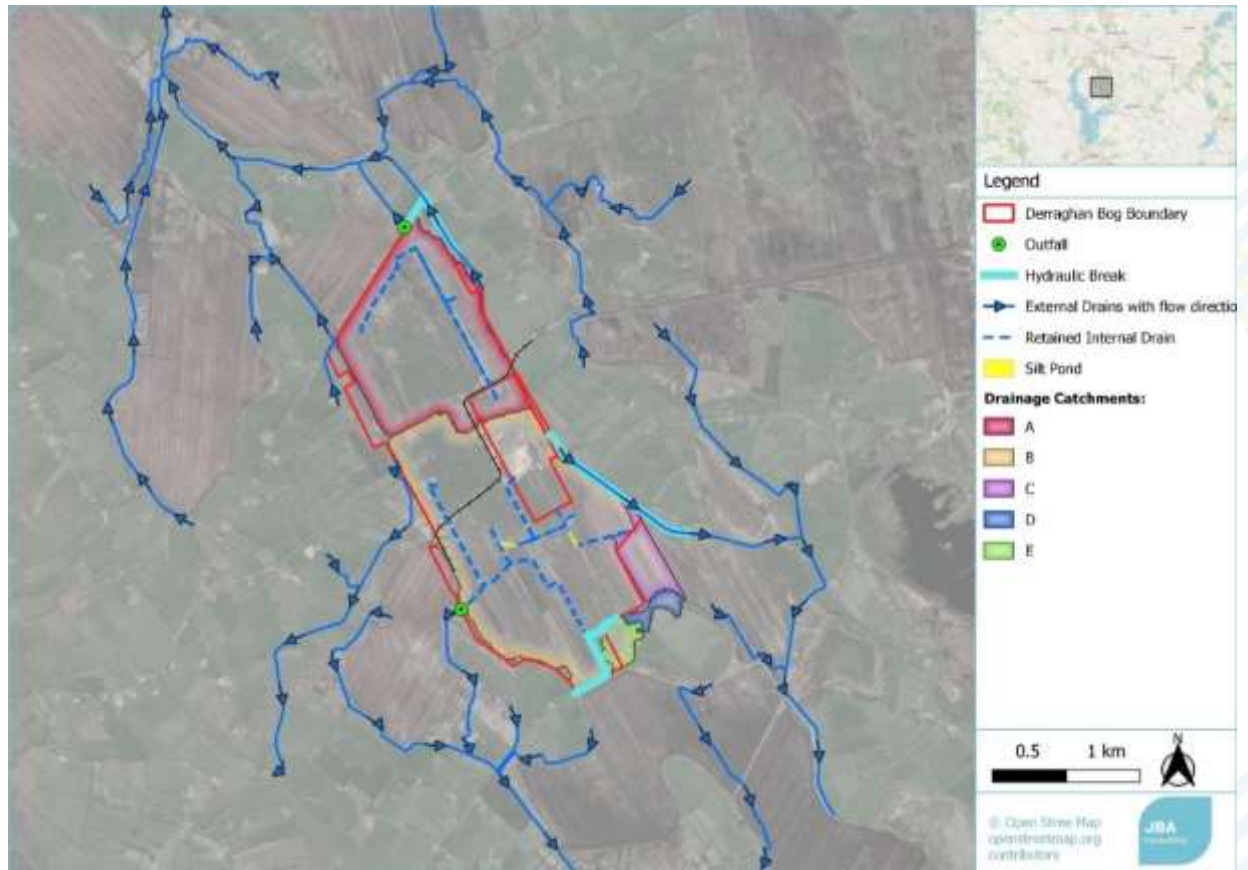


Figure 2-2 Indicative drawing of drainage features of Derraghan Bog,.

### Drainage discharge

The engineering and drainage aspects associated with the proposed rehabilitation measures for Derraghan Bog is described in the PCAS Derraghan Bog Engineering Report 2022, prepared by Bord na Móna, Civil Engineering Office and A Drainage Management Plan developed by RPS for Bord na Móna.

The engineering report outlines there are five sub-catchments within the bog, two of which (A and B) make up the majority of the bog. Sub catchment 'A' drains to a northern outfall by gravity, whereas the remaining catchments (B,C,D and E) to the south are pumped to a southern drainage outfall. This southern pumped outfall will be bypassed and the existing silt pond required under IPC licence downstream of the pump and drainage channels will be retained and utilised, this will result in deep water locally at the previous pump site. This will become a gravity outfall with the outfall level being retained post-rehabilitation at appropriate levels to maintain water levels over peat, drained at two discharge points, one to the north and one to the south of Derraghan Bog.

From these outfalls, Derraghan Bog drains to the south to a local watercourse, part of the Billberry\_SC\_010 sub catchment and to the north to a local watercourse, part of the Shannon[Upper]\_SC\_080 sub catchment.

The Drainage management plan includes an impact assessment of the proposed rehabilitation measures on the bog and surrounding landscape. The assessment identified that there is a very low risk to the immediate surrounding land from the proposed rehabilitation, and no risk beyond this land.

The post-rehabilitation flow path will not be significantly different to existing conditions where surface water will be conveyed towards the relevant outfall based on existing topographical flow paths for the bog. The existing internal pipe network will be blocked, and the future drainage will be at surface level to allow water to settle on the bog and promote regeneration.

### Timescale

The rehabilitation work will be carried out over seven months from April to October 2022 inclusive, and rehabilitation activities will cease in the winter months due to wetter ground conditions. This is an approximate timescale and will depend on weather conditions. Normal working times will be between 8am and 5pm Monday to Friday.

The alterations following the rehabilitation will be permanent.

Indicative timeline includes:

- 2022. 1st phase of rehabilitation. Field drain blocking.
- 2022. 2nd phase. Further realignment of piped drainage and other re-wetting measures dependent on success of 1st phase re-wetting, as determined by ongoing monitoring of water levels and re-vegetation.
- Other enhancement measures such as fertiliser treatment will be carried out, if needed. These will be determined by ongoing monitoring.

### Decommissioning

The decommissioning of onsite infrastructure will be likely be carried out after the rehabilitation activities. Bord na Móna must follow Condition 10 of the Integrated Pollution Control Licence issued by the Environmental Protection Agency to 'Decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution

This will involve the following actions:

- Clean-up of bog (e.g., waste materials removed from site)
- Cleaning of existing silt ponds
- Decommissioning and Removal of Bog Pump Sites
- Peat Stockpile management/ removal
- Des-sludging of septic tank

Other elements of decommissioning to be carried out not applicable to Condition 10 are:

- Removal of Railway Lines
- Restricting Access (bogs and silt ponds)
- Removal of High Voltage Power Lines if feasible

### Operation post-rehabilitation

Most of the activities post-rehabilitation will come from monitoring of drainage management measures, including monitoring of adjacent land. Where negative impacts to the condition of the bog are observed higher intervention measures can and will be implemented on or around the bog to mitigate the impacts. Monitoring of the general ecology and habitats of the bog will be on-going.

Under IPC licence, Bord na Móna will maintain silt ponds to manage sediment entering the unnamed tributary of the Drumnee to the south (Bilberry\_SC\_010) and an unnamed tributary of the Derrygeel to the north (Shannon[upper]\_SC\_080) during and after rehabilitation.

The bog rehabilitation of the bog to a naturally functioning peatland ecosystem, and this will result in 'operational' carbon capture and increased water storage, with controlled release.

## 3 Existing Environment

Bord na Móna carried out an ecological walkover survey of Derraghan Bog in October 2021, as well as earlier surveys undertaken in September 2021. A further walkover was completed in April 2022 by JBA and Bord na Móna.

Descriptions of the Key Biodiversity Features of Interest are set out in detail within Section 3.3 of the Derraghan Cutaway Bog Decommissioning and Rehabilitation Plan (Bord na Móna, 2021).

### 3.1 Habitats

Habitats recorded by Bord Na Móna Ecology team in October 2021 are included in the Table 3-1 and mapped in Figure 3-1, and included is the Fossitt code for each habitat, interpreted by JBA. Note that no site visit or habitat survey has been carried out by JBA for this report.

Part of Derraghan Bog was utilised for industrial peat production from 1941 until 2020, The northern section was almost entirely out of production since 1995. The northern section is predominately made up of poor and dry birch woodland (WN7) with Birch *Betula* spp. with Rowan *Sorbus aucuparia*, Willow *Salix* spp, Aspen *Populus tremula*, Lodge Pole Pine *Pinus contorta*, Scot's Pine *Pinus sylvestris*, Blackthorn *Prunus spinosa*, Oak *Quercus* spp. (saplings) , Hawthorn *Crataegus monogyna*, Holly *Ilex aquifolium* and Elder *Sambucus nigra*.

This woodland is flanked to the east and west by more recently cut bog which has developed into Birch dominated scrub, Heather *Calluna vulgaris* dominated dry heath (HH1), and areas of cutover bog (PB4) with pioneer poor fen (PF2) species such as soft rush *Juncus effusus*. A small area of low-quality rich fen (PF1) was identified with species such as Saw Sedge *Cladium mariscus*, Black Bog Rush *Schoenus nigricans* and Lesser Tussock Sedge *Carex diandra*.

