

Article 6 (3) Appropriate Assessment Screening Report

Granaghan Bog
Decommissioning and
Rehabilitation Plan 2024





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1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the undertaking of an Article 6(3) Screening for Appropriate Assessment for the proposed Decommissioning and Rehabilitation of Granaghan Bog, located in Co. Roscommon.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a desk study and field surveys undertaken by Bord na Móna ecologists over the period of 2009 to 2023, and on a site visit carried out on the 14th of March 2023 by Valerie Kendall (B.Sc(H), M.EnvSc) and Rudraksh Gupta (BSc., MSc) of MKO. It specifically assesses whether the proposed Decommissioning and Rehabilitation plan will have any impact upon European Designated Sites.

This Appropriate Assessment Screening Report has been prepared in accordance with the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010) and the Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin 7, Ireland OPR (2021).

1.2 Statement of Authority

A baseline ecological survey was undertaken on the 14 of March 2023 by Valerie Kendall (B.Sc(H), M.EnvSc) and Rudraksh Gupta (BSc., MSc) of MKO. This report has been prepared by Valerie Kendall (B.Sc(H), M.EnvSc) and Rachel Minogue (B.Sc). Valerie is an Ecologist with MKO and has 10 years' relevant experience in ecological assessments and consultancy. Rachel is an ecologist with MKO, with the relevant qualifications in Environmental Science. This report has been reviewed by Colin Murphy (B.Sc, M.Sc). Colin is an experienced project ecologist with MKO and has over 3 years' professional consultancy experience.

2. DESCRIPTION OF THE PROJECT

2.1 Site Location

Granaghan Bog is located approximately 6.5km north-northwest of Lanesborough, and approx 6.6km southeast of Strokestown, in Co. Roscommon (Grid Reference: M 99178 76265). Granaghan Bog comprises an area of 212 ha. Lough Ree SAC [000440] is located approx 5.8 km south, and Lough Ree SPA [004064] is located approx 6.0 km south of Granaghan Bog.

The site can be accessed via a local road off of the R371, which is connected to the N5 northwest of the site.

The location of Granaghan Bog is shown in **Figure 2.1**

2.2 Site Description

Granaghan Bog comprises an area of 212 ha and is considered a deep peat cutover bog. The Decommissioning and Rehabilitation footprint comprises an area of 168 ha. Granaghan Bog is part of the Mount Dillon Bog Group, with Mount Dillion located immediately to the south and southeast. An existing rail line connects the bog with Mount Dillion bog to the south. Areas of Granaghan Bog subject to the PCAS rehabilitation can be split into two parts; a large main section, formerly used for peat production, and smaller section of remnant raised bog to the southeast of this area, which was never used for peat production, where domestic turf cutting has occurred along the margins. The two sections are bisected by the local road L1426. The site formerly had a pumped drainage regime. Granaghan Bog has a partially pumped drainage system. A single automatic pump drains the bog, discharging water into a network on silt ponds on the south- eastern side of the bog.

Granaghan Bog is located within the Upper Shannon Catchment, and Shannon [Upper] Sub Catchment. The site is located within the Curraghroe Ground Waterbody. The majority of Granaghan Bog is located in an area of low groundwater vulnerability, as per EPA Maps. The Curraghroe Stream, a tributary of the Feorish River, flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction into Lough Ree SAC and Lough Ree SPA, after approx 14.6km.

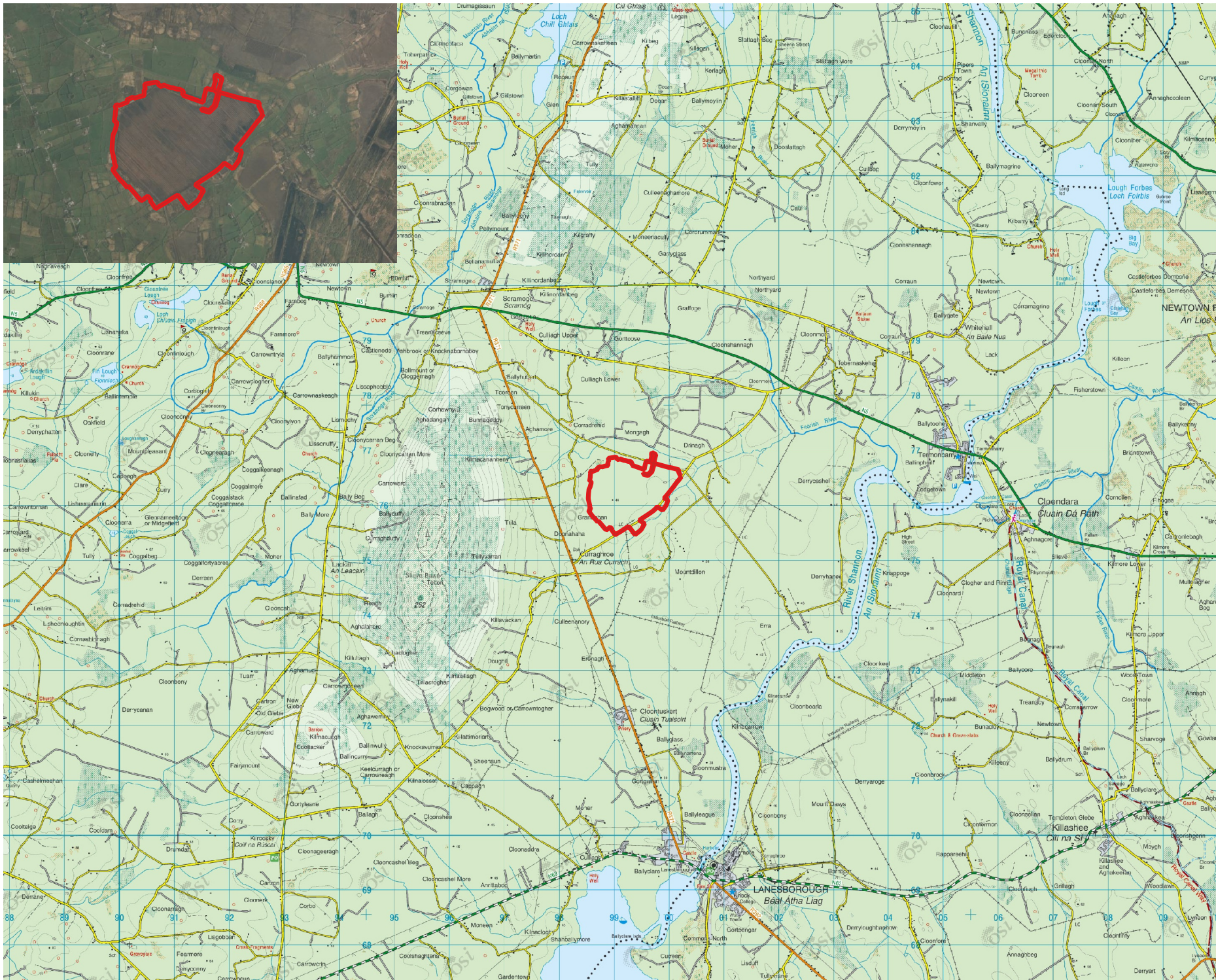
Granaghan Bog was drained and developed for industrial peat production in the 1980s, with the peat harvested used to fuel peat in Lough Ree Power station in Lanesborough. Industrial peat extraction permanently ceased in 2020 at Granaghan Bog. The remaining peat deposits are deep across most of Granaghan Bog, ranging from 2-4m, with thicker deposits in the south-western area where peat is 5.5m.

Areas of cutover bog at Granaghan are dominated by bare peat, comprising the majority of ground cover on the site. Small fragments of remnant high bog exist to the margins of the site, which are dry, fragmented and in poor condition. To the southwest of the site, wetter peat conditions have led to the development of a small patch of pioneer poor fen vegetation. A small Conifer Plantation (WD4) is present to the north-east margins of the site. A small area of agricultural pasture is present within the BnM boundary to the east of the site. The marginal lands consist of Scrub (WS1), Cutover Bog (PB4) or disturbed high bog (PB1).

GSI data indicates that the western section of Granaghan Bog is underlain by the Moathill Formation, with the remaining area of the bog underlain by the Ballysteen Formation, and a small area underlain by Argillaceous Limestone (Visean). All these bedrock units are classified as locally important aquifers as they are moderately productive in local zones. Further GSI mapping does not identify any Karst



features near the Bog. Quaternary geology maps show that Granaghan Bog is underlain by Peat, surrounded by inorganic deposits.



Map Legend

 Site Layout



| | |
|--|-------------|
| Drawing Title | |
| Site Location | |
| Project Title | |
| Granaghan Bog | |
| Drawn By | Checked By |
| RM | CM |
| Project No. | Drawing No. |
| 230210 | Figure 2.1 |
| Scale | Date |
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2.3 Characteristics of the Peatland Climate Action Scheme

2.3.1 Overview

Bord na Móna has operated under an IPC Licence issued and administered by the EPA for the extraction of peat within the Mount Dillon bog group (Ref. P0504-01), of which Granaghan Bog in Co. Roscommon is part of. Industrial peat harvesting at the Granaghan Bog is now complete since 2020. As part of Condition 10.2 of this license, a rehabilitation plan must be prepared to ensure the permanent rehabilitation of the cutaway bog lands within the licensed area. The license conditions required by Bord na Móna agree with the EPA measures that will provide for rehabilitation, i.e., stabilisation of Granaghan Bog upon cessation of peat production and compliments the licence requirements to decommission the site. This regulatory requirement is the main driver of the development of this rehabilitation plan.

A document titled ‘Granaghan Bog Decommissioning and Rehabilitation Plan 2024 has been prepared specifically to describe the proposed permanent rehabilitation measures at Granaghan Bog and is appended to this document as **Appendix 1**.

It is proposed by Government that Bord na Móna carry out a Peatland Climate Action Scheme (PCAS) on peatlands previously used for energy production. The enhanced decommissioning, rehabilitation, and restoration of the peatlands funded by the PCAS will deliver benefits across climate action (GHG mitigation, and acceleration towards carbon sequestration), enrich the state’s natural capital, increase eco-system services and biodiversity, improve water quality, and storage attenuations, and improve amenity opportunities for peatlands. The additional costs of the proposed PCAS will be supported by Government through the Climate Action Fund and Ireland’s National Recovery and Resilience Plan. Bord na Móna have identified a footprint of 33,000 ha (a subset of the Bord na Móna estate that has been used for energy production) as peatlands suitable for enhanced rehabilitation – including Granaghan Bog. This proposed scheme will significantly go beyond what is required to meet rehabilitation obligations under existing EPA IPC licence conditions.

Decommissioning is a requirement of the applicable Integrated Pollution Control Licence issued by the EPA, which seeks to address condition 10.1 of license Ref. P0501-01, which requires the following:

10.1 Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall:

10.1.1 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.

Decommissioning must take place at each bog prior to or concurrent with rehabilitation – the scale of decommissioning per bog varies dependent on the items/ infrastructure previously in place to facilitate prior peat extraction.

Enhanced decommissioning as part of the PCAS will enhance the future after use of the bog for amenity value, security against access for illegal and unsocial activities and general State and community benefit.

Rehabilitation seeks to address the requirements of Condition 10.2 of IPC License Ref. P0504-01 and is based on a reference document prepared by BnM per Bog for which the IPC license is applicable. See the following extract from IPC License Ref. P0501-01:

“The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the cutaway boglands within the licensed area.”

Enhanced rehabilitation interventions supported by the above referenced Scheme will ensure that environmental stabilisation is achieved (meaning IPC obligations are met), and importantly, significant additional benefits, particularly relating to climate action and other ecosystem services, will also be delivered.

See appendix **XI** in the Granaghan Bog Decommissioning and Rehabilitation Plan 2023 in **Appendix 1** of this AASR for full details on the relevant Policy and Regulatory Frameworks.

2.3.2 Decommissioning and Rehabilitation stage

Bord na Móna have defined the key rehabilitation outcome at Granaghan Bog as environmental stabilisation, re-wetting, and setting the bog on a trajectory towards development of naturally functioning peatland and wetland habitats. Rehabilitation is generally defined by Bord na Móna as:

- Stabilisation of bare peat areas via targeted active management (e.g., drain-blocking/re-wetting) slowing movement of water across the site and encouraging natural colonisation; and
- Mitigation of key emissions (e.g., potential run-off of suspended solids).

168 ha of Granaghan Bog will be subject to rehabilitation measures, as described in **Table 2.1** below. These are bespoke interventions designed to stabilise the existing baseline and meet compliance with the requirements of the existing EPA, IPC License and the proposed PCAS. Prescriptive measures are unique to the existing baseline habitats and comprise 3 no. broad categories, 1) those associated with dry cutaway, 2) measures associated with deep peat cutover bog and 3) those associated with wetland cutaway. The aim of rehabilitation is as much as possible to place existing peatlands on a trajectory towards a naturally functioning peatland system (Renou-Wilson 2012).

The proposed Granaghan Bog rehabilitation plan will be undertaken using standard best practices in peatland restoration. These are based on published information in the Irish context, methodologies developed through rehabilitation trials, best practices employed elsewhere in Europe on peatland rehabilitation and restoration, and also the experience of 40 years of research on the after-use development and rehabilitation of the Bord na Móna cutaway bogs (Clarke and Rieley 2010), including examples such as the Bord na Móna Raised Bog Restoration Project (Bord na Móna 2014).

In terms of rehabilitation, the ecological and site information collected during BnM ecological baseline surveys, additional site visits, stakeholder input, and monitoring and desktop analysis forms the basis for the planning of peatland rehabilitation at Granaghan Bog, along with:

- Experience of 40 years of research on the after-use development and rehabilitation of the Bord na Móna cutaway bogs (Clarke, 2010; Bord na Móna, 2016)
- Significant international engagement with other countries in relation to best-practise principles for peatland rehabilitation and after-use through the International Peatland Society and the Society for Ecological Restoration (Joosten & Clarke 2002; Clarke & Rieley 2010; Gann et al. 2019)
- Consultation and engagement with internal and external stakeholders
- GIS mapping
- Bord na Móna drainage surveys
- Bog topography and LiDAR data.
- Hydrological modelling
- The development of a Methodology Paper outlining the Scheme (PCAS). This rehabilitation includes enhanced measures defined in the Methodology Paper which are designed to exceed the standard stabilisation requirements as defined by the IPC Licence

and to enhance the ecosystem services of Granaghan Bog optimising climate action benefits.

2.3.2.1 Decommissioning Measures

The proposed **Decommissioning Measures** at Granaghan Bog includes:

- Clean- up of Bog
- Cleaning Silt Ponds
- Peat Stockpile Management
- Decommissioning and Removal of Bog pump Sites where feasible
- De-Sludge Septic Tank, if needed.

Enhanced **Decommissioning Measures** at Granaghan Bog include:

- Removal of railway lines
- Restricting access to bog.
- Removal of high voltage power lines, if feasible.

Refer to **Appendix VII** in the Granaghan Bog Decommissioning and Rehabilitation Plan 2023 in **Appendix 1** of this AASR for full details on the Decommissioning measures proposed for Granaghan Bog.

Refer to **Appendix IX** in the Granaghan Bog Decommissioning and Rehabilitation Plan 2023 in **Appendix 1** of this AASR for further details on the Extractive Waste Management Plan for the minimisation, treatment, recovery, and disposal of wastes.