Cutting ceased in the southern section in 2020, strips of birch scrub, heather dominated heath and some pioneer cutover bog species are present, as well as species associated with bare cutover bog.

Several Access routes (BL3) (rail lines and tracks including gravel embankments) and associated habitats such as dry grassland verges (GS2) and scrub are found across the site.

Table 3-1: List of habitats recorded on site

Habitat	Fossitt Code
Bare peat	PB4
Bog	PB1
Built Land	BL3
Fen (potentially rich)	PF1
Fen (poor)	PF2
Grassland or agriculture	GS2
Gravel subsoil	ED2
Heath (dry)	HH1
Heath and Scrub	HH1/WS1
Open Water	FL8
Pioneer open cutaway habitats	PB4
Riparian	WN5
Scrub	WS1
Scrub and grassland	WS1/GS2
Scrub and Pioneer open cutaway habitats	WS1/PB4
Wetlands	GS4
Woodlands	WN7

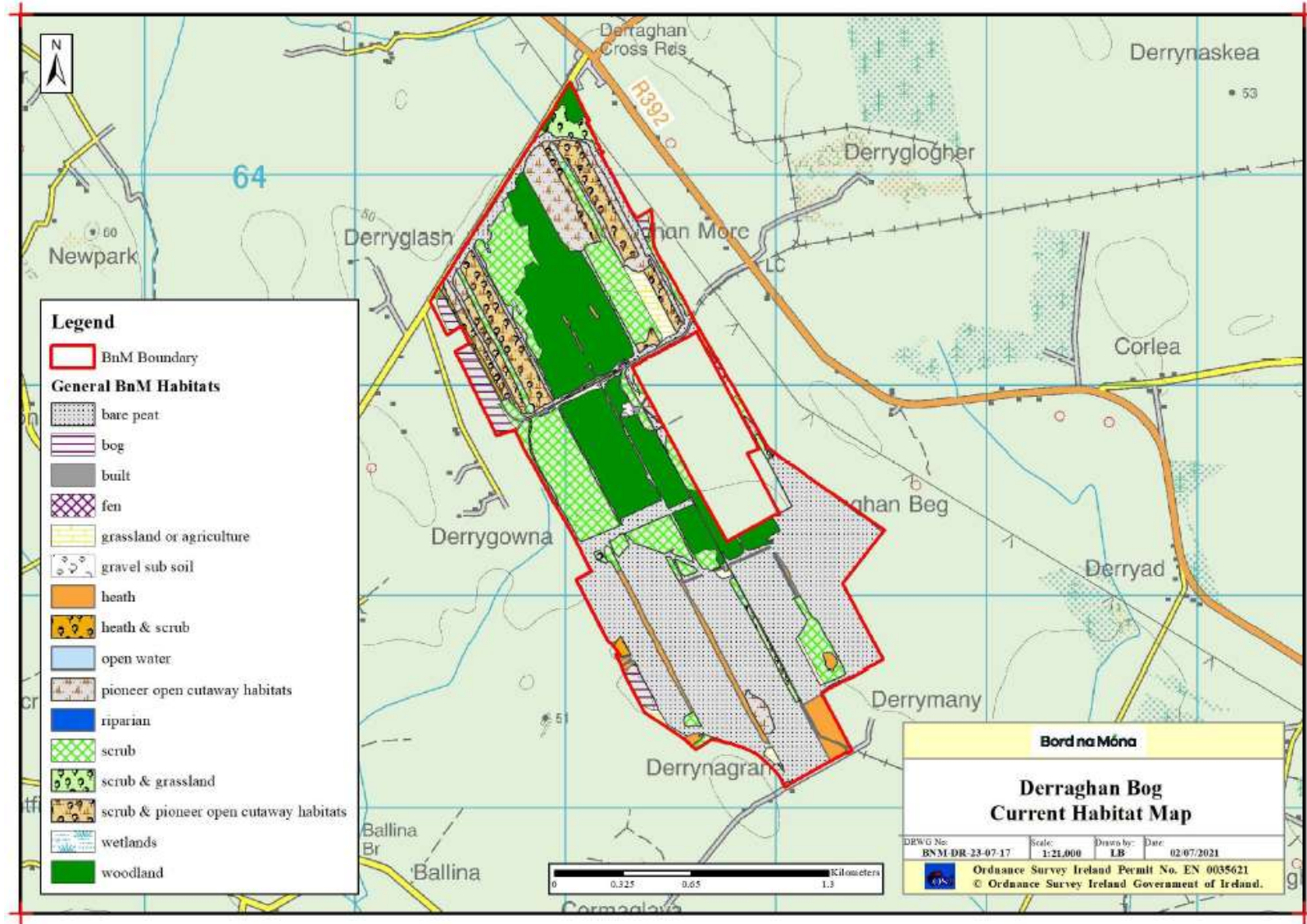


Figure 3-1: Habitat Map of Derraghan Bog, habitat survey and mapping carried out by BNM



### 3.2 Annex listed species

During previous walkover surveys of the site, BNM ecologists have recorded Common Frog *Rana temporaria* (Annex V), Pine Marten *Martes martes* (Annex V), and Common Snipe *Gallinago gallinago* (Annex II, III). Whooper Swan *Cygnus cygnus* (Annex I) were recorded flying over the bog in October 2021 but have not been seen on the Bog.

European Otter *Lutra lutra* has been recorded within 2km of Derraghan Bog, but no evidence of Otter was recorded during the surveys carried out by BNM ecologists. However, on other bogs nearby, including Derryadd to the north and Derrycashel and Derrycolumb to the south (NBDC 2022) evidence of Otter has been observed. There may be Otter on or near watercourses next to cut-over bog in Derraghan, but it is likely the majority of the cut over bog is unsuitable for this species. Otter may use areas of scrub when moving between the bog margins and nearby streams. Otter is protected under the EU Habitats Directive Annex II, Annex IV, and the Wildlife Acts and is a qualifying interest of the Lough Ree SAC.

Mallard *Anas platyrhynchos* are a QI Lough Ree SPA and have been recorded on the bog.

#### Additional Annex Species recorded within approximately 2km of Derraghan bog (NBDC 2021):

- Common Frog *Rana temporaria* Annex V
- Irish Hare *Lepus timidus* subsp. *Hibernicus* Annex V
- Pine Marten *Martes martes* Annex V
- Soprano Pipistrelle *Pipistrellus pygmaeus* Annex IV

#### Additional Annex I, II and III Bird species within approximately 2km of Derraghan bog (NBDC 2021):

The Table below outlines the Birds listed under Annex I, II or III of the Birds Directive that have been recorded within 2km of Derraghan. This table also outlines if each species is a QI of Lough Ree SPA and if that species may be present during the construction of the Rehabilitation Measures on Derraghan Bog, which will be carried out from April-October 2022.

QI species Mallard may be nesting on Derraghan Bog during the construction of the rehabilitation measures.

Table 3-2 Species recorded within 2km and their likely present on bog during construction

Species	Annex	QI of Lough Ree SPA?	QI Likely to be present in Derraghan during construction phase (April- October?)
Little Egret <i>Egretta garzetta</i>	Annex I	No	Unlikely- Breeds in lakes, marshes, flooded fields & estuaries.
European Golden Plover <i>Pluvialis apricaria</i>	Annex I, III	Yes	No - breeding population limited to the uplands of northwest counties in Ireland.
Whooper Swan <i>Cygnus cygnus</i>	Annex I	Yes	No - winter migrant only
Common Pheasant <i>Phasianus colchicus</i>	Annex II, III	No	Yes- seen on bog during survey
Common Wood Pigeon <i>Columba palumbus</i>	Annex II, III	No	Yes- seen on bog during survey
Mallard <i>Anas platyrhynchos</i>	Annex II, III	Yes	Yes- Seen on bog during survey
Common Coot <i>Fulica atra</i>	Annex II, III	Yes	Unlikely to be present, suitable habitat not present for foraging.
Common Pochard <i>Aythya ferina</i>	Annex II, III	No	Unlikely - scarce breeder in Ireland, mostly near Lough Neagh
Eurasian Teal <i>Anas crecca</i>	Annex II, III	Yes	Possible- Teal can breed in small, vegetated drains.
Eurasian Wigeon <i>Anas penelope</i>	Annex II, III	Yes	No - Scarce breeding population

			limited to Northern counties
Tufted Duck <i>Aythya fuligula</i>	Annex II, III	Yes	No- widespread resident but breeds near open water bodies- Derraghan bog not suitable.
Common Snipe <i>Gallinago gallinago</i>	Annex II, III	No	Yes- seen on bog during survey
Eurasian Curlew <i>Numenius arquata</i>	Annex II	No	Unlikely- Breeding population severely declined, nests on the ground in rough pastures, meadows and heather.
Northern Lapwing <i>Vanellus vanellus</i>	Annex II	Yes	Possible- Lapwing frequently breed on BnM bare peat sites.
Common Scoter <i>Melanitta nigra</i>	Annex II, III	Yes	No - scarce breeding on Lough Ree
Northern Shoveler <i>Anas clypeata</i>	Annex II, III	Yes	Unlikely- breeding on lake shore
Red Breasted Merganser <i>Mergus serrator</i>	Annex II	No	No- Nests on sheltered lakes and large rivers

### 3.3 Breeding Bird Walkover 2022

A breeding bird walkover survey was carried out on 6th April 2022 by JBA ecologist Hannah Mulcahy accompanied by a Bord Na Mona ecologist. The weather for the survey was optimal.