2.3.2.2 Rehabilitation Measures

The proposed **Enhanced Rehabilitation Measures** for Granaghan Bog include:

- Deep Peat measures including field re-profiling, resulting in banded areas suitable for *Sphagnum* inoculation, on deeper peat.
- Intensive drain blocking around shallow peat/ 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.
- Regular drain blocking (3/100m) on dry cutaway along with the blocking of outfalls and management of water levels, along with organic fertiliser application.
- 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.
- Deep Peat measures including field re-profiling, resulting in banded areas suitable for *Sphagnum* inoculation, on deeper peat. Such measures will be appropriate where there are pockets of residual deep peat within the southwestern lobe of Drinagh Bog.
- Targeted drain blocking on remnant high bog and areas of cutover bog at the margins to optimise hydrological conditions (AW2). This will be particularly suitable for much of the central and south-eastern part of the eastern lobe of Drinagh Bog which has developed a mosaic of established Scrub and areas of bare peat.
- 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* moss will be undertaken where required.
- Initial hydrological modelling indicates that some parts of the site will develop a mosaic of wetland habitats. 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 small 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.

Table 2-1 Types of Enhanced Rehabilitation Measures at Granaghan Bog.

| Type | Rehab Code | Enhanced Rehabilitation Measure | Extent (Ha) |
|------------------|------------|---|-------------|
| Deep Peat | DPT2 | More intensive drain blocking (max 7/100 m) + blocking outfalls and managing overflows | 49.1 |
| | DPT3 | More intensive drain blocking (max 7/100 m), + field reprofiling + blocking outfalls and managing overflows | 18.2 |
| | DPT4 | Berms and field re-profiling (45m x 60m cell), modifying outfalls and managing overflows & drainage channels for excess water & <i>Sphagnum</i> inoculation | 46.3 |
| Dry Cutaway | DCT2 | Regular drain blocking (3/100m) +modifying outfalls and managing water levels with overflow pipes + targeted fertiliser treatment | 15.4 |
| Wetland | WLT4 | More intensive drain blocking (max 7/100 m), + modifying outfalls and managing overflows + transplanting Reeds and other rhizomes | 9.3 |
| Marginal land | MLT1 | No work required. | 7.7 |
| Additional works | AW2 | Targeted Drain Blocking | 2.9 |
| Silt ponds | Silt ponds | Silt ponds | 0.4 |
| Constraints | Constraint | Other constraints | 18.2 |
| Total | | | 168 |

2.3.3 Aftercare and Maintenance

This programme for monitoring, aftercare and maintenance has been designed to meet the Conditions of the IPC Licence. This is defined as:

- There will be initial quarterly monitoring assessments of the site to determine the general status of the site, the condition of the silt ponds, assess the condition of the rehabilitation work, monitoring of any potential impacts on neighbour's land, general land security, boundary management, dumping and littering.
- The number of these site visits will reduce after 2 years to bi-annually and then after 5 years to annual visits.
- These monitoring visits will also consider any requirements for further practical rehabilitation measures.
- The baseline condition of the site will be established post-rehabilitation implementation by using an aerial survey to take an up-to-date aerial photo when rehabilitation is completed. This will be used to verify completion of rehabilitation measures. The extent of bare peat will be assessed using this baseline data, and habitat maps will be updated, if needed. It is proposed that sites can be monitored against this baseline in the future.
- Water quality monitoring at the bog will be established. The main objective of this water quality monitoring will be to establish a baseline and then monitor the impact of peatland rehabilitation on water quality from the bog.
- In order to assist in monitoring surface water quality from this bog, it is planned to increase the existing licence monitoring requirements to sampling for the same parameters to every month during the scheduled activities and for a period up to two years post rehabilitation, depending on the period required to confirm that the main two parameters, suspended solids and ammonia are remaining compliant with the licence emission and trigger limit values and there is an improving trajectory in these two parameters i.e. reduction in concentration.
- Enhanced water quality monitoring will aim to include up to 70% of a bog's drainage catchments.
- Monitoring results will be maintained, trended, and reported on each year as part of the requirement to report on Condition 10.1 of the IPC Licence on Bog Rehabilitation in the Annual Environmental Report, which will be available in April each year at www.epa.ie.
- The parameters to be included (as per condition 6.2 of the IPC Licence) include monthly monitoring for pH, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour, and COD and DOC.
- This monthly sampling regime on a selected number of silt ponds will be carried out over a two-year cycle.
- The original (licence) requirement was for a quarterly sampling regime, but this has been increased to a monthly regime to appropriately track the changing water chemistry that will occur as part of this enhanced rehabilitation. In addition, DOC will be included as a parameter to try and identify any changes in carbon in the surface water.
- If, after two years, key criteria for successful rehabilitation are being achieved and key targets are being met, then the water quality monitoring will be reviewed, with consideration of potential ongoing research on site. The water quality data, the aerial surveys and the habitat mapping will be collated and will be submitted to the EPA as part of the final validation report.
- If, after two years, key criteria for successful rehabilitation have not been achieved and key targets have not been met, then the rehabilitation measures and status of the site will be evaluated and enhanced, where required. This evaluation may indicate no requirement for additional enhancement of rehabilitation measures but may demonstrate that more time is required before key criteria for rehabilitation has been achieved. Monitoring of water quality will then also continue for another period to be defined.
- Where other uses are proposed for the site that are compatible the provision of biodiversity and ecosystem services, these will be assessed by Bord na Móna in consultation with

interested parties. Other after-uses can be proposed for licensed areas and must go through the required assessment process and planning procedures.

Additional monitoring measures are also proposed to monitor ecosystem service benefits that have been derived by enhanced rehabilitation. These proposed monitoring measures will be funded by the proposed Climate Action Fund Scheme or additional other funding. Monitoring of climate action and other ecosystem service benefits will be designed to take account of the requirements of monitoring benefits of the overall Scheme and will be stratified; that is not all monitoring will be carried out in each site. These are defined as:

- Vegetation and habitat monitoring after rehabilitation is completed using a bog condition assessment (ecotope mapping). This assessment will include assessment of on environmental and ecological indicators such as vegetation cover, vegetation communities, presence of key species, *Sphagnum* cover, bare peat cover and water levels. It is proposed that sites can be monitored against this baseline in the future.
- The condition of the bog can be assessed using the condition assessment and suitable Greenhouse Gas (GHG) emission factors can be assigned to different habitats. GHG emission factors have been determined for various peatland habitats in Ireland (Wilson et al., 2015) and are constantly being refined with more and more research. BnM is actively supporting research into GHG fluxes in different rehabilitated peatland habitats. This means that potential GHG emissions can be estimated from the site, as the site continues along its trajectory towards a naturally functioning peatland ecosystem.

2.3.4 Rehabilitation Plan Validation and Licence Surrender

IPC Licence condition 10.4. *‘A final validation report to include a certificate of completion for the Rehabilitation Plan, for all or part of the site as necessary, shall be submitted to the agency within six months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the agency, to confirm that there is no continuing risk to the environment’.*

Reporting to the EPA will continue until the licence is surrendered. The bog will be included in the full licence surrender process as per the guidance to licensees on surrender, cessation, and closure of licensed sites EPA, 2012, when:

- The planned rehabilitation has been complete.
- The key criteria for successful rehabilitation have been achieved and key targets have been met.
- Water quality monitoring demonstrates that water quality of discharge is stabilising or improving, and
- The site has been environmentally stabilised.

2.3.5 Timeframe

- 2022-2023: Short term planning actions.
- 2023-2024: Short- term practical actions
- 2024-2025: Long term practical actions. Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.
- 2025: Decommission silt-ponds, if necessary.
- In general, rehabilitation activities will be carried out between the months of April and October inclusive. The decommissioning stage may overlap rehabilitation activities.
- The duration of activities provided are approximate and may be slightly shorter or longer, depending on weather conditions and progress on rehabilitation prescriptions. Activities may cease for the winter months due to rainfall and poor ground conditions.
- In any case, the rehabilitation period will not be longer than 1 year.

- Normal working times will be daylight hours between 08.00 and 17.30hrs Monday to Friday.

See **Table 7.1** in the Granaghan Bog Decommissioning and Rehabilitation Plan 2023 in **Appendix 1** of this AASR for full details on success criteria, targets, measuring success criteria and expected time frame.

2.4

Description of the Baseline Ecological Environment

Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM, 2018, updated 2022).

Bord na Móna carried out a baseline ecological survey of all of its properties in 2009 – 2012 and developed habitat maps of the sites. Granaghan Bog was surveyed between 2012-2022. Updated walkover surveys of Granaghan Bog were conducted in November 2022 and July 2023 by BnM, to inform the preparation of this rehabilitation plan, and habitat maps have been updated where required.

Habitat mapping followed best-practise guidance from Smith et al. (2011). General marginal habitats and other habitats that had not been modified significantly by industrial peat extraction were classified using Fossitt et al. (2000). Plant nomenclature for vascular plants follows Stace (2019), while mosses and liverworts nomenclature follow identification keys published by the British Bryological Society (2010). A more detailed Bord na Móna classification system was previously developed for classifying pioneer cutaway habitats as Fossitt categories were deemed not to be detailed enough for cutaway bog (much of cutaway bog could be classified as Cutover Bog - PB4). Much of the pioneer cutaway vegetation is still at an early stage of its development and cannot be assigned to Fossitt Level 3 categories yet. A site visit was carried out in September 2022 by BnM to categorise any changes to habitat extent at Granaghan Bog.

A detailed ecological survey report by Bord na Móna for Granaghan Bog is contained in **Appendix II** of **Appendix 1**.

A walkover survey was conducted on the 14th of March 2023 by VK and RG of MKO to confirm the ecological baseline as identified by Bord na Móna in preceding surveys.

During the multidisciplinary walkover survey, an otter survey was conducted as per NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). This involved a search for all otter signs e.g., spraints, scat, prints, slides, trails, couches, and holts. In addition to the width of the rivers/watercourses, a 10 m riparian buffer (both banks) was considered to comprise part of the otter habitat (NPWS 2009). The dedicated otter surveys also followed the guidance as set out in NRA (2008) 'Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes' and following CIEEM best practice competencies for species surveys (CIEEM, 2013).

2.4.1

Habitats

Granaghan Bog was drained and developed for industrial peat production in the 1980s, with the peat harvested used to fuel peat in Lough Ree Power station in Lanesborough. Industrial peat extraction permanently ceased in 2020 at Granaghan Bog. The remaining peat deposits are deep across most of Granaghan Bog, ranging from 2-4m, with thicker deposits in the south-western area where peat is 5.5m. As such, Granaghan Bog is considered a deep peat cutover bog.

The southwest section of the bog site is predominantly **Cutover Bog habitat (PB4)** with dominant displays of pioneer species, including Purple Moor Grass (*Molinia caerulea*), Common Cottongrass (*Eriophorum angustifolium*), Soft Rush (*Juncus effusus*), and bare peat (**Plates 2.1- 2.2**). Near the marginal area of the southwest boundary, patches of **Raised Bog (PB1)** habitat exist with the presence of *Sphagnum spp.*, Gorse (*Ulex europaeus*), Ling Heather (*Calluna vulgaris*), Common Cottongrass (*Eriophorum angustifolium*), Bell Heather (*Erica cinerea*), Deergress (*Trichophorum germanicum*), and Reindeer Moss (*Cladonia rangiferina & Cladonia portentosa*) (**Plates 2.3-2.4**) A long and narrow **grassland habitat** dominant by Purple Moor Grass (*Molinia caerulea*), extends along the southwest

margin of the site, and other species including Common Cottongrass (*Eriophorum angustifolium*), Deergrass (*Trichophorum germanicum*), and Soft Rush (*Juncus effusus*) were also recorded. This area is bordered by **Scrub (WS1)/Emerging Woodland** habitat with species recorded including Downy Birch (*Betula pubescens*), Ivy (*Hedera Hibernica*), Gorse (*Ulex europaeus*), *Salix spp*, Bracken (*Pteridium aquilinum*), and Bramble (*Rubus fruticosus agg.*) (**Plate 2.5**) A **Drainage Ditch (FW4)** flowing in a northwest direction also borders the southwest boundary of the bog site. It is partially shaded by a Gorse (*Ulex europaeus*), Bracken (*Pteridium aquilinum*), and Bramble (*Rubus fruticosus agg.*) and a *Betula-Salix* canopy. In unshaded areas, submergent aquatic vegetation occurs (**Plate 2.6**).

The local access road and a drainage ditch run in a southwest – northeast direction adjacent to the east boundary of Granaghan Bog. A **Scrub (WS1)** border comprising mainly of Gorse (*Ulex europaeus*), Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*), and Downy Birch (*Betula pubescens*), extends along this east boundary (**Plate 2.7**) The adjacent bog site is **Cutover Bog Habitat (PB4)** with bare peat and pioneer Soft Rush (*Juncus effusus*). In the northeast vicinity of the bog site, is an area of open water in a low-lying depression (**Plates 2.8-2.9**), surrounded by Soft Rush (*Juncus effusus*) and Common Reed (*Phragmites australis*), which developed on cutover bog (PB4).

The east portion of north boundary of the bog site is bordered by a **Drainage Ditch (FW4)** and an unnamed local road which connects to the R371 northwest of the site. A **heath/scrub habitat (HH/WS1)** extends along the boundary between the road and the bog site consisting of Ling Heather (*Calluna vulgaris*) dominant habitat and Purple Moor Grass (*Molinia caerulea*), emergent Downy Birch (*Betula pubescens*), Gorse (*Ulex europaeus*) were also recorded (**Plate 2.10**). **Cutover bog habitat (PB4)** extends beyond this marginal heath habitat consisting mainly of bare peat and pioneer communities with Purple Moor Grass (*Molinia caerulea*), Common Cottongrass (*Eriophorum angustifolium*), Soft Rush (*Juncus effusus*), Ling Heather (*Calluna vulgaris*), *Salix spp* and Bracken (*Pteridium aquilinum*)

Located at the central-north boundary is a vegetated **Drainage Ditch (FW4)** and a silt pond with Gorse (*Ulex europaeus*), Purple Moor Grass (*Molinia caerulea*), Downy Birch (*Betula pubescens*), *Salix spp*, Soft Rush (*Juncus effusus*), Hazel (*Corylus avellana*, and Coltsfoot (*Tussilago farfara*) noted along the silt pond bank tops and surrounding area. Submergent and floating aquatic vegetation were noted in the silt pond (**Plates 2.11-2.12**).

The west portion of the north boundary area is predominantly **grassland habitat (GS)** near the margin, **bare peat (BP)** and **cutover bog (PB4)** in varying stages of recolonization were also recorded. A deep drainage channel runs along this boundary with banks dominated by mature *Salix sp.*, Downy birch (*Betula pubescens*), and Gorse (*Ulex europaeus*). A conifer tree stand also occurs along this treeline. The northwest area of the bog is an area of low depression and open water with cutover bog (PB4) in varying stages of recolonization by emergent pioneer species including *Juncus sp.*, *Molinia spp.*, and *Typha latifolia*.

The Curraghroe Stream (which is highly modified and has been canalised), a tributary of the Feorish River, flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site is classified as a Depositing/ lowland **river (FW2)** (**Plate 2.13**)



Plate 2-1 **Cutover bog (PB4)** dominated by bare peat to the southwest section of the bog. Pioneer species recorded include soft rush (*Juncus effusus*), purple moor grass (*Molinia caerulea*) and Common Cottongrass (*Eriophorum angustifolium*).



Plate 2-2 **Cutover bog (PB4)** dominated by bare peat to the southwest section of the bog. Pioneer species recorded include soft rush (*Juncus effusus*), purple moor grass (*Molinia caerulea*) and Common Cottongrass (*Eriophorum angustifolium*).



Plate 2-3 An area of **Raised Bog (PBI)** in poor condition present to the southwest margin of the site. Species recorded include *Sphagnum* spp., Ling Heather (*Calluna vulgaris*), Common Cottongrass (*Eriophorum angustifolium*), Bell Heather (*Erica cinerea*), Deergass (*Trichophorum germanicum*), Reindeer Moss (*Cladonia rangiferina* & *Cladonia portentosa*), Gorse (*Ulex europaeus*)



Plate 2-4 An area of **Raised Bog (PBI)** in poor condition present to the southwest margin of the site. Species recorded include *Sphagnum* spp., Ling Heather (*Calluna vulgaris*), Common Cottongrass (*Eriophorum angustifolium*), Bell Heather (*Erica cinerea*), Deergass (*Trichophorum germanicum*), Reindeer Moss (*Cladonia rangiferina* & *Cladonia portentosa*).