The area of cut over bog on Derraghan was surveyed for the appropriate habitat and presence for the birds listed in Table 3-2 above, specifically Mallard and Lapwing which may be breeding on the bog, as well as Teal, Little Grebe etc. No birds listed in section 3.2 were noted in the northern area of Derraghan.

The following birds were observed during the survey in the southern area of Derraghan:

- 3 Mallard Drakes (no females were observed)
- 1 Snipe
- 12 Golden Plover (passage flock not breeding pairs)

Locations of these bird sightings are indicated in Figure 3-1 below. No breeding Mallard were observed, as all birds recorded were males (drakes). The snipe observed was foraging at the edge of the bog in agricultural fields. The Golden Plover were likely foraging on Derraghan on their passage north and are not breeding here.

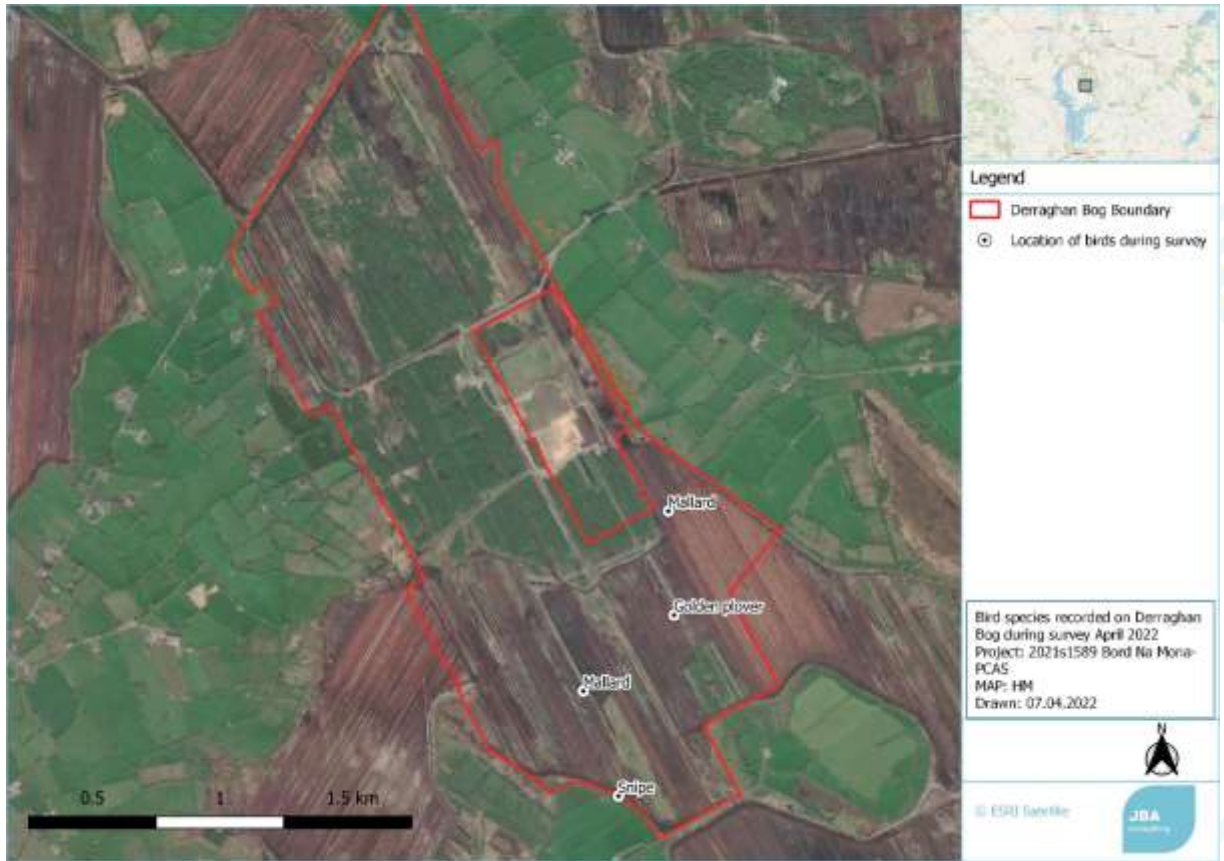


Figure 3-1 Birds noted on Derraghan Bog 2022

## 4 Natura 2000 Sites

The DEHLG (2009) guidance identifies that Screening for Appropriate Assessment of a plan or project should consider the following Natura 2000 sites:

- Any Natura 2000 sites within or adjacent to the plan or project area.
- Any Natura 2000 sites within the likely zone of impact of the plan or project. This is dependent on the nature and scale of the plan, with 15km generally recommended for plans, but potentially much less for projects.
- Any Natura 2000 sites that are more than 15km from the plan or project area, but may potentially be impacted upon, for example, through a hydrological connection.

As the scale of proposed rehabilitation activities are considered of 'Project' status, only Natura 2000 sites within a 15km range of the proposed project were examined (Figure 4-1). The Natura 2000 sites within the range are:

- Lough Ree SAC (000440)
- Lough Ree SPA (004064)
- Fortwilliam Turlough SAC (000418)
- Mount Jessop Bog SAC (002202)
- Lough Forbes Complex SAC (001818)
- Ballykenny-Fisherstown Bog SPA (004101)
- Brown Bog SAC (002346)
- Corbo Bog SAC (002349)

There are no Natura 2000 sites located within the footprint of the proposed rehabilitation activities. The nearest designated sites with a surface water connection are the Lough Ree SAC and SPA, located c. 2.1km away from the site, and 6.9km downstream of the bog's southern outfall. Derraghan Bog also drains into a tributary of the River Shannon at the northern outfall, before connecting with the River Shannon proper at the town of Lanesborough. This flows into the northern extremes of Lough Ree SAC and SPA, and the surface water pathway is 9.6km from the site to the SAC and SPA. All other European sites are located upstream of the catchment and are not connected via surface water.

Derraghan Bog spans two groundwater bodies (GWB), the Funshinagh (IE\_SH\_G\_091) GWB to the north and the Inny (IE-SH-G110) to the south. Only Fortwilliam Turlough SAC and Lough Ree SAC and SPA are in the same GWB and within 10km of Derraghan Bog SAC. European sites outside 10km of the bog will not be adversely affected via a groundwater pathway

Only Fortwilliam Turlough SAC and Lough Ree SAC and SPA are within 5km of the site, however Fortwilliam Turlough does not have any QIs that are susceptible to air-based impacts. Both sites located in Lough Ree have mobile species that could be using habitat within Derraghan Bog or in channels downstream of the bog.

Of the European Sites that occur within 15km of Derraghan Bog, further assessment is required for the following sites following analysis of the potential pathways for each site.

Surface water pathways, groundwater pathways, and disturbance to mobile species outside the designated site:

- Lough Ree SAC (000440)
- Lough Ree SPA (004064)

Only Groundwater pathways:

- Fortwilliam Turlough SAC (000418)

The location of these European sites is shown in Figure 4-1 below and a summary of the potential pathways of European Sites as described above can be seen in Table 4-1 below.

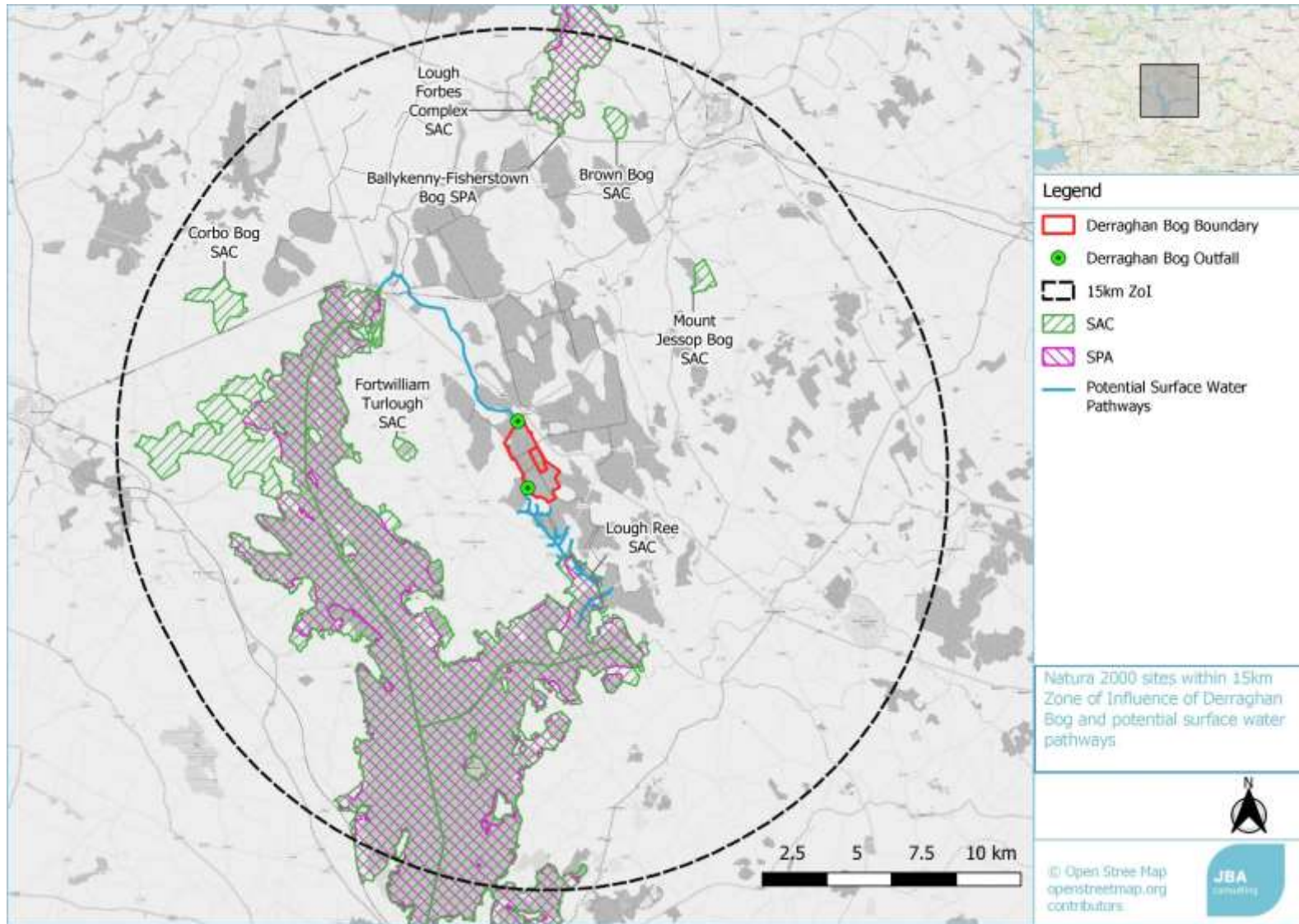


Figure 4-1: Natura 2000 sites and site location.

Table 4-1: European Sites determining Zol via potential source> pathways> receptor model

Qualifying Interests of site	Distance	Surface water pathway	Groundwater pathway	Air Pathway	Disturbance pathway	Further assessment required?
<b>Lough Ree SAC (000440)</b>						
<ul style="list-style-type: none"> <li>-Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]</li> <li>-Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</li> <li>-Active raised bogs [7110]</li> <li>-Degraded raised bogs still capable of natural regeneration [7120]</li> <li>-Alkaline fens [7230]</li> <li>-Limestone pavements [8240]</li> <li>-Bog woodland [91D0]</li> <li>-Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</li> <li>-Otter (<i>Lutra lutra</i>) [1355]</li> </ul>	2.1 km	Yes connected 6.9 km downstream of southern outfall and 9.6km downstream of northern outfall	Yes - within the same GWB	Yes- within 5km	Otter from the SAC have large territory and may be within Project area.	Yes
<b>Lough Ree SPA (004064)</b>						
<ul style="list-style-type: none"> <li>-Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]</li> <li>-Whooper Swan (<i>Cygnus cygnus</i>) [A038]</li> <li>-Wigeon (<i>Anas penelope</i>) [A050]</li> <li>-Teal (<i>Anas crecca</i>) [A052]</li> <li>-Mallard (<i>Anas platyrhynchos</i>) [A053]</li> <li>-Shoveler (<i>Anas clypeata</i>) [A056]</li> <li>-Tufted Duck (<i>Aythya fuligula</i>) [A061]</li> <li>-Common Scoter (<i>Melanitta nigra</i>) [A065]</li> <li>-Goldeneye (<i>Bucephala clangula</i>) [A067]</li> <li>-Coot (<i>Fulica atra</i>) [A125]</li> <li>-Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> <li>-Lapwing (<i>Vanellus vanellus</i>) [A142]</li> <li>-Common Tern (<i>Sterna hirundo</i>) [A193]</li> <li>-Wetland and Waterbirds [A999]</li> </ul>	2.2 km	Yes connected 6.9 km downstream of southern outfall and 9.6km downstream of northern outfall	Yes - within the same GWB	Yes- within 5km.	Some species may be present including Mallard, Little Grebe, Teal, and Lapwing	Yes
<b>Fortwilliam Turlough SAC (000418)</b>						

Qualifying Interests of site	Distance	Surface water pathway	Groundwater pathway	Air Pathway	Disturbance pathway	Further assessment required?
-Turloughs [3180]	3.4 km	No- located upstream of local drainage channels, which drain towards Lough Ree	Yes - within the same GWB	No - QI not affected via air pathway	No	Yes
<b>Mount Jessop Bog SAC (002202)</b>						
-Degraded raised bogs still capable of natural regeneration [7120] -Bog woodland [91D0]	8.2 km	Not connected	No-In a different GWB	No	No	No
<b>Lough Forbes Complex SAC (001818)</b>						
-Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150] -Active raised bogs [7110] -Degraded raised bogs still capable of natural regeneration [7120] -Depressions on peat substrates of the Rhynchosporion [7150] -Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) [91E0]	10.9 km	Not connected - upstream of River Shannon	No - Within the same GWB but over 10km away and separated by the River Shannon	No	No	No
<b>Ballykenny-Fisherstown Bog SPA (004101)</b>						
Greenland White-fronted Goose ( <i>Anser albifrons flavirostris</i> ) [A395]	10.9 km	Not connected - upstream of River Shannon	No - within the same GWB but over 10km away and separated by the River Shannon	No -	No- Populations Greenland White-fronted Geese of this SPA are unlikely to use the Bog.	No
<b>Corbo Bog SAC (002349)</b>						
-Active raised bogs [7110] -Degraded raised bogs still capable of natural regeneration [7120] -Depressions on peat substrates of the <i>Rhynchosporion</i>	11.2 km	Not connected	Within the same GWB but over 10km away and separated by	No	No	No

Qualifying Interests of site	Distance	Surface water pathway	Groundwater pathway	Air Pathway	Disturbance pathway	Further assessment required?
[7150]			Lough Ree			
<b>Brown Bog SAC (002346)</b>						
- Active raised bogs [7110] -Degraded raised bogs still capable of natural regeneration [7120] -Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	11.3km	Not connected - upstream of River Shannon	Within a different GWB	No	No	No



Details of the Qualifying Interests and project-relevant threats /pressures and their impacts and sources in relation to the Natura 2000 sites with a hydrological connection that are listed above are given in Table 4-2

Table 4-2: Site briefs; Qualifying Interests; and project-relevant threats /pressures and their impacts and sources in relation to the Natura 2000 sites within the 15km ZoI (plus hydrological connectivity extension).

Brief	Qualifying Interests	Project Relevant threats/ pressures listed on citation
<p>Lough Ree SAC (000440)</p> <p>One of the largest and most important lakes in Ireland, Lough Ree is an excellent example of a natural eutrophic system. The woodlands at the site are considered the best in the midlands. The site also contains very good examples of degraded raised bog much of which retain a typical raised bog flora, and which could be improved by restoration works. Bog woodland is also represented though some of this is planted <i>Pinus</i> species. A further area of wet woodland on cutover peat is notable for the abundance of <i>Frangula alnus</i>. Good to moderate examples of alkaline fens and calcareous dry grasslands also occur. Limestone pavement with species-rich woodland occurs at Rathcline. Several Red Data plant species occur. <i>Lutra lutra</i> is frequent on the site and the fish <i>Coregonus autumnalis</i> pollan has been recorded. It is an important bird site for wintering and breeding waterfowl, and has a colony of <i>Sterna hirundo</i>. It is of particular importance for the breeding population of <i>Melanitta nigra</i>, as it is one of only three sites for the species in Ireland. Water quality of the lake is considered good.</p> <p>(NPWS, 2020a)</p>	<ul style="list-style-type: none"> <li>-Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150]</li> <li>-Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</li> <li>-Active raised bogs [7110]</li> <li>-Degraded raised bogs still capable of natural regeneration [7120]</li> <li>-Alkaline fens [7230]</li> <li>-Limestone pavements [8240]</li> <li>-Bog woodland [91D0]</li> <li>-Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</li> <li>-Otter (<i>Lutra lutra</i>) [1355]</li> </ul> <p>(NPWS 2016)</p>	<p>Flooding modifications, and Diffuse groundwater pollution due to agricultural and forestry activities</p> <p>Note that disturbance outside SAC is not listed as a significant threat/pressure</p> <p>(NPWS, 2020a)</p>
<p>Lough Ree SPA (004064)</p> <p>Lough Ree is one of the most important Midland sites for wintering waterfowl, with nationally important populations of <i>Anas penelope</i>, <i>Anas crecca</i>, <i>Anas acuta</i>, <i>Anas clypeata</i>, <i>Aythya fuligula</i> and <i>Bucephala clangula</i>. Nationally important populations of <i>Pluvialis apricaria</i> and <i>Vanellus vanellus</i> are also associated with the lake. Regionally important numbers of <i>Cygnus cygnus</i> and <i>Anser albifrons flavirostris</i> are also found in the vicinity of the lake. The site supports a nationally important population of <i>Sterna hirundo</i>. <i>Larus ridibundus</i> breeds (nationally important) and <i>Larus fuscus</i> and <i>Larus canus</i> have bred in the past (recent census information is poor). Lough Ree is an important site for breeding duck and grebes, with <i>Aythya fuligula</i> and <i>Podiceps cristatus</i> having populations of national importance. Of particular note is that it is one of the two main sites in the country for breeding <i>Melanitta nigra</i>, a Red Data Book</p>	<ul style="list-style-type: none"> <li>-Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]</li> <li>-Whooper Swan (<i>Cygnus cygnus</i>) [A038]</li> <li>-Wigeon (<i>Anas penelope</i>) [A050]</li> <li>-Teal (<i>Anas crecca</i>) [A052]</li> <li>-Mallard (<i>Anas platyrhynchos</i>) [A053]</li> <li>-Shoveler (<i>Anas clypeata</i>) [A056]</li> <li>-Tufted Duck (<i>Aythya fuligula</i>) [A061]</li> <li>-Common Scoter (<i>Melanitta nigra</i>) [A065]</li> <li>-Goldeneye (<i>Bucephala clangula</i>) [A067]</li> <li>-Coot (<i>Fulica atra</i>) [A125]</li> </ul>	<p>None listed relevant to bog restoration works</p> <p>Note that disturbance outside SAC is not listed as a significant threat/pressure</p> <p>(NPWS, 2020b)</p>