Plate 2-5 A long and narrow grassland habitat dominant by Purple Moor Grass (*Molinia caerulea*) present to the southwest margin of the site with other species recorded include Common Cottongrass (*Eriophorum angustifolium*), Deergrass (*Trichophorum germanicum*), and Soft Rush (*Juncus effusus*). This area is bordered by Scrub (WS1)/Bog Woodland (WN7) habitat with species recorded including Downy Birch (*Betula pubescens*), Ivy (*Hedera Hibernica*), Gorse (*Ulex europaeus*), *Salix* spp, Bracken (*Pteridium aquilinum*), and Bramble (*Rubus fruticosus* agg.)



Plate 2-6 A **Drainage Ditch (FW4)** flowing in a northwest direction borders the southwest boundary of the bog site. It is partially shaded by a Gorse (*Ulex europaeus*), Bracken (*Pteridium aquilinum*), and Bramble (*Rubus fruticosus* agg.) and a *Betula-Salix* canopy.



Plate 2-7 **Scrub (WSI)** dominated by Gorse (*Ulex europaeus*) present to the eastern border of the site, along the roadway. Other species recorded include (*Crataegus monogyna*), Holly (*Ilex aquifolium*), and Downy Birch (*Betula pubescens*).

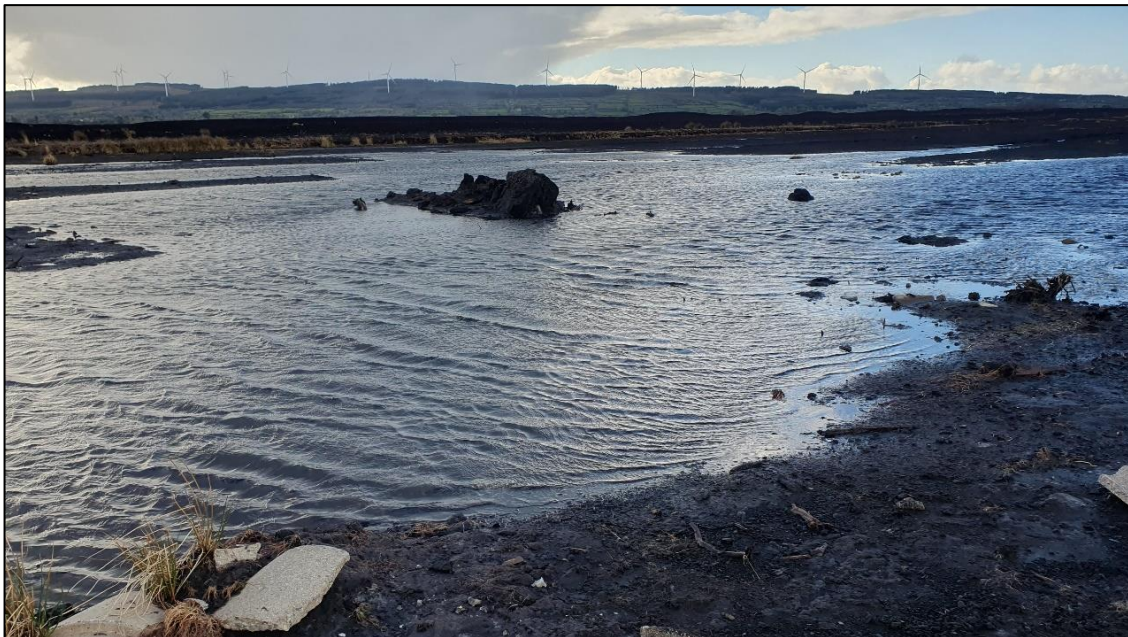


Plate 2-8 An area of open water in a low-lying depression, surrounded by Soft Rush (*Juncus effusus*) and Common Reed (*Phragmites australis*) is present to the northeast of the bog site which developed on cutover bare peat.



Plate 2-9 An area of open water in a low-lying depression, surrounded by Soft Rush (*Juncus effusus*) and Common Reed (*Phragmites australis*) is present to the northeast of the bog site which developed on cutover bare peat.



Plate 2-10 A **heath/scrub habitat (HH/WS1)** extends along the boundary between the road and the bog site consisting of Ling Heather (*Calluna vulgaris*) dominant habitat and Purple Moor Grass (*Molinia caerulea*), emergent Downy Birch (*Betula pubescens*), Gorse (*Ulex europaeus*)



Plate 2-11 Silt pond located to the central-north boundary with Gorse (*Ulex europaeus*), Purple Moor Grass (*Molinia caerulea*), Downy Birch (*Betula pubescens*), *Salix* spp, Soft Rush (*Juncus effusus*), Hazel (*Corylus avellana*, and Coltsfoot (*Tussilago farfara*) noted along the silt pond bank tops and surrounding area. Submergent and floating aquatic vegetation were noted in the silt pond.



Plate 2-12 Located at the central-north boundary is a vegetated Drainage Ditch (FW4) with Gorse (*Ulex europaeus*), Purple Moor Grass (*Molinia caerulea*), Downy Birch (*Betula pubescens*), *Salix* spp, Soft Rush (*Juncus effusus*), Hazel (*Corylus avellana*, and Coltsfoot (*Tussilago farfara*).



Plate 2-13 Downstream view of the Curraroe Stream that runs to the southeast of the site classified as a ***Depositing/lowland river*** (FW2)

2.4.2 Fauna

Several bird species were recorded on Granaghan Bog during the BnM surveys carried out from 2012-2023 including Mallard (*Anas platyrhynchos*), Snipe (*Gallinago gallinago*), Hooded Crow (*Corvus cornix*), Swallow (*Hirundo rustica*), Blackbird (*Turdus merula*), Robin (*Erithacus rubecula*), Song Thrush (*Turdus philomelos*), Magpie (*Pica pica*). On the most recent visit to Granaghan in September of 2022, other species of bird recorded utilising or associating with habitats onsite include Meadow pipit (*Anthus pratensis*), Pied Wagtail (*Motacilla alba*), Common Kestrel (*Falco tinnunculus*), and Wintering Teal (*Anas crecca*).

Numerous mammal signs were recorded on site by BnM including signs of Badger (*Meles meles*), Fox (*Vulpes vulpes*), and Hare (*Lepus timidus subsp. Hibernicus*). Further, there are records of Otter (*Lutra lutra*) using the Curraroe Stream to the south of the bog. An Otter spraint was located next to the stream and bankside vegetation consisted of a mix of scrub and wet grassland, by BnM on the 22nd of August 2022. One butterfly species, the Peacock Butterfly (*Aglais io*) was recorded on site by BnM.

Mammal signs (tracks) possibly of a Fox were also recorded during the ecological walkover survey carried out on the 14 of March 2023 by Valerie Kendall (B.Sc(H), M.EnvSc) and Rudraksh Gupta (BSc., MSc) of MKO. Following the dedicated Otter survey, no signs of otters were recorded on the site by MKO.

See **Appendix III** in the Granaghan Bog Decommissioning and Rehabilitation Plan 2023 in **Appendix 1** of this AASR for the full Ecological Survey Report by BnM

2.4.3 Drainage and Connection to European Sites

Granaghan Bog is located within the Upper Shannon Catchment, and Shannon [Upper] Sub Catchment. The site is located within the Curraghroe Ground Waterbody. The majority of Granaghan Bog is located in an area of low groundwater vulnerability, as per EPA Maps. The site formerly had a pumped drainage regime. A single automatic pump drains the bog, discharging water into a network on silt ponds on the southeastern side of the bog. Silt ponds will continue to be maintained during the rehabilitation and decommissioning. Silt pond decommissioning will be considered when sites are deemed to be on a trajectory of environmental stability and peatland rehabilitation has been completed.

The bog contains several drainage pathways and discharge locations. The northern sub-catchment of the bog discharges to a boundary drain to the north which flows east and discharges to the northeast of the bog to the tributary stream of the Curraghroe (Stream). The southern sub-catchments of Granaghan Bog discharge via adjacent drains to the south of the Curraghroe Stream 010 which flows to the Feorish (Tarmonbarry) east of the bog. The Feorish (Tarmonbarry) flows east to the River Shannon. Granaghan bog has four treated surface water outlets from previously active peat extraction catchments, which discharge to the Curraghroe Stream (IE_SH_26C150180 Curraghroe Stream_010) and the Feorish River (IE_SH_26F030400 Feorish (Tarmonbarry)_020).

The Curraghroe Stream (which is highly modified and has been canalised), a tributary of the Feorish River, flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction into Lough Ree SAC and Lough Ree SPA, after approx 14.6km. The Shannon (Upper) River flows through Lough Ree SAC/ SPA in a southerly direction into the Middle Shannon Callows SPA and River Shannon Callows SAC after approx 46km. The Shannon (Upper) River then intersects with the Shannon (Lower) River, which flows in a southerly direction into Lough Derg, North-east Shore SAC, and Lough Derg (Shannon) SPA after approx 97km. Finally, the Shannon River (Lower) flows in a southerly direction into the River Shannon



and River Fergus Estuaries SPA and Lower River Shannon SAC after approx 130km, before discharging into the open sea.

2.4.4 Consequences of Proposed Rehabilitation for Current Habitats

It is not expected that the site has the potential to develop active raised bog analogous to the priority EU Habitats Directive Annex 1 habitat within the foreseeable future (ca. 50 years), and only a small proportion of the bog has potential to develop Sphagnum-rich habitats in this timeframe. Nevertheless, re-wetting across the entire bog, as part of the PCAS, will improve habitat conditions of the whole bog, making the overall bog wetter and other peatland habitats (e.g., fen, reed swamp, wet woodland, heath) will develop in a wider mosaic that reflects underlying conditions.

Habitats currently evaluated as not requiring rehabilitation (i.e., marginal land, railway line) will remain in line with existing baseline trends for these habitats.

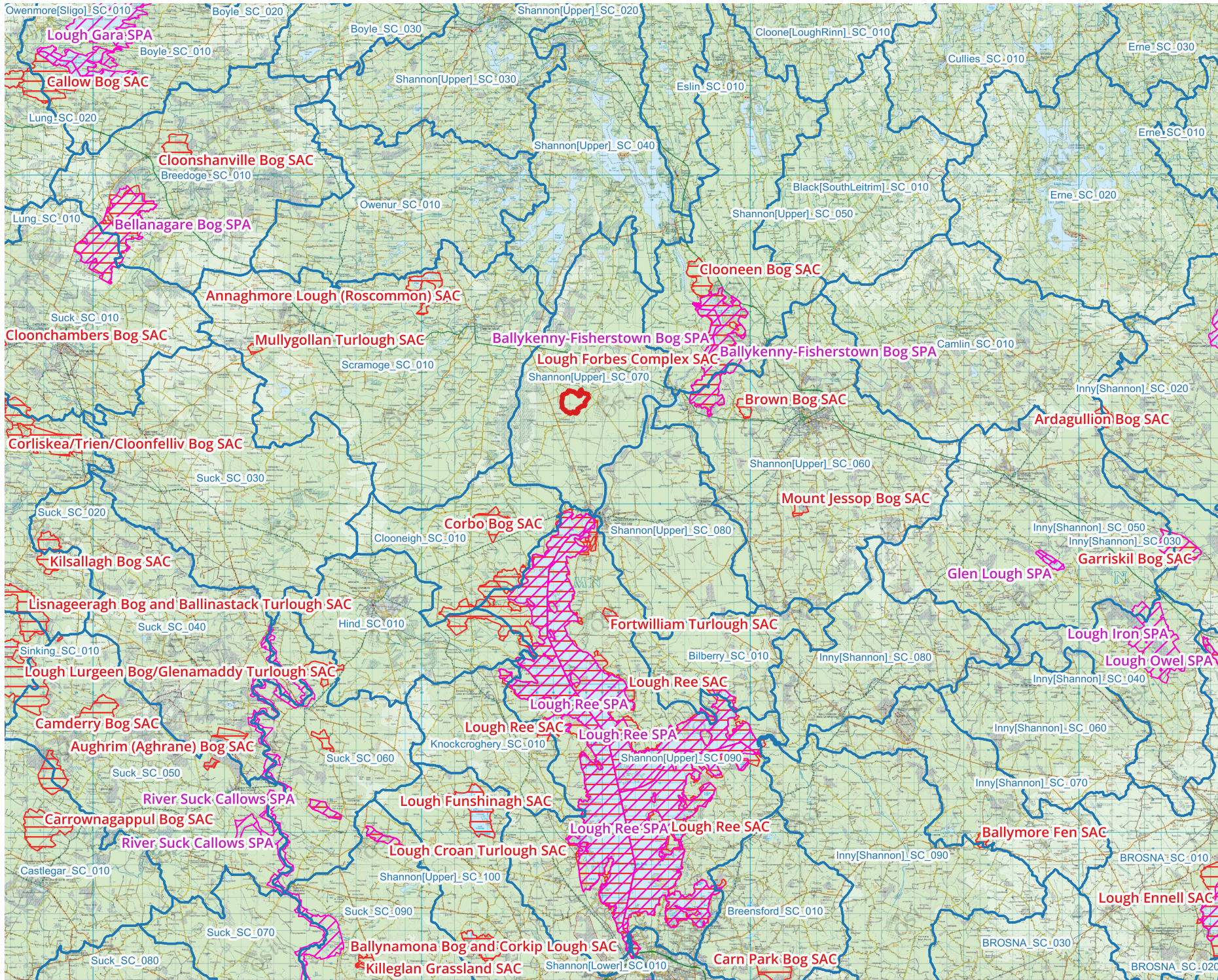
3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Identification of the European Sites within the Likely Zone of Impact





The following methodology was used to establish any European Sites upon which there is a potential for a likely significant effect to occur either individually or in combination with other plans and projects as a result of the proposed Decommissioning and Rehabilitation:


- Initially, the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on 12/02/2024.
- All European Sites that could potentially be affected were identified using a source-pathway - receptor model. To provide context for the assessment, European Sites surrounding the Decommissioning and Rehabilitation site are shown on **Figure 3.1**. Information for these sites according to the site-specific conservation objectives, as per the NPWS website (www.npws.ie), is provided in **Table 3-1**. Catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed Decommissioning and Rehabilitation plan and any European Sites. The hydrological catchments are also shown in **Figure 3.1**
- European Sites further away from the proposed Decommissioning and Rehabilitation site were also considered. In this case, connectivity with European Sites further downstream in the catchment were identified. These include River Shannon Callows SAC (approx. 46 km downstream); Middle Shannon Callow SPA (approx. 46 km downstream); Lough Derg North-East Shore SAC (approx. 97 km downstream); Lough Derg (Shannon) SPA (approx. 97 km downstream); Lower River Shannon SAC (approx. 130 km downstream); River Shannon and River Fergus Estuaries SPA (approx. 160 downstream). However, given the nature, scale and location of the proposed Decommissioning and Rehabilitation site and the attenuating properties of the intervening waterbodies, no potential pathway for significant effects was identified.
- With respect to Special Protection Areas (SPA) and in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, '*Assessing Connectivity with Special Protection Areas (SPA)*' (2016) was consulted. This document provides guidance in relation to the identification of connectivity between a proposed Decommissioning and Rehabilitation plan and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- **Table 3-1** provides details of all relevant European Sites as identified in the preceding steps and assesses the potential for likely significant effects on each.
- The assessment considers any likely direct or indirect impacts of the proposed Decommissioning and Rehabilitation plan, both alone and in combination with other plans and projects, on European Sites by virtue of criteria including the following: size and scale; land-take; distance from the European Site or key features of the site; resource requirements; emissions; excavation requirements; transportation requirements and duration of construction; operation and decommissioning.

- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report 12/02/2024.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Impact and considered in this screening assessment.
- The potential for the proposed Decommissioning and Rehabilitation plan to result in cumulative impacts on any European Sites in combination with other plans and projects was considered in this assessment and is presented in **Section 3.2** below.



Map Legend

-  Site Layout
-  Special Area of Conservation (SAC)
-  Special Protection Area (SPA)
-  EPA Hydrological Subcatchments



North

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|---|---------------------------|
| Drawing Title | |
| European Designated Sites Within the Likely Zone of Influence | |
| Project Title | |
| Granaghan Bog | |
| Drawn By | Checked By |
| RM | CM |
| Project No. 230210 | Drawing No. Figure 3.1 |
| Scale 1:301,072 | Date 17/01/2024 |



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Table 3.3-1 Identification of Designated sites within the Likely Zone of Impact

| European Sites and distance from proposed Decommissioning and Rehabilitation | Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 12/02/2024 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|---|---|--|--|
| Special Areas of Conservation (SAC) | | | |
| <p>Lough Ree SAC [000440]</p> <p>Distance: 5.8 km</p> <p>Surface Water Distance: 14.6km</p> | <ul style="list-style-type: none"> • [1355] Otter (<i>Lutra lutra</i>) • [3150] Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites) • [7120] Degraded raised bogs still capable of natural regeneration. • [7230] Alkaline fens • [8240] Limestone pavements • [91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles • [91D0] Bog woodland | <p>Detailed conservation objectives for this site, (Version 1, August 2016), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>There is no complete source-impact-pathway for the following QI habitats due to their terrestrial nature and the 5.8km buffering distance from the proposed Decommissioning and Rehabilitation site to this SAC:</p> <ul style="list-style-type: none"> • [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco- Brometalia</i>) (*important orchid sites) • [7120] Degraded raised bogs still capable of natural regeneration. • [8240] Limestone pavement • [91A0] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles • [91D0] Bog woodland <p>As such there is no potential for indirect effects on these terrestrial QI habitats.</p> <p>Granaghan Bog and Lough Ree SAC are hydrologically connected via the the Curraghroe Stream, a tributary of the Feorish River, which flows through the south and</p> |

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| | | | <p>southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction into Lough Ree SAC after approx 14.6km. As such, following the precautionary principle, a potential pathway for effect on the following aquatic QI habitats and species was identified:</p> <ul style="list-style-type: none"> • [1355] Otter (<i>Lutra lutra</i>) • [3150] Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation • [7230] Alkaline fens <p>However, the objective of the proposed Decommissioning and Rehabilitation plan is to stabilise the bog. The proposed Decommissioning and Rehabilitation plan is specifically designed to reverse the drainage of the bog and to minimise the run-off of waters from it. The proposed Decommissioning and Rehabilitation will not result in any loss of habitats, are short term and will not be occurring over the entire bog at any one time, leaving much of the bog completely undisturbed. Further, due to the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, there is no potential for indirect effects in the form of deterioration of water quality on Lough Ree SAC. There is no potential for the proposed Decommissioning & Rehabilitation to result in significant effects on downstream watercourses and ecological receptors as the Decommissioning & Rehabilitation primarily involves the blocking of drainage pathways from the bog.</p> <p>As such, in the absence of any mitigation, there is no potential for any significant effect on these QI receptors as a</p> |
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| | | | <p>result of water pollution or change to the hydrological regime within the SAC.</p> <p>The potential for disturbance to Otter (<i>Lutra lutra</i>), where it occurs outside the SAC, was also assessed.</p> <p>There are records of Otter (<i>Lutra lutra</i>) using the Curraroe Stream to the south of the bog. An Otter spraint was located next to the stream and bankside vegetation consisting of a mix of scrub and wet grassland, by BnM during the ecological surveys carried out from 2012-2023. Silt ponds were checked for otter breeding potential during the ecological survey conducted by MKO on the 14th of March 2023. However, no otter signs/habitats were recorded. The Decommissioning and Rehabilitation will not result in any loss of potential otter habitat (foraging and breeding) as it is short term and will not be occurring over the entire bog at any one time, leaving much of the bog undisturbed. Hence there is no potential for Decommissioning and Rehabilitation, in the absence of any mitigation, to result in significant upstream ex-situ disturbance to this QI species.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Lough Forbes Complex SAC [001818]</p> <p>Distance: 6.1 km</p> | <ul style="list-style-type: none"> [3150] Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i>-type vegetation [7110] Active raised bogs [7120] Degraded raised bogs still capable of natural regeneration. | <p>Detailed conservation objectives for this site, (Version 1, May 2016), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the designated site.</p> <p>Due to the absence of a hydrological connection, and the buffering distance of approx 6.1km from the proposed Decommissioning and Rehabilitation site boundary to this SAC, no complete source-pathway was identified for these QI</p> |

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| | <ul style="list-style-type: none"> [7150] Depressions on peat substrates of the <i>Rhynchosporion</i> [91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) | | <p>habitats. As such, there is no potential for indirect effects to occur.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Corbo Bog SAC [002349]</p> <p>Distance: 7.2 km</p> | <ul style="list-style-type: none"> [7110] Active raised bogs [7120] Degraded raised bogs still capable of natural regeneration. [7150] Depressions on peat substrates of the <i>Rhynchosporion</i> | <p>Detailed conservation objectives for this site, (Version 1, November 2015), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the designated site.</p> <p>Due to the terrestrial nature of the QI habitats and the buffering distance of approx 7.2km from the proposed Decommissioning and Rehabilitation site boundary to this SAC, no complete source-impact- pathway was identified. As such, there is no potential for indirect effects to occur.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Clooneen Bog SAC [002348]</p> <p>Distance: 8.9 km</p> | <ul style="list-style-type: none"> [7120] Degraded raised bogs still capable of natural regeneration. [7150] Depressions on peat substrates of the <i>Rhynchosporion</i> [91D0] Bog woodland | <p>Detailed conservation objectives for this site, (Version 1, August 2016), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the designated site.</p> <p>Due to the terrestrial nature of the QI habitats and the buffering distance of approx 8.9km from the proposed Decommissioning and Rehabilitation site boundary to this SAC, no complete source-impact- pathway was identified. As such, there is no potential for indirect effects to occur.</p> |

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| | | | <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Brown Bog SAC [002346]</p> <p>Distance: 8.9 km</p> | <ul style="list-style-type: none"> • [7110] Active raised bogs • [7120] Degraded raised bogs still capable of natural regeneration. • [7150] Depressions on peat substrates of the <i>Rhynchosporion</i> | <p>Detailed conservation objectives for this site, (Version 1, February 2016), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effect on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the designated site.</p> <p>Due to the terrestrial nature of the QI habitats and the buffering distance of approx 8.9km from the proposed Decommissioning and Rehabilitation site boundary to this SAC, no complete source-impact- pathway was identified. As such, there is no potential for indirect effects to occur.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Annaghmore Lough (Roscommon) SAC [001626]</p> <p>Distance: 9.0 km</p> | <ul style="list-style-type: none"> • [7230] Alkaline fens • [1013] <i>Vertigo geyeri</i> (Geyer's Whorl Snail) | <p>Detailed conservation objectives for this site, (Version 1, January 2019), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the designated site.</p> <p>Due to the absence of a hydrological connection, and the buffering distance of approx 9 km from the proposed Decommissioning and Rehabilitation site boundary to this SAC, no complete source-pathway was identified for these QI habitat and species. As such, there is no potential for indirect effects to occur.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation,</p> |

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| <p>Fortwilliam Turlough SAC [000448]</p> <p>Distance: 11.9 km</p> | <ul style="list-style-type: none"> [3180] Turloughs | <p>Detailed conservation objectives for this site, (Version 1, February 2018), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the designated site.</p> <p>Due to the absence of a hydrological connection and the buffering distance of approx 11.9km from the proposed Decommissioning and Rehabilitation site boundary to this SAC, no complete source-impact- pathway was identified for the QI habitat. As such, there is no potential for indirect effects to occur.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Mount Jessop Bog SAC [002202]</p> <p>Distance: 14.0 km</p> | <ul style="list-style-type: none"> [7120] Degraded raised bogs still capable of natural regeneration. [91D0] Bog woodland | <p>Detailed conservation objectives for this site, (Version 1, June 2023), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the designated site.</p> <p>Due to the terrestrial nature of the QI habitats and the buffering distance of approx 14km from the proposed Decommissioning and Rehabilitation site boundary to this SAC, no complete source-impact- pathway was identified. As such, there is no potential for indirect effects to occur.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |

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| <p>River Shannon Callows SAC [000216]</p> <p>Distance: 35km</p> <p>Surface Water Distance: 46km</p> | <ul style="list-style-type: none"> • [1355] Otter (<i>Lutra lutra</i>) • [6410] Molinia meadows on calcareous, peaty, or clayey-silt-laden soils (<i>Molinion caeruleae</i>) • [6510] Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) • [7230] Alkaline fens • [8240] Limestone pavements* • [91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) | <p>Detailed conservation objectives for this site, (Version 1, January 2022), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>Granaghan Bog and the River Shannon Callows SAC are hydrologically connected via the Curraghroe Stream a tributary of the Feorish River, which flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction into Lough Ree SAC. The Shannon (Upper) River then flows through Lough Ree SAC in a southerly direction into the River Shannon Callows SAC, after approx 46km.</p> <p>Although there is potential hydrological connectivity to the River Shannon Callows SAC via the River Shannon [Upper], the SAC is located approx. 46km downstream. Therefore, due to the distance of greater than 46km, and the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, there is no potential for indirect effects in the form of deterioration of water quality on the River Shannon Callows SAC, as the Decommissioning & Rehabilitation primarily involves the blocking of drainage pathways from the bog.</p> <p>No pathway for significant effect on this European Designated Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment</p> |
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| <p>Lough Derg, North-East Shore SAC [002241]</p> <p>Distance 73km</p> <p>Surface Water Distance: 97km</p> | <ul style="list-style-type: none"> • [5130] <i>Juniperus communis</i> formations on heaths or calcareous grasslands • [7210] Calcareous fens with <i>Cladium mariscus</i> and species of the Caricion davallianae* • [7230] Alkaline fens • [8240] Limestone pavements • [91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) • [91J0] <i>Taxus baccata</i> woods of the British Isles | <p>Detailed conservation objectives for this site, (Version 1, April 2019), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>Granaghan Bog and Lough Derg, Northeast Shore SAC are hydrologically connected via the Curraghroe Stream, a tributary of the Feorish River, that flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction into Lough Ree SAC. The Shannon (Upper) River then flows through Lough Ree SAC in a southerly direction into the River Shannon Callows SAC. The Shannon (Upper) River then intersects with the Shannon (Lower) River, which flows in a southerly direction into Lough Derg, North-east Shore SAC, after approx 97km.</p> <p>Although there is potential hydrological connectivity to Lough Dergm Northeast Shore SAC via the River Shannon [Upper and Lower], the SAC is located approx. 97km downstream. Therefore, due to the distance of greater than 97km, and the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, there is no potential for indirect effects in the form of deterioration of water quality on Lough Derg, Northeast Shore SAC, as the Decommissioning & Rehabilitation primarily involves the blocking of drainage pathways from the bog.</p> <p>No pathway for significant effect on this European Designated Site was identified, when considered in the absence of any mitigation, individually or cumulatively with</p> |
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| <p>Lower River Shannon SAC [002165]</p> <p>Distance: 125km</p> <p>Surface Water</p> <p>Distance: 130km</p> | <ul style="list-style-type: none"> • [1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) • [1095] Sea Lamprey (<i>Petromyzon marinus</i>) • [1096] Brook Lamprey (<i>Lampetra planeri</i>) • [1099] River Lamprey (<i>Lampetra fluviatilis</i>) • [1106] Atlantic Salmon (<i>Salmo salar</i>) (only in fresh water) • [1110] Sandbanks which are slightly covered by sea water all the time. • [1130] Estuaries • [1140] Mudflats and sandflats not covered by seawater at low tide. • [1150] *Coastal lagoons • [1160] Large shallow inlets and bays • [1170] Reefs • [1220] Perennial vegetation of stony banks • [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts • [1310] Salicornia and other annuals colonizing mud and sand. • [1330] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) | <p>Detailed conservation objectives for this site, (Version 1, August 2012), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SAC as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>Granaghan Bog and the Lower River Shannon SAC are hydrologically connected via the Curraghroe Stream, a tributary of the Feorish River, that flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction into Lough Ree SAC. The Shannon (Upper) River then flows through Lough Ree SAC in a southerly direction into the River Shannon Callows SAC. The Shannon (Upper) River then intersects with the Shannon (Lower) River, which flows in a southerly direction into Lough Derg, North-east Shore SAC. Finally, the Shannon (Lower) River flows in a southerly direction into the Lower River Shannon SAC after approx 130km, before discharging into the open sea.</p> <p>Although there is potential hydrological connectivity to the Lower River Shannon SAC via the River Shannon [Upper and Lower], the SAC is located approx. 130km downstream. Therefore, due to the distance of greater than 130km, and the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, there is no potential for indirect effects in the form of deterioration of water quality on the Lower River Shannon SAC, as the Decommissioning & Rehabilitation primarily involves the blocking of drainage pathways from the bog.</p> |

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| | <ul style="list-style-type: none"> • [1349] Bottlenose Dolphin (<i>Tursiops truncatus</i>) • [1355] Otter (<i>Lutra lutra</i>) • [1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) • [3260] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation • [6410] Molinia meadows on calcareous, peaty, or clayey-silt-laden soils (<i>Molinion caeruleae</i>) • [91E0] *Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) | | <p>No pathway for significant effect on this European Designated Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment</p> |
| Special Protection Area (SPA) | | | |
| <p>Lough Ree SPA [004064]</p> <p>Distance: 6.0 km</p> <p>Surface Water Distance: 14.6km</p> | <ul style="list-style-type: none"> • [A004] Little Grebe (<i>Tachybaptus ruficollis</i>) • [A038] Whooper Swan (<i>Cygnus cygnus</i>) • [A050] Wigeon (<i>Anas penelope</i>) • [A052] Teal (<i>Anas crecca</i>) • [A053] Mallard (<i>Anas platyrhynchos</i>) • [A056] Shoveler (<i>Anas clypeata</i>) • [A061] Tufted Duck (<i>Aythya fuligula</i>) • [A065] Common Scoter (<i>Melanitta nigra</i>) • [A067] Goldeneye (<i>Bucephala clangula</i>) • [A125] Coot (<i>Fulica atra</i>) | <p>This site has the generic conservation objective:</p> <p><i>‘To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA’.</i></p> <p>And</p> <p><i>‘To maintain or restore the favourable conservation condition of the wetland habitat at Lough Ree SPA as a resource for the regularly occurring migratory waterbirds that utilise it’.</i></p> | <p>There will be no direct effects on this SPA as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>Granaghan Bog and Lough Ree SPA are hydrologically connected via the Curraghroe Stream, a tributary of the Feorish River, which flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction into Lough Ree SPA, after approx 14.6km.</p> <p>As such, following the precautionary principle, a potential pathway for effect on the listed SCI species and their habitats</p> |