<p>species. The woodland around the lake is a stronghold for <i>Sylvia borin</i> and this scarce species probably occurs on some of the islands within the SPA. <i>Lutra lutra</i> is frequent within the site and the fish <i>Coregonus autumnalis</i> pollan occurs.</p> <p>(NPWS 2020b)</p>	<p>-Golden Plover (<i>Pluvialis apricaria</i>) [A140]          -Lapwing (<i>Vanellus vanellus</i>) [A142]          -Common Tern (<i>Sterna hirundo</i>) [A193]          -Wetland and Waterbirds [A999]</p> <p>(NPWS 2021b)</p>	
<p>Fortwilliam Turlough SAC (000418)</p>		
<p>Fortwilliam is the most important turlough in Co. Longford and the 004 NUTS region and one of only two good examples east of the Shannon. It has a diverse vegetation with particularly large stands of nutrient-poor marsh containing normally calcifuge plants. The woodland is also unusual and goes with a historic low intensity of grazing. There is no sign of drainage in the basin and little sign of eutrophication.</p> <p>(NPWS, 2018a)</p>	<p>-Turloughs [3180]          (NPWS, 2018b)</p>	<p>- Diffuse groundwater pollution due to agricultural and forestry activities (Low, outside)</p> <p>- Water abstractions from groundwater (Low, inside and outside)</p> <p>(NPWS, 2018a)</p>

## 5 Screening Assessment

This screening exercise will focus on assessing the likely adverse effects of the project on the Natura 2000 sites identified in Section 4 above, along all pathways for:

- Lough Ree SAC (000440)
- Lough Ree SPA (004064)

And along groundwater pathways only for:

- Fortwilliam Turlough SAC (000418)

This section identifies the potential impacts which may arise as result of the proposed project on these European Sites. It then goes on to identify how these impacts could potentially impact on Natura 2000 sites listed above. The significance of potential impacts is also assessed, with any potential in-combination effects also identified.

### 5.1 Surface water

The rehabilitation of bogs can have three general impacts on surface water that could impact on surface-water dependent features downstream:

- changing drainage boundaries so that water enters different (sub-)catchments and affects the volume of water in downstream water courses which could affect QI feature.
- cause temporary drying of watercourses as retained water is lost to evapotranspiration or infiltration resulting in reduced flow or drying of channels that would affect QI features.
- reduces peak flows downstream which could affect QI features dependent on flooding (this is very unlikely)

#### Construction phase

The rehabilitation of Derraghan Bog will involve the use of excavators to block drains and heavy machinery to carry out the field re-profiling of the cut over bog and to form peat-berms. There is a potential pathway for effect on Lough Ree SAC and SPA through surface water via local watercourses Billberry\_SC\_010 sub catchment and the Shannon[Upper]\_SC\_080 sub catchment, with a distance of 6.9km along the shortest connecting waterbody to the nearest Natura 2000 sites (Figure 2-2). Lough Ree SAC and SPA could indirectly impact water dependant QIs Otter *Lutra lutra* [1355] and various Wetland and Waterbirds [A999] of Lough Ree SAC and SPA.

The rehabilitation activities could potentially release a small amount of suspended solids and pollutants, such as discharge of dissolved organic particles from the moving of peat, or accidental release hydrocarbons from the vehicles used for the rehabilitation activities during this phase.

The rehabilitation measures are designed to slow the release of water and minimise run-off, any release to watercourse is expected to be minimal and settle out or sufficiently dilute within a short distance. In addition, these streams are predominantly drainage ditches with low conveyance and flow rate. Therefore, the rehabilitation works will likely have only a very local affect to Project site.

The drainage channels around the site have been previously assessed as being low quality small channelised, modified watercourses that support little suitable habitat for foraging Otter *Lutra lutra* [1355] the only QI from Lough Ree SAC likely to be affected by localised sediment deposition. The stream does not support suitable habitat for suitable prey items for Otter such as fish and crayfish.

There is a potential that bog re-profiling is carried out as part of the bog rehabilitation measures that the bog sub-catchments will be modified. However the risk of increased runoff from Derraghan Bog is low as all rehabilitation measures being proposed will reduce runoff.

#### Operation phase

The rehabilitation will change the hydrology of the bog and the surrounding catchment by holding back water and allowing the water to be released more slowly. Evidence from bogs that have previously been the subject of rehabilitation measures demonstrates that the measures proposed at Derraghan Bog, which are all aimed at reducing runoff and retaining water within the bog, have the effect of reducing

the frequency and magnitude of flood events by restoring a more natural hydrological regime. Rehabilitation has been successfully applied to numerous Bord na Móna bog sites as well as SAC sites such as Clara Bog (East), Raheenmore Bog, Carrownagappul Bog and Lisnageeragh Bog.

While it is anticipated that rehabilitation will generally lead to dampening of peak flows and support sustained flows during dry periods, there is a potential risk that during prolonged dry periods that the rehabilitation measures may lead to downstream watercourses drying out as a result of increased attenuation capacity, increased rates of evapotranspiration along with the additional storage capacity created within the bog. The drainage management plan has assessed the Risk of drying out has been classed as Low risk for all four catchment of the Derraghan Bog (see Figure 3-4 in Drainage Management Plan).

This is likely to ensure water will slowly be released into the catchment during low rainfall events and will hold water back during flood conditions. The water attenuation conditions created by the rehabilitation will result in reduced water run off and result in minimal sedimentation.

The operational phase of the project will likely increase supporting wetland habitat for the QIs of the Lough Ree SAC and SPA.

#### Decommissioning phase

Decommissioning will occur during and after rehabilitation, with an aim to ensuring that no environmental liability remains from the industrial harvesting infrastructure. The decommissioning will likely affect small areas of the bog area and mostly on built land. Therefore there are no anticipated impacts from surface water pathways or ground water pathways to nearby European Sites from decommissioning.

**Therefore, no likely significant effects are anticipated via surface water pathways on any of the European sites and their QIs during construction, decommissioning or operation of rehabilitation measures of Derraghan bog.**

## 5.2 Groundwater

The rehabilitation measures will block drains within the bog, causing the groundwater level within the peat to rise. Any changes to quality of the water infiltrating the peat as a result of restoration activities will be small and very localised, and will most likely drain from the peat to surface water, or become so diluted amongst the peat that no impacts would occur.

The groundwater vulnerability is low across the site the combined permeability of the peat layer and the underlying lacustrine clay deposits above the aquifer and the relatively low permeability of the lacustrine subsoil below the site (Figure 5-1, Figure 5-2). Restoration works will not take place in areas where groundwater is potentially more exposed, such as the gravel ridge in the centre of the site.

**Therefore, no likely significant effects are anticipated via ground water pathways on any of the European sites and their QIs during construction, decommissioning or operation of rehabilitation measures of Derraghan Bog.**

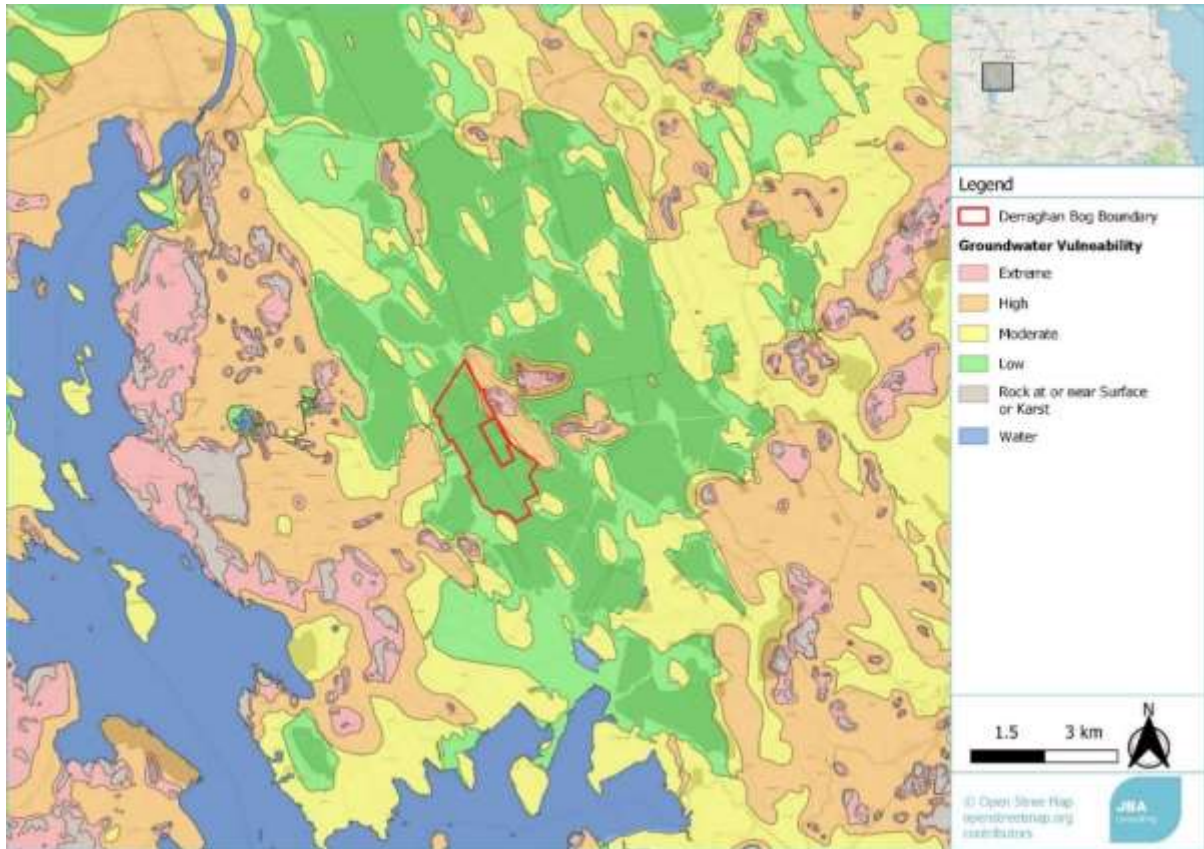


Figure 5-1 Groundwater vulnerability in the vicinity of Derraghan Bog

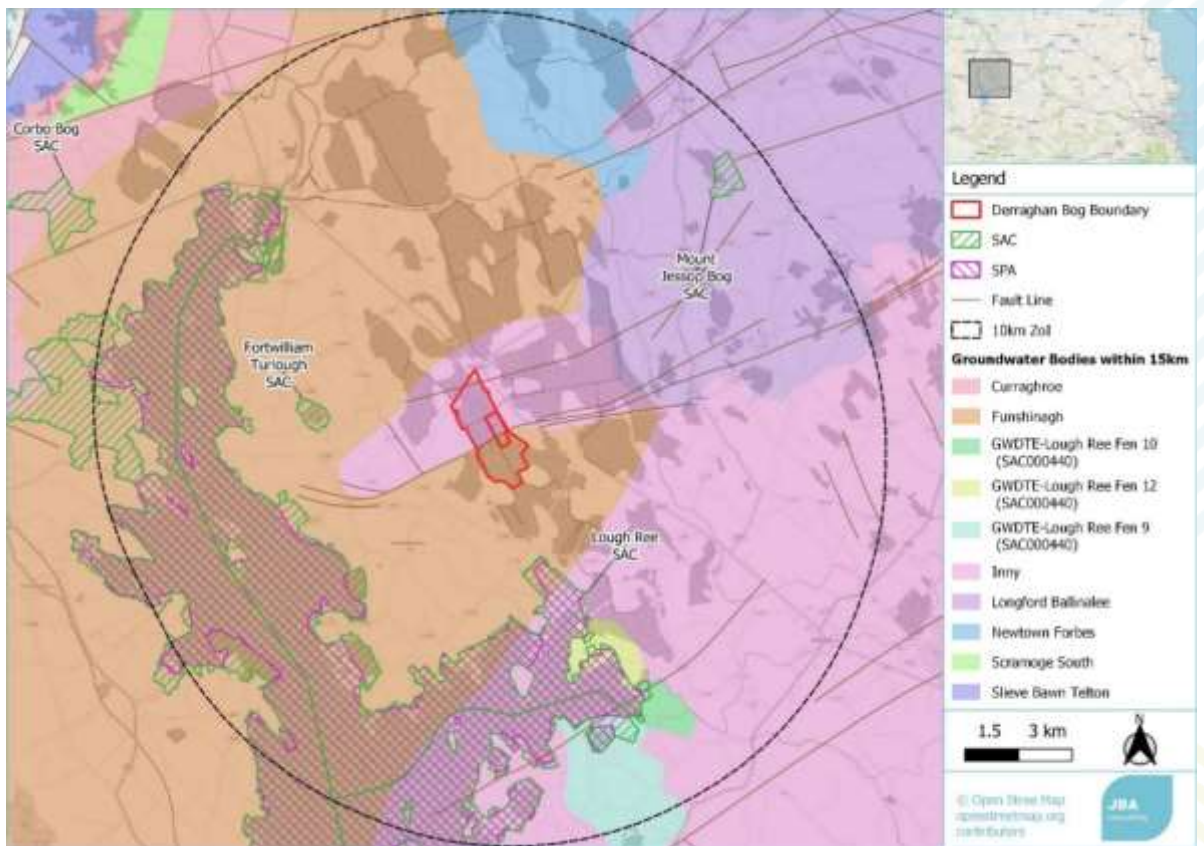


Figure 5-2 Groundwater Bodies in relation to Derraghan Bog and European Sites

## 5.3 Land and Air

The loss or degradation of supporting habitats outside the identified Natura 2000 sites via land- and air-based impacts could have potential adverse impacts on a number of the mobile QIs associated with these Natura 2000 sites.

### 5.3.1 Physical and noise disturbance

Direct physical impacts and indirect impacts, such as visual and noise impacts, have the potential to physically disturb habitats as well as the floral and faunal species within them. The SAC and SPA is located >2km from Derraghan Bog and therefore there will be no direct physical impact to the habitats of these European Sites. However the proposed site may provide suitable ex-situ habitat for QI species of the Natura 2000 sites of Lough Ree SAC and SPA.

### Construction Phase

Otter *Lutra lutra* [1355], QI of Lough Ree SAC may use the local watercourses Billberry\_SC\_010 and the Shannon [Upper]\_SC\_080. Evidence of Otters on cutover bogs have been recorded nearby along watercourses in other bogs nearby (NBDC maps). No Otter holts or couches were recorded on Derraghan during the surveys. Using precautionary principle, Otter may be present within the vicinity of Derraghan Bog and may cross the bog to access streams along its margins, but they are unlikely to be dependent on the habitats on site due to the highly disturbed nature of the cutover bog. Disturbance impacts during Rehabilitation activities to Otter will be minimal, as the activities will be localised, small in scale and temporary, and based in the least suitable areas of habitat.

The QI Birds of Lough Ree SPA may also be present in Derraghan Bog. Many of the QIs of the Lough Ree SPA are wintering species or are associated with large to medium sized waterbodies, which are unlikely to be present on Derraghan during the summer breeding season when works are due to take place. As indicated in Table 3-2 and Section 4, the only QI birds of the SPA recorded or likely to be present on Derraghan during the construction of the rehabilitation measures is Mallard, Little Grebe, Teal, and Lapwing. A walkover survey was carried out in April 2022 to check for any QI birds that may be breeding or foraging on the bog, and assess the habitat suitability for these species to breed. Two QI bird species, Mallard (3) and Golden Plover (12), were observed during the survey. Golden Plover were observed in a flock and were likely to be passage migrants temporarily foraging on the bog. These birds will not be significantly impacted by disturbance as they are not breeding here and there is receiving habitat for them to forage in away from the main Rehabilitation activities. Three mallards were observed, all drakes, and no female Mallards were seen, indicating the bog is not suitable for significant numbers of breeding Mallards. The Natura 2000 Form for this SPA notes a minimum of 675 Mallard in Lough Ree SPA, and the majority will breed in and around Lough Ree itself (NPWS 2004).

The rehabilitation measures will mostly be concentrated the cut-over bog to the south east, where the deep peat measures will be carried out, which will involve 5 machines operating in this local area at one time, This area was observed to be is unsuitable for Mallards and any birds in general to nest. Other measures such as drain blocking will be smaller scale and targeted, at most creating a temporary disturbance. This means that any disturbance will not have a likely significant effect on the Mallard population of Lough Ree SPA.

### Operation Phase

The post-rehabilitation of Derraghan Bog may provide additional habitat for Otter, particularly in the bog edges, including the woodlands, drains and marginal land surrounding the bog once the measures have been complete and will likely have positive impacts for this species. The monitoring of the bog post-rehabilitation is minimal and will not impact this species.