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| | <ul style="list-style-type: none"> • [A140] Golden Plover (<i>Pluvialis apricaria</i>) • [A142] Lapwing (<i>Vanellus vanellus</i>) • [A193] Common Tern (<i>Sterna hirundo</i>) • [A999] Wetlands and Waterbirds | <p><i>NPWS (2022) Conservation objectives for Lough Ree SPA [004064]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</i></p> | <p>was identified in the form of deterioration of water and habitat quality, in the absence of mitigation.</p> <p>However, the objective of the proposed Decommissioning and Rehabilitation plan is to stabilise the bog. The proposed Decommissioning and Rehabilitation plan is specifically designed to reverse the drainage of the bog and to minimise the run-off of waters from it. The proposed Decommissioning and Rehabilitation will not result in any loss of habitats, are short term and will not be occurring over the entire bog at any one time, leaving much of the bog completely undisturbed. Further, due to the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, there is no potential for indirect effects in the form of deterioration of water quality on Lough Ree SPA. There is no potential for the proposed Decommissioning & Rehabilitation to result in significant effects on downstream watercourses and ecological receptors as the R & D primarily involves the blocking of drainage pathways from the bog.</p> <p>As such, in the absence of any mitigation, there is no potential for any significant effect on the SCI Species as a result of water pollution or change to the hydrological regime within the SPA.</p> <p>The potential for disturbance to the SCI species, where they occur outside the SPA was also assessed.</p> <p>The vast majority of Granaghan Bog comprised cutover bog dominated by bare peat. However, the silt ponds located on the site, and small areas of poor fen have the potential to provide wetland habitat for wintering or passage wildfowl species, which are likely to occur where there is deep enough water on areas of the bog. This may be limited and dependent upon pumping regimes, rainfall, flood levels in</p> |
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| | | | <p>adjacent watercourse or floodplains. As such, there is potential habitat available for the following listed SCI species.</p> <ul style="list-style-type: none"> • Teal (<i>Anas crecca</i>) [A052] • Mallard (<i>Anas platyrhynchos</i>) [A053] • Wigeon (<i>Anas penelope</i>) [A050] • Wetland and Waterbirds [A999]. • Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] • Shoveler (<i>Anas clypeata</i>) [A056] • Tufted Duck (<i>Aythya fuligula</i>) [A061] • Common Scoter (<i>Melanitta nigra</i>) [A065] • Goldeneye (<i>Bucephala clangula</i>) [A067] • Coot (<i>Fulica atra</i>) [A125] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Lapwing (<i>Vanellus vanellus</i>) [A142] • Common Tern (<i>Sterna hirundo</i>) [A193] <p>Further, the following species have been recorded at Granaghan Bog during Bord na Móna and MKO surveys:</p> <ul style="list-style-type: none"> • [A038] Whooper Swan (<i>Cygnus cygnus</i>) • [A053] Mallard (<i>Anas platyrhyncho</i>) • [A052] Teal (<i>Anas crecca</i>) <p>Furthermore, the Decommissioning and Rehabilitation plan will not result in any loss of habitat. The plan is predominantly short term and will not be covering the entire bog at any one time, leaving much of the bog completely undisturbed as activities progress. Hence, there is no potential for the Decommissioning and Rehabilitation plan, in the absence of any mitigation, to result in significant disturbance to these SCI species.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and</p> |
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| <p>Ballykenny-Fisherstown Bog SPA [004101]</p> <p>Distance 6.1 km</p> | <ul style="list-style-type: none"> [A395] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) | <p>This site has the generic conservation objective:</p> <p><i>‘To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.’</i></p> <p><i>NPWS (2022) Conservation objectives for Ballykenny-Fisherstown Bog SPA [004101]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</i></p> | <p>the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> <p>There will be no direct effects on this SPA as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>The proposed Decommissioning and Rehabilitation site footprint is located approx 6.1km from this SPA, which is within the core foraging range of 5 – 8 km for the Greenland White-Fronted Goose (<i>Anser albifrons flavirostris</i>) (SNH 2016).</p> <p>However, the vast majority of Granaghan Bog comprised cutover bog dominated by bare peat, with a small area of agricultural pasture present within the BnM boundary to the east of the site. However, this habitat is common and widespread in the wider landscape.</p> <p>Further, the Decommissioning and Rehabilitation will not result in any loss of potential Greenland White Fronted Goose habitat (foraging) as it is short term and will not be occurring over the entire bog at any one time, leaving much of the bog undisturbed. Hence there is no potential for Decommissioning and Rehabilitation, in the absence of any mitigation, to result in significant ex-situ disturbance to this SCI species.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
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| <p>Middle Shannon Callows SPA [004096]</p> <p>Distance: 35km</p> <p>Surface Water Distance: 46km</p> | <ul style="list-style-type: none"> • [A038] Whooper Swan (<i>Cygnus cygnus</i>) • [A050] Wigeon (<i>Anas Penelope</i>) • [A122] Corncrake (<i>Crex crex</i>) • [A140] Golden Plover (<i>Pluvialis apricaria</i>) • [A142] Lapwing (<i>Vanellus vanellus</i>) • [A156] Black-tailed Godwit (<i>Limosa limosa</i>) • [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) • [A999] Wetlands and Waterbirds | <p>Detailed conservation objectives for this site, (Version 1, November 2022), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SPA as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>Granaghan Bog and the Middle Shannon Callows SPA are hydrologically connected via the Curraghroe Stream a tributary of the Feorish River, which flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction through Lough Ree SPA. The Shannon (Upper) River then flows in a southerly direction into the Middle Shannon Callows SPA, after approx 46km.</p> <p>Although there is potential hydrological connectivity to the Middle Shannon Callows SPA via the River Shannon [Upper], the SPA is located approximately 46km downstream. Therefore, due to the distance of greater than 46km, and the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, in the absence of any mitigation, there is no potential for any significant effect on these SCI species as a result of water pollution or change to the hydrological regime within the SPA.</p> <p>Further, due to the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, the buffering distance of approx 35km, there is no potential for ex situ disturbance or displacement related impacts on the SCI species as a result of the proposed Decommissioning and Rehabilitation at Granaghan Bog on the Middle Shannon Callows SPA.</p> |
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| | | | <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Lough Derg (Shannon) SPA [004058]</p> <p>Distance 73km</p> <p>Surface Water Distance: 97km</p> | <ul style="list-style-type: none"> [A017] Cormorant (<i>Phalacrocorax carbo</i>) [A061] Tufted Duck (<i>Aythya fuligula</i>) [A067] Goldeneye (<i>Bucephala clangula</i>) [A193] Common Tern (<i>Sterna hirundo</i>) [A999] Wetlands and Waterbirds | <p>This site has the generic conservation objective:</p> <p><i>‘To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.’</i></p> <p>And</p> <p><i>‘To maintain or restore the favourable conservation condition of the wetland habitat at Lough Derg (Shannon) SPA as a resource for the regularly occurring migratory waterbirds that utilise it.’</i></p> <p><i>NPWS (2022) Conservation objectives for Lough Derg (Shannon) SPA [004058]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</i></p> | <p>There will be no direct effects on this SPA as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>Granaghan Bog and Lough Derg (Shannon) SPA are hydrologically connected via the Curraghroe Stream a tributary of the Feorish River, which flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction through Lough Ree SPA. The Shannon (Upper) River then flows in a southerly direction into the Middle Shannon Callows SPA. The Shannon (Upper) River then intersects with the Shannon (Lower) River, which flows in a southerly direction into Lough Derg (Shannon) SPA, after approx 97km.</p> <p>Although there is potential hydrological connectivity to the Middle Shannon Callows SPA via the River Shannon [Upper and Lower], the SPA is located approximately 97km downstream. Therefore, due to the distance of greater than 97km, and the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, in the absence of any mitigation, there is no potential for any significant effect on these SCI species as a result of water</p> |

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| | | | <p>pollution or change to the hydrological regime within the SPA.</p> <p>Further, due to the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, the buffering distance of approx 73km, there is no potential for ex situ disturbance or displacement related impacts on the SCI species as a result of the proposed Decommissioning and Rehabilitation at Granaghan Bog on Lough Derg (Shannon) SPA.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>River Shannon and River Fergus Estuaries SPA [004077]</p> <p>Distance: 125km</p> <p>Surface Water Distance: 130km</p> | <ul style="list-style-type: none"> • [A017] Cormorant (<i>Phalacrocorax carbo</i>) • [A038] Whooper Swan (<i>Cygnus cygnus</i>) • [A046] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) • [A048] Shelduck (<i>Tadorna tadorna</i>) • [A050] Wigeon (<i>Anas Penelope</i>) • [A052] Teal (<i>Anas crecca</i>) • [A054] Pintail (<i>Anas acuta</i>) • [A056] Shoveler (<i>Anas clypeata</i>) • [A062] Scaup (<i>Aythya marila</i>) • [A137] Ringed Plover (<i>Charadrius hiaticula</i>) • [A140] Golden Plover (<i>Pluvialis apricaria</i>) • [A141] Grey Plover (<i>Pluvialis squatarola</i>) | <p>Detailed conservation objectives for this site, (Version 1, September 2012), were reviewed as part of the assessment and are available at www.npws.ie</p> | <p>There will be no direct effects on this SPA as the proposed Decommissioning and Rehabilitation site boundary is located entirely outside the boundary of this designated site.</p> <p>Granaghan Bog and the River Shannon and River Fergus Estuaries SPA are hydrologically connected via the Curraghroe Stream a tributary of the Feorish River, which flows through the south and southeastern boundaries of the bog, flowing in a northerly direction before merging with the Feorish (Tarmonbarry) River, located to the south of the bog, outside of the site boundary. The Feorish (Tarmonbarry) River flows in a north-westerly direction before intersecting with the Shannon (Upper) River, which flows in a southerly direction through Lough Ree SPA. The Shannon (Upper) River then flows in a southerly direction into the Middle Shannon Callows SPA. The Shannon (Upper) River then intersects with the Shannon (Lower) River, which flows in a southerly direction into Lough Derg (Shannon) SPA. Finally, the Shannon (Lower) River flows in a southerly direction into</p> |

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| | <ul style="list-style-type: none"> • [A142] Lapwing (<i>Vanellus vanellus</i>) • [A143] Knot (<i>Calidris canutus</i>) • [A149] Dunlin (<i>Calidris alpina</i>) • [A156] Black-tailed Godwit (<i>Limosa limosa</i>) • [A157] Bar-tailed Godwit (<i>Limosa lapponica</i>) • [A160] Curlew (<i>Numenius Arquata</i>) • [A162] Redshank (<i>Tringa totanus</i>) • [A164] Greenshank (<i>Tringa nebularia</i>) • [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) • [A999] Wetlands and Waterbirds | | <p>the River Shannon and River Fergus Estuaries SPA after approx 130km, before discharging into the open sea.</p> <p>Although there is potential hydrological connectivity to the River Shannon and River Fergus Estuaries SPA via the River Shannon [Upper and Lower], the SPA is located approximately 130km downstream. Therefore, due to the distance of greater than 130km, and the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, in the absence of any mitigation, there is no potential for any significant effect on these SCI species as a result of water pollution or change to the hydrological regime within the SPA.</p> <p>Further, due to the small nature and scale of the proposed Decommissioning and Rehabilitation at Granaghan Bog, the buffering distance of approx 125km, there is no potential for ex situ disturbance or displacement related impacts on the SCI species as a result of the proposed Decommissioning and Rehabilitation at Granaghan Bog on River Shannon and River Fergus Estuaries SPA.</p> <p>No pathway for significant effect on this European Site was identified, when considered in the absence of any mitigation, individually or cumulatively with other plans or projects and the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
|--|--|--|--|

3.2 Likely Cumulative Impact of the Proposed Decommissioning and Rehabilitation plan on European Sites, In-Combination with Other Plans and Projects

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites considered in **Table 3.1**, as no potential for significant effect was identified in **Table 3.1**. This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities, and their predicted environmental effects.

3.2.1 Plans

The following development plans been reviewed and taken into consideration as part of this assessment:

- Roscommon County Development Plan 2022-2028
- 4th National Biodiversity Action Plan 2023-2030

The review focused on policies and objectives that relate to Natura 2000 sites and natural heritage.

Table 3-2. Review of relevant Policies and Objectives

| Plans | Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in The Zone of Influence | Assessment of development compliance with policy |
|--|---|--|
| <p>Roscommon County Development Plan 2022-2028</p> | <p>Natural Heritage Policy Objectives</p> <p>NH 10.1 Ensure the protection, conservation, and enhancement of the biodiversity of the county.</p> <p>NH 10.2 Support the implementation of the relevant recommendations contained in the National Biodiversity Action Plan, including no net loss in biodiversity, and the All-Ireland Pollinator Plan.</p> <p>NH 10.4 Proposals where woodland, tree or hedgerow removal is proposed will be required to demonstrate a sufficient level of protection to Annex IV species, such as Bats and Otter, in accordance with the Habitats Directive.</p> <p>NH 10.7 Implement Article 6(3) and where necessary Article 6(4) of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011.</p> <p>NH 10.8 Ensure that no plans, programmes, etc. or projects are permitted that give rise to significant cumulative, direct, indirect or secondary impacts on the integrity of European Sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects, (either individually or in combination with other plans, programmes, etc. or projects).</p> <p>NH 10.9 Ensure that any plan or project that could have a significant adverse impact (either alone or in combination with other plans and projects) upon the conservation objectives of any Natura 2000 Site or would result in the deterioration of any habitat or any species reliant on that habitat will not be permitted unless in exceptional circumstances.</p> <p>NH 10.10 Actively promote the conservation and protection of areas designated as an NHA (including proposed sites) and to only consider proposals for development within or affecting an NHA where it can be clearly demonstrated that the proposed development will not have a significant adverse effect on the NHA or pNHA.</p> <p>NH 10.17 Work with relevant agencies such as the Bord na Mona, NPWS, Coillte and adjacent local authorities to prepare an after-use framework plan for the peatlands and related infrastructure, to provide for the future sustainable and environmentally sensitive use of large industrial peatlands sites when peat harvesting finishes.</p> | <p>The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified.</p> <p>There will be no impact on designated sites or biodiversity as a result of the proposed Decommissioning and Rehabilitation.</p> |

| Plans | Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in The Zone of Influence | Assessment of development compliance with policy |
|---|--|--|
| <p>4th National Biodiversity Action Plan 2023-2030</p> | <p>Objective 1: Adopt a Whole-of Government, Whole of Society Approach to Biodiversity. Proposed actions include capacity and resource reviews across Government; determining responsibilities for the expanding biodiversity agenda providing support for communities, citizen scientists and business; and mechanisms for the governance and review of this National Biodiversity Action Plan.</p> <p>Objective 2: Meet Urgent Conservation and Restoration Needs. Supporting actions will build on existing conservation measures. Efforts to tackle Invasive Alien Species will be elevated. The protected area network will be expanded to include the Marine Protected Areas. The ambition of the EU Biodiversity Strategy will be considered as part of an evolving work programme across Government.</p> <p>Objective 3: Secure Nature’s Contribution to People. Actions highlight the relationship between nature and people in Ireland. These include recognising the tangible and intangible values of biodiversity, promoting nature’s importance to our culture and heritage, and recognising how biodiversity supports our society and our economy.</p> <p>Objective 4: Enhance the Evidence Base for Action on Biodiversity. This objective focuses on biodiversity research needs, as well as the development and strengthening of long-term monitoring programmes that will underpin and strengthen future decision-making. Action will also focus on collaboration to advance ecosystem accounting that will contribute towards natural capital accounts.</p> <p>Objective 5: Strengthen Ireland’s Contribution to International Biodiversity Initiatives. Collaboration with other countries and across the island of Ireland will play a key role in the realisation of this Objective. Ireland will strengthen its contribution to international biodiversity initiatives and international governance processes, such as the United Nations Convention on Biological Diversity.</p> | <p>The Development plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network and other natural heritage interests. No potential for cumulative impacts when considered in conjunction with the current proposal were identified.</p> <p>There will be no impact on designated sites or biodiversity as a result of the proposed Decommissioning and Rehabilitation.</p> |

3.2.2 Other Projects

Assessment material for this in-combination impact assessment was compiled on the relevant developments within the vicinity of the Proposed Decommissioning and Rehabilitation and was verified on the 16/01/2024. The material was gathered through a search of relevant online Planning Registers, reviews of relevant documents, planning application details and planning drawings, and served to identify past and future projects, their activities, and their environmental impacts. All relevant projects were considered in relation to the potential for in-combination effects. All relevant data was reviewed (e.g., individual EISs/EIARs, layouts, drawings etc.) for all relevant projects where available. These consisted mainly of small scale to medium scale domestic developments.