The operation of the rehabilitation measures will likely create suitable habitat, particularly wetland habitat, for many QI birds, and it is likely their presence will increase on Derraghan. The bog will be occasionally monitored but otherwise will be undisturbed and no significant impacts are expected from disturbance during operation.

### 5.3.2 Air Pollution

Regarding adverse air-based impacts, the release of dust and vehicle emissions can travel up to 5km, but given the small nature of rehabilitation activities, and the general wet environment of the bog, even using the precautionary principle there will no impacts that would reach Natura 2000 sites.

There may be some release of dust during the decommissioning of any buildings or storage tanks, or removal of railway infrastructure in to the atmosphere however this will be small in scale and settle mostly on site or very nearby. Therefore there are no anticipated impacts from air pathways to nearby European Sites from decommissioning.

**Therefore, no likely significant effects are anticipated via land and air pathways on any of the European sites and their QIs during construction, decommissioning or operation of rehabilitation activities of Derraghan Bog.**

## 5.4 In-Combination Effects

The previous section has identified that the project will have no likely significant effect on any Natura 2000 sites, however there may be disturbance impacts that are well below the de minimis threshold for likely significant effects alone, but could act in-combination with other sources of disturbance leading to potential effects on QIs, particularly birds. The Mid Shannon Wilderness Greenway (as part of the Mid-Shannon Wilderness Park) will cross Derraghan along the route of the old Railway, The Mid Shannon Wilderness Park is currently at concept stage and Derraghan is one of the bogs proposed to be developed in partnership between Bord na Móna, local communities and Longford County Council. An AA Screening has been carried out for this project and it was found there are no likely significant effects on any Natura 2000 sites (Flynn Furney, 2021). Given that the Bog Rehabilitation will take place in 2022 and the greenway won't start until 2023 at the earliest there is no possibility for in-combination effects of disturbance.

Other significant local projects where no in-combination effects are possible based on current proposals are noted in case the project is re-assessed at a later date:

- Derraghan Ash Disposal Facility, located next to Derraghan Bog. This is an accepted planning application where a pre-existing ash disposal facility, surrounded on all side by Derraghan will be upgraded to allow for the deposition of 130,000 tonnes of dry ash. The facility will exclusively accept ash from Lough Ree Power Station in Lanesborough (Lanesboro) and intended to operate until the 30th of December 2020, after which it would be decommissioned.
- Derryadd Wind Farm - The planning consent for this wind farm has been overturned at Judicial review stage and updated proposals are not available at the time of writing this screening.
- Other Bord Na Móna Bog restoration projects that are planned within 15km of Derraghan Bog include Knappoge Bog (8.3km north) Clooneeny Bog (7.8km north east) and Begnagh Bog (7.3km north). Each of these projects will have similar assessments as Derraghan Bog.
- NPWS Raised Bog restoration Project: Lough Ree Bog (8km west) and Lough Forbes Bog (12km north) are both under restoration. These restoration projects are subject to Appropriate Assessment.

As the proposed project is unlikely to affect the QIs/SCIs or conservation objectives of any European site, there is no potential for other plans or projects to act in combination with it to result in likely significant effects on European sites.

## 5.5 Summary

The proposed rehabilitation measures in Derraghan Bog aims to re-wet and stabilise water flow. The rehabilitation measures will be temporary and small in scale with small emissions and will not result in any significant changes to the hydrological regime outside of the bog . Therefore, in the absence of any mitigation, there is no potential for any significant effect on these European Sites and their Qualifying Interest, as a result of change to the hydrological regime or pollution or disturbance to key species.

### 5.5.1 Description of likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 sites

Project Elements	Comment
Size and scale	The proposed rehabilitation measures will involve the decommissioning, and rehabilitation of 289 Hectares of the cut-over Derraghan Bog by Bord Na Móna.

Project Elements	Comment
	<p>The rehabilitation measures will involve drain blocking, berm and field re-profiling, blocking outfalls, managing overflows and overflow pipes, <i>Sphagnum</i> moss inoculation, maintain existing silt ponds and creation of wetland. The deep peat measures of field re-profiling and berm creation will involve 5 machines at one time, and other measures will be targeted with fewer machines.</p> <p>The surrounding landscape is composed agricultural grassland, commercial forestry plantation and other cut-over bogs including some that are being or will be subject to restoration.</p> <p>There will be decommissioning of former industrial harvesting infrastructure, which will be carried out after the rehabilitation measures.</p>
Land-take	There will be no direct land take from any of Natura 2000 sites.
Distance from Natura 2000 site or key features of the site	<p>The Natura 2000 sites and their proximity to the proposed site:</p> <ul style="list-style-type: none"> <li>• Lough Ree SAC 2.1km</li> <li>• Lough Ree SPA 2.2 km</li> <li>• Fortwilliam Turlough SAC 3.4km</li> </ul>
Resource requirements (water abstraction etc.)	There will be no water abstraction requirements.
Emissions (disposal to land, water or air)	<p>Construction (rehabilitation) phase: Excavators, screw levellers, and bull-dozers will be used to carry out the rehabilitation measures. Dust, noise and vibration will occur from the machinery, but this will be localised and in low volumes, and occur along mostly existing trackways. Dust and noise limits are currently set on IPC licenses. The presence of staff on site will cause small amount of waste and disturbance.</p> <p>Operation phase: During post-rehabilitation continued monitoring of surface water and drains will be carried out by Bord na Móna, as well as vegetation monitoring. Very little emissions will result from this, mostly from presence of surveyors and their mode of transport.</p> <p>Decommissioning phase: Decommissioning will occur during and after rehabilitation, with an aim to ensuring that no environmental liability remains from the industrial harvesting infrastructure. The decommissioning will likely affect small areas of the bog area and mostly on built land. Small amounts of dust may be released during decommissioning of industrial infrastructure but this is small in scale and will settle nearby.</p>
Excavation requirements	Surface excavations will be carried out on the cut-over bog during the filed re-profiling, and one drain will be constructed to provide an hydraulic break and adding in pipes where necessary. However this will involve shallow excavation and involve moving peat layer only. Maintenance of the existing drains (hydraulic break) and existing silt ponds will only require shallow excavation during cleaning, if at all..
Transportation requirements	<p>Temporary Impacts: Levels of traffic to the site during the rehabilitation phase will increase traffic to the area but will be temporary in nature. All access to the site will be on pre-existing roads and transportation requirements will not affect Natura sites.</p> <p>Permanent Impacts: On-going monitoring of the post-rehabilitation phase will require visits to the site. Given the size, scale and location</p>



Project Elements	Comment
	of the proposed project, transportation requirements will not affect Natura 2000 sites.
Duration of construction, operation, decommissioning etc.	Construction/ rehabilitation measures will last approximately 7 months from April to October 2022. Operation/post-rehabilitation will be permanent. Decommissioning will occur during operation and be carried out as required in 2-3 years after 2022.

### 5.5.2 Description of likely changes to the Natura 2000 sites

Potential Impact	Comments
Reduction of habitat area	There will be no temporary or permanent reduction in habitat area for any of the European sites.
Disturbance to key species	There may be minor disturbance to ex-situ Bird QIs (Mallard) of Lough Ree SPA and Otter of Lough Ree SAC, however this expected to be insignificant due to the small scale and temporary nature of the rehabilitation measures during construction, which will take place during summer, and will be beneficial to these species during operation due to increase in suitable habitat.
Habitat or species fragmentation	There will be no temporary or permanent habitat or species fragmentation within any of the Natura 2000 sites.
Reduction in species density	There will be no temporary or permanent reduction in species density within any of the Natura 2000 sites, or any QIs of these sites.
Changes in key indicators of conservation value (water quality etc.)	Water flow and quality are likely to be improved. Any changes are likely to be beneficial to downstream ecological features.
Climate change	The project is expected to result in the bog reverting from a carbon source (as peat cutting releases carbon and GHG) to a state of reduced emissions, through rehabilitation measures proposed and therefore reduce some of the effects of climate change. There is no direct link to screened in Natura 2000 sites beyond the benefit of such actions generally.

### 5.5.3 Description of likely impacts on the Natura 2000 sites as a whole

Potential Impact	Comments
Interference with the key relationships that define the structure of the site	Interference with the key relationships that define the structure of the sites are not anticipated
Interference with key relationships that define the function of the site	Interference with the key relationships that define the function of the sites are not anticipated

Provide indicators of significance as a result of the identification of effects set out above in terms of:

Potential Impact	Indicators
Loss (Estimated percentage of lost area of habitat)	No Natura 2000 sites will experience a direct loss in habitat area.
Fragmentation	Fragmentation of habitat and/or species is not anticipated.

Disruption & disturbance	Disturbance is expected to be minimal and temporary to ex-situ species of Lough Ree SAC and SPA.
Change to key elements of the site (e.g. water quality etc.)	Potential temporary changes to key elements (i.e. water quality) of the site are anticipated but these will be contained within the site and will not impact downstream watercourses.

**5.5.4 Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is unknown**

Based upon best scientific judgement, no significant impacts are expected from the elements mentioned above; and that no significant gaps in knowledge of the scale or magnitude of potential impacts from the proposed site exist.

**5.6 Concluding Statement**

Following this initial screening of the proposed rehabilitation measures on Derraghan Bog it can be concluded that the possibility of any likely significant effects on the European Sites listed below, whether arising from the project itself or in combination with other plans and projects, can be excluded beyond a reasonable scientific doubt on the basis of the best scientific knowledge available.

- Lough Ree SAC (000440)
- Lough Ree SPA (004064)
- Fortwilliam Turlough SAC (000418)

If any changes occur in the design of these rehabilitation measures, a new Screening for Appropriate Assessment is required.

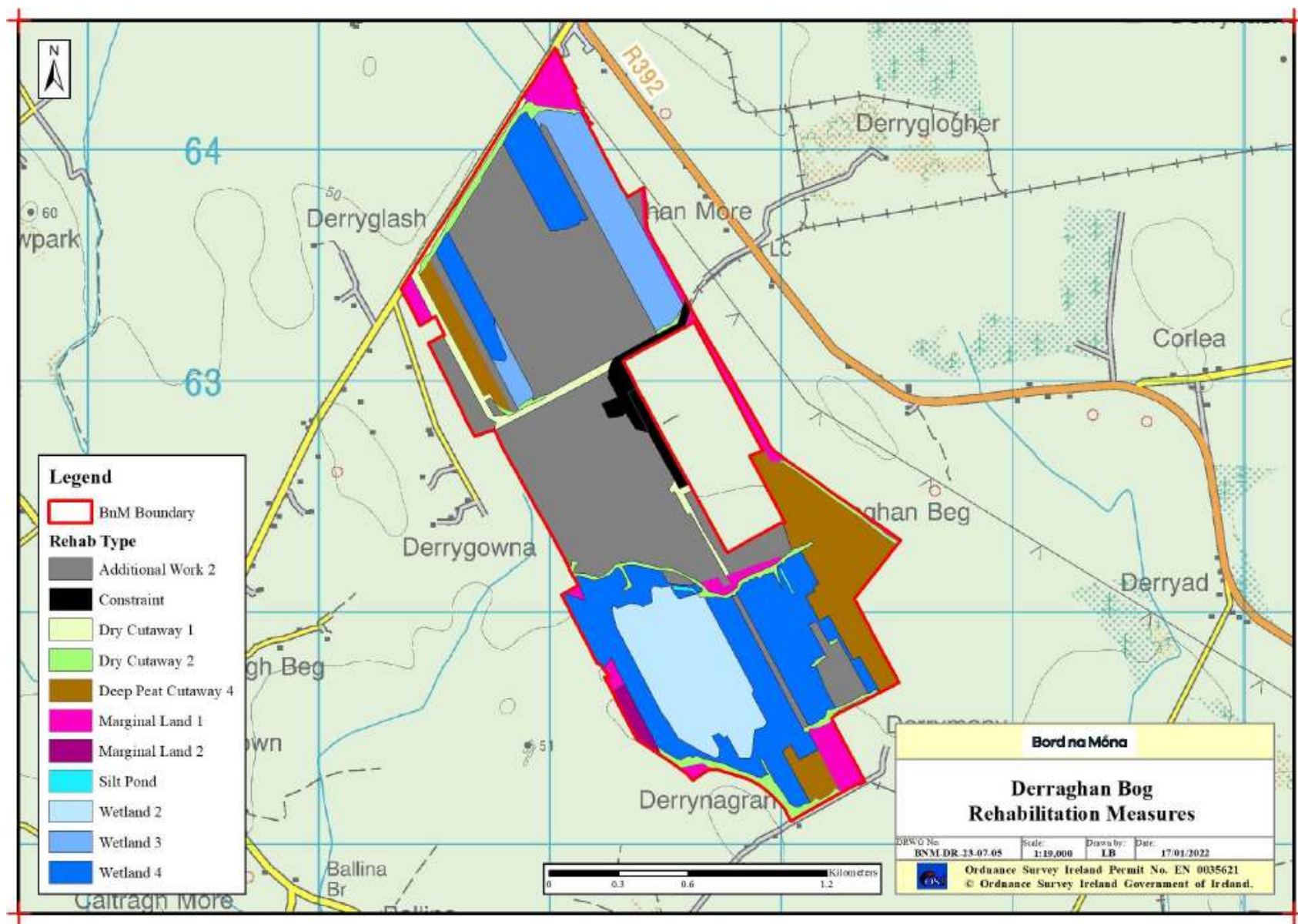
## Appendices

### A Enhanced rehabilitation measures at Derraghan Bog

Type / code		Enhanced Rehabilitation Measure	Area
Dry Cutaway -	DCT1	Blocking outfalls and managing water levels with overflow pipes	6.7
Dry Cutaway -	DCT2	Regular drain blocking (3/100m) +blocking outfalls and managing water levels with overflow pipes + targeted fertiliser treatment	10.2
Deep Peat -	DPT 4	Berms and field re-profiling (45x60m cell), blocking outfalls and managing overflows & drainage channels for excess water & Sphagnum Inoculation	25.7
Wetland -	WL2	Turn off or reduce pumping to re-wet cutaway + blocking outfalls and managing water levels with overflow pipes + Targeted blocking of outfalls within a site	10.7
Wetland -	WLT3	Blocking outfalls and managing water levels with overflow pipes. Targeted blocking of outfalls within a site, constructing larger berms to re-wet cutaway and transplanting reeds and other rhizomes.	18.8
Wetland -	WLT4	More intensive drain blocking (max 7/100 m), + blocking outfalls and managing overflows + transplanting Reeds and other rhizomes	74.3
Marginal land -	MLT1	No work required	15..0
Marginal land -	MLT2	More intensive drain blocking (max 7/100 m)	6.1
Silt ponds -	Silt pond	Silt ponds	0.3
Constraint -	Constraint	Other Constraints (ROW)	15.4
Additional Works -	AW2	More intensive drain blocking and outfall management	105.8
Total	---	---	289.2

See corresponding drawing - Appendix B

## B Drawing of proposed rehabilitation measures



## References

- Bord na Mona (2021a) 'Derraghan Bog Engineering Report 2022, Peatland Climate Action Scheme'
- Bord na Mona (2021b) 'Derraghan Bog Cutaway Bog Decommissioning and Rehabilitation Plan'.
- DoEHLG (2009a) 'Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government.'
- DoEHLG (2009b) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities., Department of the Environment, Heritage and Local Government, available: <http://www.wicklow.ie/sites/default/files/Manager's%20report%20on%20submissions%20to%20the%20Proposed%20Amendments.pdf> [accessed 12 Jan 2017].
- European Commission (Ed.) (2000) Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Luxembourg: Office for Official Publications of the European Communities.
- European Commission (2007) 'Guidance document on Article 6 (4) of the "Habitats Directive" 92/43/EEC - Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission.'
- European Commission, Directorate-General for the Environment, Oxford Brookes University, and Impacts Assessment Unit (Eds.) (2002) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Luxembourg: EUR-OP.
- Fossitt, J.A. (2000) A Guide to Habitats in Ireland, Heritage Council of Ireland series, Kilkenny: Heritage Council/Chomhairle Oidhreachta.
- NBDC (2021) Biodiversity Maps - Map Viewer [online], National Biodiversity Data Centre Biodiversity Maps, available: <http://maps.biodiversityireland.ie/#/Map> [accessed 10 Feb 2018].
- NPWS (2004) Natura 2000 Standard Data Form: Lough Ree SPA 04064, National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, available: <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004064.pdf> [accessed 21 Mar 2022].
- NPWS (2016) 'Conservation Objectives: Lough Ree SAC [000440] Version 1.', available: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO000440.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000440.pdf) [accessed 22 Feb 2022].
- NPWS (2018a) 'Natura 2000 Standard Data Form: Fortwilliam Turlough SAC IE0000448, available: <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004064.pdf> [accessed 22 Feb 2022].
- NPWS (2018b) 'Conservation Objectives: Fortwilliam Turlough SAC [000448] Version 1.', available: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO000448.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000448.pdf) [accessed 22 Feb 2022].
- NPWS (2020a) 'Natura 2000 Standard Data Form: Lough Ree SAC IE0000440, <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000440.pdf> [accessed 22 Feb 2022].
- NPWS (2020b) 'Natura 2000 Standard Data Form: Lough Ree SPA IE00004046, available: <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004064.pdf> [accessed 22 Feb 2022].
- NPWS (2022) 'Conservation Objectives: Lough Ree SPA [004064] Version 1.', available: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO004064.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004064.pdf) [accessed 22 Feb 2022].
- RPS (2021) 'Drainage Management Plan for Derraghan Bog prepared for Bord na Mona'.

**JBA**  
consulting

Offices at  
Dublin  
Limerick

Registered Office  
24 Grove Island  
Corbally  
Limerick  
Ireland

t: +353 (0) 61 345463  
e: info@jbaconsulting.ie

JBA Consulting Engineers and  
Scientists Limited  
Registration number 444752

JBA Group Ltd is certified to:  
ISO 9001:2015  
ISO 14001:2015  
ISO 27001:2013  
ISO 45001:2018

Visit our website  
[www.jbaconsulting.ie](http://www.jbaconsulting.ie)