- Permission for revised site boundaries and layout as previously granted planning permission under planning permission PD/04/503 and full planning permission to construct a sun room to the side of an existing dwelling house, construct a domestic garage, close the existing site entrance and create a new site entrance onto the public road & associated siteworks at Ballyhubert, Scramogue, Co. Roscommon. (Planning Ref: 18495).
- Permission for the construction of a dwelling house, domestic garage, the installation of a sewerage treatment unit and percolation area along with connections to all site services and all other associated site works at Ballyhubert Townland, Scramogue, Co Roscommon. (Planning Ref: 20262).
- Permission for works to uprate the existing Lanesboro - Sliabh Bawn 100kV overhead line (OHL). Within County Roscommon the proposed development is located in the following townlands: Ballyleague, Gortgallan, Ballyglass, Cloontuskert, Erenagh, Killavackan, Culleenanory, Curraghroe, Doonahaha, Terila (Dillon), Trila (Martin), Kilmacananneny, Bunnageddy, Corhawny, Tonycurneen and Tooreen. The proposed development will consist of works along the c.9.5km Lanesboro - Sliabh Bawn 100kV OHL between the existing Lanesboro 110kV substation in the townland of Lanesborough in Co Longford & the existing SliabhBawn 110kV substation in the townland of Tooreen, Co. Roscommon. Approximately 9.4 km of the existing OHL circuit is located within the functional area of Roscommon County Council with approximately 0.1 km in the functional area of Longford County Council (A separate planning application is being lodged with Longford County Council). A Natura impact Statement will be submitted to the Planning Authority with the application. (See Newspaper Notice for Full description of development). (Planning Ref: 23342).
- Permission for 1. Construction of a Gas Insulated Switchgear (GIS) compound measuring approximately 92.8m by 90.5m. The proposed GIS compound will be raised to a ground level of 1.2m higher than the existing ground level at the site, and will comprise: (i) GIS building with an approximate gross floor space 1624.1m² and height of 15m (in addition, 6 no. lightning protection rods, approximately 3m in height, are located on the parapet of the GIS building); (ii) An internal access track measuring approximately 245m in length and 5m in width, 15 no. car parking spaces; underground stormwater attenuation tank; underground foul wastewater pumping station and all associated site development and landscaping works; and (iii) The substation compound will be bounded by a palisade fence 2.6m in height and further enclosed by a property fence measuring 1.4m in height. 2. The proposed development will also consist of the redevelopment of the existing AIS 110 kV substation, comprising the following: (i) Decommissioning of the 110 kV AIS busbar and 110 kV primary plant within the existing 110 kV AIS substation; (ii) The modification of 8 no. existing 110 kV underground circuits which will be re-routed into the new 110 kV GIS substation; and, (iii) Construction of 3no. underground joint bays; 1 no. new gantry tower (approximate footprint of 30.2m² and a height of 12.5m); 1 no. new Line Cable Interface Mast (approximate footprint of 123m² and a height of 20.7m); removal of the existing 110 kV OHL tower and section of cable which extends to the proposed Line Cable Interface Mast and all associated and ancillary transmission infrastructure. 3. Construction of a Distribution System Operator (DSO) compound

measuring approximately 30m²; 4. Construction of a landowner access road (hardcore surfacing) of approximately 91m in length and 6m in width; and, 5. All ancillary site development works to facilitate the proposed development including geotechnical and geo-environmental ground investigations, site preparation works, site clearance and levelling, site drainage and associated outfall headwall to facilitate discharge to the River Shannon, temporary construction compounds and landscaping. (Planning Ref: 2360056).

- Permission for a development that will consist of the redevelopment of the existing Lanesboro 110kV AIS substation with a new 110 kV Gas Insulated Switchgear (GIS) substation. The 110 kV GIS substation redevelopment will comprise of the following elements: (i) A 110 kV GIS substation contained within a building with a gross floor area of approximately 1,470m² (54m x 15m) and a height of 15m. Associated development within the footprint of the GIS substation development will include: 6 no. lightning rods of approximately 3m in height located on the parapet of the GIS Building; a Distribution System Operator (DSO) compound (approximately 30m²); an internal circulation road of approximately 245m in length and 5m in width, 12 no. car parking spaces; underground stormwater attenuation tank; underground foul wastewater pumping station and all associated site development and landscaping works. The substation will be bounded by a palisade fence 2.6m in height and bounded with a property fence 1.4m in height; (ii) The modification of 8 no. existing 110 kV underground circuits which will be re-routed into the new 110 kV GIS substation: Sliabh Bawn-Lanesboro underground circuit, Cloon-Lanesboro underground circuit, Athlone-Lanesboro underground circuit, Richmond 1-Lanesboro underground circuit, Richmond 2-Lanesboro underground circuit, Lough Ree Power T104-Lanesboro underground circuit, T141-Lanesboro underground circuit and Mullingar-Lanesboro underground circuit. Associated development includes the construction of 3 no. underground joint bays; 1 no. gantry tower (footprint of 30.2m² and a height of 12.5m); 1 no. Line Cable Interface Mast (footprint of 123m² and the height of 20.7m) and all associated and ancillary transmission infrastructure. (iii) The construction of a Landowner access road of approximately 91m in length and 6m in width. (Planning Ref: 19201).
- Permission for development at the 13.1 Ha site known as 'Lough Ree Power (LRP) Station' located in Lanesborough (Lanesboro), in the townlands of Aghamore and Lanesborough, Eircode N37E180; in County Longford. The development will consist of the demolition of the existing LRP station (as approved under Longford County Council reg.ref 01/115 'An Board Pleanala Ref. PL14.125540 and all subsequent permissions); and the development and operation of electricity grid services - namely a battery energy storage system (BESS) and a Synchronous Condenser (Sync Con). The proposed development comprises two distinct phases of activity - the initial demolition and site reinstatement (Phase 1); following by construction and operation of the new BESS and Sync Con (phase 2). Phase 1 comprises the demolition of existing site structures (with a total footprint of c. 11.195sq.m. and a total gross floor area of c. 20,000 sq.m) including the former LRP station (boiler house, turbine house, bag filter house and associated 80 m high stack); the intermediate peat storage building and associated fuel management system; and ancillary buildings including, electrical building, tippler building and associated control room and office, the screening building, lorry uploading building, water treatment plant building, offices building, laboratory building, workshop and maintenance buildings, oil pumphouse, electrics rooms, railway/locomotive service building, cooling water pump house and sewage/foul water treatment facility. All buildings and structures (including storage tanks and vessels) will be demolished to ground level, with below ground voids filled. Existing hard standing surfaces (e.g. building ground floor concrete slabs, tarmacadam surfaces, concrete footpaths and road kerbs) will remain in site; and the site will be reinstated and secured with boundary gates and fences, etc. Associated with the demolition activity there will be on-site crushing of material using mobile machinery for the purpose of disposal and/or material re-use. Phase 2 comprises the proposed development of the BESS, Sync Con; and all associated development (Full description scanned/attached). (Planning Ref: 2275).

- Permission for development at the existing electricity generating station - known as Lough Ree Power (LRP) station, located in the townlands of Aghamore and Lanesborough in the settlement of Lanesborough (Lanesboro), Co. Longford, Eircode N39 E180; and at an existing ash disposal facility (ADF) located in the townlands of Derraghan More and Derraghan Beg, Co. Longford. (Full Description scanned / attached). (Planning Ref:19188).
- Permission for the proposed development within Co. Longford will comprise:
 - the replacement (“restringing”) of the existing overhead line circuit conductor wires with a new higher capacity conductor including installation of a new fibre communication connection;
 - the retention and refurbishment, steel member replacement, painting and foundation strengthening of the one retained end mast EM1, including the replacement of hardware and fittings, replacement of vibration dampers, and replacement of insulators at EM1;
 - The cutting of timber / vegetation;
 - all associated works within the existing Lanesboro 110kV substation to accommodate the uprated 110kV OHL including uprating of the Sliabh Bawn bay in Lanesboro 110kV substation and alterations to existing hardware; and
 - other temporary associated and ancillary site development works required for the purpose of the uprate of the existing circuit, including construction compounds, silt traps, silt fences, stone tracks, ground protection mats, infrastructure crossing support systems and temporary watercourse crossings. (Planning Ref: 2360108).
- Permission for the development will consist of the redevelopment of the existing Lanesboro 110kV AIS substation with a new 110 kV Gas Insulated Switchgear (GIS) substation. The 110 kV GIS substation redevelopment will comprise of the following elements: (i) A 110 kV GIS substation contained within a building with a gross floor area of approximately 1,470m² (54m x 15m) and a height of 15m. Associated development within the footprint of the GIS substation development will include: 6 no. lightning rods of approximately 3m in height located on the parapet of the GIS Building; a Distribution System Operator (DSO) compound (approximately 30m²); an internal circulation road of approximately 245m in length and 5m in width, 12 no. car parking spaces; underground stormwater attenuation tank; underground foul wastewater pumping station and all associated site development and landscaping works. The substation will be bounded by a palisade fence 2.6m in height and bounded with a property fence 1.4m in height; (ii) The modification of 8 no. existing 110 kV underground circuits which will be re-routed into the new 110 kV GIS substation: Sliabh Bawn-Lanesboro underground circuit, Cloon-Lanesboro underground circuit, Athlone-Lanesboro underground circuit, Richmond 1-Lanesboro underground circuit, Richmond 2-Lanesboro underground circuit, Lough Ree Power T104-Lanesboro underground circuit, T141-Lanesboro underground circuit and Mullingar-Lanesboro underground circuit. Associated development includes the construction of 3 no. underground joint bays; 1 no. gantry tower (footprint of 30.2m² and a height of 12.5m); 1 no. Line Cable Interface Mast (footprint of 123m² and the height of 20.7m) and all associated and ancillary transmission infrastructure. (iii) The construction of a Landowner access road of approximately 91m in length and 6m in width. (Planning Ref: 19201).
- Permission for the proposed completion of existing partially constructed housing development to include the construction of 31 No. dwelling houses that was previously granted full planning permission under planning reference number PL04/272 consisting of 12 No. two storey three bedroom semi-detached type dwelling houses, 1 No. two storey three bedroom type dwelling house, 6 No. two storey four bedroom semi-detached type dwelling houses, 12 No. two storey two bedroom semi-detached type dwelling houses, completion of green open spaces, completion of existing access roads, proposed connections to existing foul sewer, surface water and watermain networks and all ancillary site works. (Planning Ref: 17209).
- Permission for of PL18/6 for modifications to previously granted planning application reference number PL16/256 with regard to development of a distillery and visitor centre on site of the Old Post Office, Main Street, Lanesborough, Co. Longford consisting of: Increase overall site area to 0.3ha moving southern boundary 5.5m south. Increase overall gross internal floor area of development by 257m². Proposed 3 storey visitor facility extension: Internal modifications including relocation of proposed staff facilities to third floor and Increase roof apex height by

0.465m. Proposed single storey with mezzanine distillery (connected to the visitor facility extension):- Internal modifications including additional 15m² storage room on mezzanine level and External modifications including increase roof apex height by 1.8m, inclusion of 5 no. roof lights and 1 no. louvre on south gable. Outbuilding no #1 (connected to the distillery): Partial demolition of existing single storey outbuilding retaining existing stone wall along boundary and Rebuild & extend originally proposed single storey building by 13m² to accommodate relocated gin still and boiler room and inclusion of 2 no. roof lights. Originally proposed single storey building (connected to the gin still): Increase originally proposed area and extensively modify building footprint, internal layout, external massing, external elevations and additional storey to increase max height by 3.2m to accommodate additional: 29m² equipment mezzanine within cask filling & bottling room, 31m² bottling & packaging area on ground floor, 13m² cask store on ground floor with external sliding entrance doors, 156m² ambassador's suite over two storeys with lantern roof and 6 no. roof lights. Outbuilding number #2: Partial demolition of existing single storey outbuilding retaining existing wall along boundary. Proposed site development works: Associated modification of originally proposed site layout, site boundaries, landscaping, external lighting and site/building signage. Relocate originally proposed gas storage compound to underground semi mounded installation. (Planning Ref: 231)

- Permission for development of a distillery and visitor centre on 0.2814ha site consisting of: Change of use, refurbishment (to include alterations to façade along Main Street and internal remodelling) and combination of the 2 no. existing 3 storey buildings (existing building #1 (260m²) consisting of a retail unit on ground floor and a derelict house spanning all three floors; and existing building #2 (160m²) consisting entirely of a derelict house) into a single unit (425m²) to serve as the visitor centre including tasting area, exhibition and interpretative space, and retail area (including sale of alcohol in compliance with relevant licencing laws) with the following works to the rear along the existing stone wall forming the north west boundary of the site: *Demolition of 2 no. existing single storey extensions (22m²), *Construction of a new 3 storey visitor facility extension (184m²) comprising stair and lift core, visitor facilities, ancillary administration and storage functions, *Construction of a new single storey with mezzanine distillery (394m²) (connected to the visitor facility extension) to accommodate various milling, mashing, fermentation and distillation equipment, high level visitor walk way, ancillary plant and production functions, *Change of use, refurbishment (to include alterations to façade along New Harbour/Commons North Access Road) and extension of existing single storey out building #1(48m²) (connected to the distillery) into a single storey cask room (89m²), *Construction of a new single storey building (202m²) (connected to the cask room) to accommodate cask filling & bottling room, bonded and un-bonded warehouse and gin room. Change of use, refurbishment (to include application of external insulation) and extension (to include raised roof level (c. 1m)) of existing single storey outbuilding #2 (43m²) into a separate single storey building (80m²) to provide staff facilities, plantroom and electrical switch room with roof top plant and all associated site development works including: internal hardstanding and paving, 15 no. car parking spaces, 10. no bicycle parking spaces, gas storage compound, storage tanks, drainage system, refuse storage, boundary treatments, gates, landscaping, external lighting, associated site and building signage and 1 no. new site entrance off the New Harbour/Commons North access road. (Planning Ref: 16256).
- Surrounding land uses which included agricultural grazing lands, commercial forestry and turf cutting activities.
- An application is currently being prepared for the proposed windfarm at Derryadd, Co. Longford This proposed windfarm project does not affect the scope of the rehabilitation which will be carried out in 2024/2025, in advance of the windfarm, and is located outside the site boundary. There will be no spatial or temporal overlap of the PCAS rehabilitation with this proposed windfarm project.
- Decommissioning and Rehabilitation works carried out in Cloonshannagh Bog, Derrymoylin Bog and Kilashee, all within the Moundillon Bog group, as part of Bord Na Móna Peatland Climate Action Scheme (PCAS).

3.2.3 Conclusion of Cumulative Assessment

Following the detailed assessment provided in the preceding sections, it is concluded that, the proposed Decommissioning and Rehabilitation plan at Granaghan Bog will not result in any residual significant effects on any of the European Sites, their integrity or their conservation objectives when considered on its own. There is therefore no potential for the proposed the proposed Decommissioning and Rehabilitation plan at Granaghan Bog to contribute to any cumulative significant effects on any European Site when considered in combination with other plans and projects.

In the review of the projects undertaken, no connection that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed Decommissioning and Rehabilitation plan.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.

4. ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2021) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

4.1 Data Collected to Carry Out Assessment

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Teagasc, EPA, Water Framework Directive (WFD), Geological Survey of Ireland (GSI), Inland Fisheries Ireland (IFI), Irish Wetland Bird Survey I-WeBS & Geohive online Environmental Sensitivity Mapping tool
- Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013).
- Review of OS maps and aerial photographs of the site of the proposed Decommissioning and Rehabilitation plan.
- Review of relevant databases including National Biodiversity Ireland Database and available literature of previous surveys conducted in the area.
- Review of other plans and projects within the area.
- Review of location and layout mapping for proposed rehabilitation
- Review of the results from previous ecological surveys of Granaghan Bog.
- Review of description of proposed rehabilitation measures, including methodologies specific to the main categories of land types under consideration.
- Site visit conducted on the 14/03/2023 by MKO ecologists Valerie Kendall and Rudraksh Gupta.

4.2 Concluding Statement

It is concluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European Sites, that the proposed Decommissioning and Rehabilitation at Granaghan Bog, individually or in combination with other plans and projects, will not have a significant effect on any European Site.

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APPENDIX 1

**GRANAGHAN BOG-
DECOMMISSIONING AND
REHABILITATION PLAN 2024**

Bord na Móna

Granaghan Bog

Cutaway Bog Decommissioning and Rehabilitation Plan 2023

This document seeks to address the requirements of Condition 10.2 of IPC License Ref. P0504-01:

“The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the cutaway boglands within the licensed area.”

This licence condition requires Bord na Móna agree with the EPA the measures that will provide for rehabilitation, i.e. stabilisation of Granaghan Bog upon cessation of peat production and compliments the licence requirement to decommission the site.

Rehabilitation generally comprises site stabilisation with natural colonisation with or without targeted management.

Industrial peat production has now fully ceased at Granaghan Bog.

In addition, to preparing this document to comply with Condition 10 of IPC Licence Ref. P0504-01, due regard was also given to the Peatlands Climate Action Scheme (PCAS) announced by the Minister. This Scheme will see the Minister support, via the Climate Action Fund and Ireland’s National Recovery and Resilience Plan, Bord na Móna in developing a package of measures, ‘the Scheme’, for enhanced decommissioning, rehabilitation and restoration of cutaway peatlands referred to as, the Peatlands Climate Action Scheme’. However, only the additional costs associated with the additional and enhanced rehabilitation, i.e., measures which go beyond the existing standard mandatory decommissioning and rehabilitation requirements arising from Condition 10 will be eligible for support. The additional costs of the Scheme will be supported by Government, administered by the Department of Environment, Climate and Communications (DECC), while the National Parks and Wildlife Service (NPWS) will act as the Scheme regulator.

While this document outlines the enhanced rehabilitation measures planned for Granaghan bog, activities which goes beyond that required by Condition 10 in the Licence, rehabilitation necessary to comply with the ‘standard’ requirement of Condition 10 (in the absence of the Scheme) is also included, to estimate costs. The inclusion of the ‘standard’ rehabilitation together with the enhanced rehabilitation in this document allows the Scheme Regulator to distinguish and objectively determine the specific activities (and their associated costs) eligible for support under the Scheme.

Bord na Móna have defined the key rehabilitation outcome at Granaghan Bog as environmental stabilisation, re-wetting and setting the bog on a trajectory towards development of naturally functioning peatland and wetland habitats.

Any consideration of any other future after-uses for Granaghan Bog, such as amenity, will be conducted in adherence to the relevant planning guidelines and consultation with relevant authorities and will be considered within the framework of this rehabilitation plan.

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Non-Technical Summary

- Bord na Móna is planning to finalise the rehabilitation of Granaghan Bog.
- Industrial peat harvesting is now finished at Granaghan Bog.
- This rehabilitation is being undertaken as Bord na Móna are obliged to carry out peatland rehabilitation via an IPC License issued by the Environmental Protection Agency (EPA). In addition, the Government has agreed to support peatland rehabilitation via the establishment of the Peatland Climate Action Scheme (PCAS). This is funded via the government and by Bord na Móna.
- The key objective of peatland rehabilitation is environmental stabilisation. This means creating conditions for the development of vegetation and associated habitats on the current bare peat dominated cutover bog, and thereby minimising impacts on receiving watercourse downstream. The bog was drained in the past to allow peat production. Improvements in water quality, reduction of carbon emissions, climate action benefits and biodiversity enhancement are achieved when the remaining peat is re-wetted. This means blocking drains and other measures to raise the water table to the surface of the bog and to encourage the natural colonisation of vegetation.
- In general, soggy ground conditions are preferred. This means the remaining peat is wet and that plants that prefer wetter conditions, like Bog Cotton, Heather and Reeds will thrive.
- Many Bord na Móna bogs cannot be restored back to raised bog, as the acrotelm (surface layer of vegetation) and large quantities of peat has been removed and the environmental conditions have been significantly modified. However other natural habitats will develop such as shallow wetlands with Reedbeds and Birch woodland, and in time naturalised peatland habitats can be restored.
- The development of a range of habitats in Granaghan Bog will support biodiversity including plants, insects, birds and mammals. This includes some species that are rare and protected in the wider landscape. It will increase the national area of native woodland. Many wetland habitats in the wider landscape have been reclaimed for agriculture and other uses and peatland rehabilitation is an opportunity to create new wetland habitats that will have significant biodiversity and climate benefits.
- Granaghan Bog was drained and developed for industrial peat production in the 1980s and much of the site contains residual deep peat which is mostly bare. Granaghan Bog formerly had a pumped drainage regime.
- Rehabilitation measures proposed for Granaghan Bog include deep peat rewetting via cell bunding and drain blocking along with the use of fertiliser to be spread on headlands and other areas (a small part of the overall area). This will encourage vegetation growth. In addition, some targeted drain blocking is proposed in small parts of the bog margins and hydrological modelling has been undertaken to inform the adjustment of outfalls to optimise summer wetland water levels. Such measures will promote the development of wetland vegetation.
- Bord na Mona plan to carry out this work in 2023.
- These rehabilitation measures will be planned by a team consisting of ecologists, hydrologists and engineers. It is a principle of Bord na Móna rehabilitation planning that no actions will be taken that would negatively impact on adjacent land. No boundary drains will be blocked. Water will still leave the site via the existing outlets.
- It will take some time for vegetation and habitats to fully develop at Granaghan, and a peatland ecosystem to be restored. However, it is expected that most of the site will be developing pioneer habitats after 10 years.

- This is a peatland rehabilitation plan. This plan does not consider future after-use or development. Bord na Móna continually reviews its land-bank to consider future commercial or industrial developments, such as renewable energy. Any other proposed development will be planned in adherence to relevant planning guidelines and will consider the rehabilitation and the condition of the site.
- Peatland rehabilitation of these bogs will bring a range of benefits to the local community via improvements to the local landscape and is also important for supporting national policies and strategies in relation to reduction of carbon emissions from these peatlands, supporting biodiversity and improvements to water quality.

DRAFT

1. INTRODUCTION

Bord na Móna operates under IPC Licence issued and administered by the EPA to extract peat within the Mountdillon bog group (Ref. P0504-01). As part of Condition 10.2 of this license, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. Granaghan bog is part of the Mountdillon bog group (see Appendix II for details of the bog areas within the Mountdillon bog group). Granaghan Bog is located in Co. Roscommon.

This is a specific rehabilitation plan for the bog and outlines:

- Description of site management and status.
- Main issues and approaches to rehabilitation.
- Consultation to date with interested parties.
- Interaction with other policy and legislative frameworks (Appendix VI).
- The planned rehabilitation goals and outcomes.
- The scope of the rehabilitation plan.
- Criteria which define the successful rehabilitation and key targets to validate rehabilitation.
- Proposed rehabilitation actions.
- Proposed timeframe to implement these measures.
- Budget and Costings.
- Associated aftercare, maintenance, and monitoring.

Note: This plan should be read in conjunction with the accompanying Map book.

It is proposed by Government that Bord na Móna carry out a Peatlands Enhanced Decommissioning, Rehabilitation and Restoration Scheme on its peatlands. Note this proposal is also known colloquially as the 'Peatlands Climate Action Scheme' (PCAS). The additional costs of the Scheme will be supported by Government through the European Union's Recovery and Resilience Facility as part of Ireland's National Recovery and Resilience Plan administered by the Department of Environment, Climate and Communications (DECC), while the National Parks and Wildlife Service (NPWS) will act as the Scheme regulator. Bord na Móna have previously identified a footprint of 33,000 ha as peatlands suitable for this scheme. This Scheme will significantly go beyond what is required to meet rehabilitation and decommissioning obligations (Appendix VII & IX) under existing EPA IPC licence conditions. Improvements supported by the Scheme will ensure that environmental stabilisation is achieved (meaning IPC obligations are met), and importantly, significant additional benefits, particularly relating to climate action and other ecosystem services, will also be delivered. The Scheme commenced in 2021.

Only the costs associated with the additional, enhanced and accelerated rehabilitation, i.e. those measures which go beyond the existing decommissioning and rehabilitation requirements arising from Condition 10, will be eligible for support under the Scheme. Bord na Móna have now announced the complete cessation of industrial peat production across its estate (January 2021).

It is expected that the Scheme (PCAS) will have benefits accruing from biodiversity provision, water quality and storage attenuation as well as increased carbon storage, reduced carbon emissions and acceleration towards carbon sequestration. The Scheme will also facilitate monitoring of carbon fluxes (Greenhouse Gases and fluvial carbon) in selected areas (in addition to other established Research programmes), to monitor changes in where the interventions will accelerate the trajectory towards a naturally functioning peatland ecosystem.

It is envisaged that the Rehabilitation Scheme will support activities, interventions, or measures across the Bord na Móna cutaway peatlands which accelerate the original timelines. Selected rehabilitation measures will take account of site environmental conditions, which can vary significantly. These measures potentially include:

- intensive management of water levels through pump management, drain-blocking and cell bunding;
- re-profiling that will deliver suitable conditions for development of wetlands, fens and bog habitats;
- targeted fertiliser applications,
- seeding of targeted vegetation; and
- proactive inoculation of suitable peatland areas with *Sphagnum*.

These are collectively designed to optimise hydrological conditions (ideally and where possible water-levels <10 cm) for climate action benefits and to accelerate the trajectory of the site towards a naturally functioning ecosystem, and eventually a reduced carbon source/carbon sink again (in some areas of dry cutaway this trajectory will be significantly longer and it is not feasible in the short-term to re-wet some areas. These areas will develop other habitats). The key to optimising climate action benefits is the restoration of suitable hydrological conditions and more intensive intervention will be used in an attempt to ensure that the extent of suitable hydrological conditions can be optimised.

These measures are designed to encourage the development of peat-forming habitats, where possible. They are also designed to further slow the movement of water across the site (with the site acting similarly to a constructed wetland), slowing the release of water (improving local water attenuation). Water quality is also expected to improve as the site returns to a naturally functioning peatland ecosystem. It is anticipated that the combination of active enhanced rehabilitation measures and natural colonisation will quickly accelerate environmental stabilisation. Nevertheless, it will still take some time (30-50 years) for naturally functioning wetland and peatland ecosystems to fully re-establish.

The measures will also accelerate the development of new habitats for a range of species under pressure in the wider landscape and will have the potential to develop habitats (e.g. Annex I raised bog, wetlands that support wader water birds of conservation interest) that will contribute towards the delivery of national biodiversity objectives.

Granaghan Bog is proposed to be part of this Scheme (PCAS) and this rehabilitation plan outlines the approach to be taken.

1.1 Constraints and Limitations

This document covers the area of **Granaghan Bog**.

Industrial peat extraction at Granaghan Bog permanently ceased in 2020 (having commenced bog development in 1980's). Currently the cutover area of the bog is dominated by bare peat. However, there is some pioneer poor fen and open drier cutaway vegetation communities spreading over some areas of bare peat. There is Birch scrub and establishing woodland and pioneering cutaway habitats developing in the marginal areas. Some of the site contains small areas of wetland. A small conifer plantation (WD4) occurs within the northern boundary of the bog. There are two areas of remnant raised bog, in poor condition, now dominated by heather (dry heath type vegetation) located within the northeast boundary of the site. There are another two small areas of remnant bog situated south of the road close to the silt ponds on the southern boundary of the bog.

Parts of Granaghan Bog (within and outside the areas owned and under the control of Bord na Móna) are possibly being used by domestic turf cutters. These areas are ecologically and hydrologically linked to the area owned by

Bord na Móna where rehabilitation is planned. It is beyond the scope of this rehabilitation plan to address turf cutting issues on Granaghan Bog that are outside of the control of Bord na Móna. Nevertheless, Bord na Móna are aware of such issues which may constrain the proposed rehabilitation actions, and this rehabilitation plan considered potential impacts of these on the delivery of the stated objectives.

Rehabilitation in other areas of the bog may also be constrained due to other property issues or issues such as rights of way, if present.

The rail line on site, located along the southern boundary, connects to Lough Ree Power Station. It is anticipated that this rail line will be decommissioned in 2024.

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2. METHODOLOGY

This rehabilitation plan was developed with a combination of desktop and field surveys, consultations with internal and external stakeholders and cognisance of the Scheme (PCAS). The development of this rehabilitation plan considered **recently published** guidance issued by the EPA in 2020 – **Guidance on the process of preparing and implementing a bog rehabilitation plan**.

The ecological information and site information collected during the Bord na Móna ecological baseline survey, additional confirmatory site visits (covering the period 2012 to 2022 inclusive) and monitoring and desktop analysis forms the basis for the development of the rehabilitation plan for the bog, along with:

- Experience of 40 years of research on the after-use development and rehabilitation of the Bord na Móna cutaway bogs (Clarke, 2010; Bord na Móna, 2016);
- Significant international engagement during this period with other counties in relation to best-practice regarding peatland rehabilitation and after-use through the International Peat Society and the Society for Ecological Restoration (Joosten & Clarke, 2002; Clarke & Rieley, 2010; Gann *et al.*, 2019);
- Consultation and engagement with internal and external stakeholders;
- GIS Mapping;
- BNM drainage surveys;
- Bog topography and LiDAR data;
- Previous research studies on site;
- Hydrological modelling; and
- The development of a Methodology Paper outlining the Scheme (PCAS). This rehabilitation includes enhanced measures defined in the Methodology Paper which are designed to exceed the standard stabilisation requirements as defined by the IPC Licence and to enhance the ecosystem services of Granaghan Bog, in particular, optimising climate action benefits.

2.1 Desk Study

The desk study involved collecting all relevant environmental and ecological data for the study area. The development of the rehabilitation plan also takes account of research, experience and engagement with other peatland restoration and rehabilitation projects and peatland research including Irish, UK, European and International best-practice guidance (full citations are in the References Section):

- Anderson *et al.* (2017). An overview of the progress and challenges of peatland restoration in Western Europe.
- Barry, T.A. et al (1973). A survey of cutover peats and underlying mineral soils. Soil Survey Bulletin No. 30. Dublin, Bord na Móna and An Foras Taluntais.
- Bonn *et al.* (2017). Peatland restoration and ecosystem services- science, policy and practice.
- Carroll *et al.* (2009). *Sphagnum* in the Peak District. Current Status and Potential for Restoration. Moors for the Future Report No 16.
- Clark & Rieley (2010). Strategy for responsible peatland management.
- Eades *et al.* (2003). The Wetland Restoration Manual.
- Farrell & Doyle (2003). Rehabilitation of Industrial Cutaway Atlantic Blanket Bog, NW Mayo, Ireland.
- Feehan, J. (2004). A long-lived wilderness. The future of the north midlands peatland network. Department of Environmental Resource Management, UCD.

- Foss, P.J., Crushell, P. & Gallagher, M.C. (2017) Title: Counties Longford & Roscommon Wetland Study. Report prepared for Longford and Roscommon County Councils.
- Gann *et al.* (2019). International Principles and Standards for the practice of Ecological Restoration.
- Hinde *et al.* (2010). *Sphagnum* re-introduction project: A report on research into the re-introduction of *Sphagnum* mosses to degraded moorland. Moors for the Future Research Report 18.
- Joosten & Clarke (2002). Wise Use of mires and peatlands – Background and Principles including a framework for Decision-making.
- Lindsay (2010). Peatbogs and Carbon: A Critical Synthesis to Inform Policy Development in Oceanic Peat Bog Conservation and Restoration in the Context of Climate Change.
- Mackin *et al.* (2017). Best practice in raised bog restoration in Ireland. Irish Wildlife Manuals, No. 99. National Parks and Wildlife Service,
- McBride *et al.* (2011). The Fen Management Handbook (2011), Scottish Natural Heritage.
- McDonagh (1996). Drain blocking by machines on Raised Bogs. Unpublished report for National Parks and Wildlife Service.
- NPWS (2017a). National Raised Bog Special Areas of Conservation management plan. Department of Arts, Heritage and the Gaeltacht.
- Pschenyckyj *et al.*, 2021, Optimising Water Quality Returns from Peatland Management while Delivering Co-Benefits for Climate and Biodiversity. An Fóram Uisce.
- Quinty & Rochefort (2003). Peatland Restoration Guide, second edition. Canadian *Sphagnum* Peat Moss Association and New Brunswick Department of Natural Resources and Energy.
- Regan, *et al.* (2020). Ecohydrology, Greenhouse Gas Dynamics and Restoration Guidelines for Degraded Raised Bogs. EPA Research Report. Prepared for the Environmental Protection Agency by Trinity College Dublin.
- Renou-Wilson *et al.* (2011). BOGLAND - Sustainable Management of Peatlands in Ireland. STRIVE Report No 75 prepared for the Environmental Protection Agency.
- Schouten (2002). Conservation and Restoration of Raised Bogs: Geological, Hydrological and Ecological Studies. Dúchas - The Heritage Service of the Department of the Environment and Local Government, Ireland;
- Thom (2019). Conserving Bogs – Management Handbook.
- Wheeler & Shaw (1995). Restoration of Damaged Peatlands – with Particular Reference to Lowland Raised Bogs Affected by Peat Extraction.
- Wittram *et al.* (2015). A Practitioners Guide to *Sphagnum* Reintroduction. Moors for the Future Partnership.

Additional on-line resources were also incorporated into the desk study, including:

- Mountdillon Integrated Pollution Control Licence;
- Mountdillon Annual Environmental Reports;
- Review of the National Biodiversity Data Centre (NBDC) webmapper;
- Inland Fisheries Ireland (IFI) Reports;
- Environmental Protection Agency database (www.epa.ie);
- EPA Guidance on Requests for Alterations to a Licensed Industrial or Waste Activity;
- BirdWatch Ireland online data (including I-WeBS and CBS datasets; www.birdwatchireland.ie);
- Geological Survey of Ireland - National Draft Bedrock Aquifer map;

- Geological Survey of Ireland - Groundwater Database (www.gsi.ie);
- Historic Environment Viewer at <https://webgis.archaeology.ie/historicenvironment/>
- National Parks & Wildlife Services Public Map Viewer (www.npws.ie);
- Water Framework Directive catchments.ie/maps/ Map Viewer (www.catchments.ie);
- OPW Indicative Flood Maps (www.floodmaps.ie);
- CFRAM Preliminary Flood Risk Assessment (PFRA) maps (www.cfram.ie);
- River Basin Management Plan for Ireland 2022-2027
- Bord na Móna Annual Report 2021 & 2022.
- Spatial data in respect of Article 17 reporting, available online at <https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17>.

2.2 Consultation

A number of stakeholders have been identified during the course of Bord na Móna's rehabilitation and Biodiversity Action Plan activities and are contacted during the rehabilitation planning process for their views. See Section 4.

2.3 Field Surveys

Bord na Móna carried out a baseline ecological survey of all of its properties in 2009-2012 and developed habitat maps. Additional ecological walk-over surveys and visits have taken place at Granaghan Bog between 2012-2022. As part of this exercise, a walkover survey of Granaghan Bog was conducted in November 2022 and July 2023 to further inform the preparation of this rehabilitation plan. Habitat maps have been updated, where required. This rehabilitation plan is informed by the original baseline survey as well as subsequent confirmatory site walk-over surveys and visits, and updates to baseline data.

Habitat mapping followed best-practice guidance from Smith *et al.* (2011). Map outputs including all habitat maps and target notes were produced using GIS software application packages (ArcGIS). General marginal habitats and other habitats that had not been modified significantly by industrial peat extraction were classified using Fossitt *et al.* (2000). Plant nomenclature for vascular plants follows Stace (2010), while mosses and liverworts nomenclature follows identification keys published by the British Bryological Society (2010). A more detailed Bord na Móna classification system was previously developed for classifying pioneer cutaway habitats as Fossitt categories were deemed not to be detailed enough for cutaway bog (much of cutaway bog could be classified as Cutover Bog - PB4). Much of the pioneer cutaway vegetation is still at an early stage of its development and cannot be assigned to Fossitt Level 3 categories yet. A site visit was used to categorise any changes in habitat extent at Granaghan in September 2022.

A detailed ecological survey report for Granaghan Bog is contained in Appendix II.

3. SITE DESCRIPTION

Granaghan Bog is located approximately 7km to the North of Lanesborough in County Roscommon, just off the R371 Lanesborough to Strokestown road. Granaghan is part of the Mount Dillon bog group with Mount Dillon Bog located immediately to the south and south-east. A rail link connects the bog with Mount Dillon Bog to the South. The land adjoining Granaghan bog immediately to the east, west and north is primarily agricultural pastoral land.

The area of Granaghan Bog within the PCAS rehabilitation extent can be split into two sections; a large main section, and a small area of remnant raised bog to the SE of this area. The local road L1426 bisects these two parcels of land. The main section of Granaghan was used for peat production in the past. The small area of remnant raised bog to the southeast was never put into peat production, although turf cutting has taken place around the margins of the bog.

The northern sub-catchment of the bog discharges to a boundary drain to the north which flows east and discharges to the northeast of the bog to the tributary stream of the Curraghroe (Stream). The southern sub-catchments of Granaghan Bog discharge via adjacent drains to the south to the Curraghroe Stream 010 which flows to the Feorish (Tarmonbarry)_020 east of the bog. The Feorish (Tarmonbarry)_020 flows east to the River Shannon. Granaghan Bog has a partially pumped drainage system. A single automatic pump drains the bog, discharging water into a network on silt ponds on the south-eastern side of the bog.

See Drawing number BNM-DR-25-10-01 titled **Granaghan Bog: Bog Site Location**, included in the accompanying Mapbook, which illustrates the location of Granaghan Bog in context to the surrounding area.

3.1 Status and Situation

3.1.1 Site history

The majority of Granaghan bog was in active industrial peat production since the late 1980's. The peat harvested from the bog was used as fuel peat in Lough Ree Power in Lanesborough. All industrial peat extraction at Granaghan Bog ceased in 2020.

Small sections of remnant raised bog exist on the northern, eastern, southern and western boundaries of the site. There are a number of sections of old domestic cutover bog. A small area of conifer forestry can be found on the northeastern bog boundary.

3.1.2 Current land-use

Industrial peat production has now permanently ceased at Granaghan Bog. The site has some remaining stock.

The majority of the ground cover on Granaghan Bog is bare peat.

AS described above, raised bog remnants occurs along the margins of the bog along with cutover bog. These bog remnants have been subject to drainage, associated with domestic turf cutting, which is ongoing.

Site infrastructure and structures are mapped in the accompanying Mapbook.

3.1.3 Socio-Economic conditions

Bord na Móna has historically been a vital employer for the rural community of the Midlands of Ireland. Bord na Móna compiled a report on the role of peat extraction in the midlands historically in which they report that in

1986, by the end of Bord na Móna's Third Development Programme, a total of twenty-three work locations had been established around the country. The company had an average employment of approximately 4,688 in the mid 1980's, with a peak employment of 6,100 during the production season, which placed it among the country's largest commercial employers. The importance of such levels of employment were largely due to its regional concentration in the Midlands and the lack of alternative employment opportunities at the time.

According to the Energy Crop Socio-Economic Study undertaken by Fitzpatrick Associates in 2011, there were an estimated 1,443 jobs supported by the peat-to-power industry in Ireland at the time, some 81% of which were located in the catchment areas of the three peat-fired generating stations (Lough Ree, West Offaly, and Edenderry Power Stations). These constituted jobs in the plants and in peat extraction, jobs indirectly supported in upstream supply industries and jobs induced through the trickle-down effects of the wages and salaries of those supported directly or indirectly. These job numbers have now declined with the cessation of peat extraction.

In respect of Granaghan Bog, jobs included in the above study would have included those to facilitate extraction of peat at this site and associated processing and transfer to the relevant power station.

As the primary employer in many Midland counties, Bord na Móna played a central role in building communities through several initiatives, including Education bursaries, support of local sporting clubs, the provision of community gain funds, charity programmes and the provision and building of amenity areas.

These job numbers have now declined with the cessation of peat extraction at this bog. It is anticipated that the scheme (PCAS) will provide some employment for a team of workers at this site for a period of time (> 1 year).

There are approximately 1400 people working in Bord na Móna at present. There are approximately 225 roles directly involved in PCAS.

3.2 Geology and Peat Depths

3.2.1 Sub-soil geology

GSI data indicates that the western section of Granaghan Bog is underlain by the Moathill Formation, with most of the remaining area of the bog underlain by the Ballysteen Formation and a small area underlain by Argillaceous Limestone (Visean). All of these bedrock units are classified as locally important aquifers as they are moderately productive in local zones. Geological Survey of Ireland (GSI) mapping does not identify any karst features in close proximity to the bog. No data exists concerning depth to bedrock, however, there are small pockets of bedrock outcrops in close proximity to the bog. Quaternary geology maps show Granaghan underlain by peat, yet surrounded by inorganic deposits, including till derived from limestone which occurs to the east of the bog, till derived from sandstone and shale to the west of the bog and till derived from sandstone north of the bog.

3.2.2 Peat type and depths

The remaining peat deposits are relatively deep across most of Granaghan, typically ranging from 2-4m, with thicker deposits in the south-western area where the peat is up to 5.5m thick. However, there are pockets with only shallow peat remaining, typically corresponding to the areas of elevated till ridges, as outlined in the Figure titled "*Indicative peat depth map derived from 2020 LiDAR survey and GPR data*".

3.3 Key Biodiversity Features of Interest

The majority of Granaghan Bog within the Bord na Móna boundary consists of bare peat, as this site was subject to peat extraction until 2020. Due to the recent cessation of peat production, there has been little opportunity for post-production habitats to develop, and habitats of biodiversity interest are therefore largely confined to the marginal habitats fringing the cutaway.

The largest area of Granaghan Bog is still dominated by bare peat. There are small fragments of remnant high bog in the margins of the site. These are small, dry, fragmented and in poor condition. In the southwest corner of the former production area, wetter peat conditions have enabled the development of a small patch of pioneering poor fen vegetation. There is a small conifer plantation located in the north-east margins of the site. A small section of agricultural pasture exists within the BnM boundary of the eastern bog margin. The remaining marginal areas of the bog are developing scrub (WS1), cutover bog (PB4) or disturbed high bog (PB1). Table 3.1 below provides a number of representative photos of the dominant habitats occurring within the bog.

There are records of Otter *Lutra lutra* using the Curraroe Stream to the south of the bog.

3.3.1 Current habitats

The most common habitats present at Granaghan include (in order of dominance):

- Bare peat (BP) (*Codes refer BnM classification of pioneer habitats of production bog¹*).
- Pioneer poor fen dominated by Soft Rush (pJeff) (frequently in mosaic with either bare peat or with Birch scrub)
- Emergent and open Birch scrub (eBir, oBir)
- Birch woodland (WN7)
- Purple Moorgrass-dominated vegetation (gMol)
- Pioneer dry Heath (dHeath) associated with drier disturbed areas
- Riparian zones (Rip)
- Access zones (railway along the south side)
- Conifer Plantation (WD4)

See Drawing number BNM-DR-25-10-17 titled **Granaghan Bog: Current Habitat Map**, included in the accompanying Mapbook, which illustrates the habitats at Granaghan Bog and Table 3.1 which illustrates a sample of habitats.

¹ See Appendix II – “An Overview of the Bord na Móna Habitat Classification” of the BnM [Biodiversity Action Plan 2016-2021](#)

Table 3-1 Photos of Habitats at Granaghan Bog (2023).

| Photos of Habitats at Granaghan | |
|---|---|
|  |  |
| <p><i>Bare peat in the northeast of the Granaghan. This is the dominant habitat within the bog.</i></p> | <p><i>Dry bare peat in the central elevated area underlain by limestone.</i></p> |
|  |  |
| <p><i>Pioneer open habitats developing along northern headland.</i></p> | <p><i>Stockpiles in the southeast of the bog.</i></p> |

Photos of Habitats at Granaghan



Bare peat cutaway, with wetland in the SE of the bog.

3.3.2 Species of conservation interest

A review of available biodiversity records from the National Biodiversity Data Centre (hereafter NBDC) of species records in the wider area of Granaghan bog was undertaken as part of a desk study. The 2007-2011 Bird Atlas, found 96 species of birds have been recorded on or near Granaghan Bog, including 20 red listed species and 29 amber listed species on the list of Irish Birds of conservation concern 2020-2026. Note that although these species have been recorded within the wider area of Granaghan bog, it is considered likely that the bare peat dominated habitats occurring within Granaghan bog are likely to be currently unsuitable for many species.

A review of available NBDC data for flora and fauna occurring within the area of Granaghan Bog also produced the following records;

- Eight species of Butterfly including; Green-veined White (*Pieris napi*), Small Tortoiseshell (*Aglais urticae*), Meadow Brown (*Maniola jurtina*), Orange-tip (*Anthocharis cardamines*), Ringlet (*Aphantopus hyperantus*), Small Copper (*Lycaena phlaeas*) Small White (*Pieris rapae*) and Speckled Wood (*Pararge aegeria*).
- Six species of terrestrial mammal namely Eurasian Badger (*Meles meles*), Otter (*Lutra lutra*), Irish Hare (*Lepus timidus subsp. hibernicus*), Pine Marten (*Martes martes*), Fallow deer (*Dama dama*) and Red Fox (*Vulpes vulpes*).
- Three species of odonata including; Black Darter (*Sympetrum danae*), Common Darter (*Sympetrum striolatum*) and Common Hawker (*Aeshna juncea*).

As per the above, although these species have been recorded within the wider area of Granaghan bog, it is considered likely that the bare peat dominated habitats occurring within Granaghan bog are likely to be currently unsuitable for many species.

On the most recent visit to Granaghan in September of 2022, species of bird were recorded utilising or associating with habitats onsite including Meadow pipit (*Anthus pratensis*) (Red-listed²), Pied Wagtail (*Motacilla alba*) (Green

² Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523—544

Listed), Common Kestrel (*Falco tinnunculus*) (Amber listed) and Common Snipe (*Gallinago gallinago*) (Amber listed). Wintering Teal (*Anas crecca*) (Amber listed) and Mallard (*Anas platyrhynchos*) (Amber listed) were also observed on site.

3.3.3 Invasive species

There are no known invasive species at Granaghan Bog. A broad range of common garden escapes are occasionally present around the margins of Bord na Móna bogs and although spatial overlap with the PCAS is expected to be limited, these are, where necessary, to be treated in line with Best Practice during PCAS activities.

3.4 Statutory Nature Conservation Designations

There are no European Sites (SAC's or SPA's) within close proximity (i.e. within a 5 km radius at minimum) to Granaghan Bog. The closest EU Designated Sites to Granaghan Bog are:

- Lough Forbes Complex SAC (Site code: 001818, located approximately 6km east of Granaghan Bog.
- Lough Ree SAC (Site code: 000440), located approximately 6 km south of Granaghan Bog.
- Lough Ree SPA (Site code: 004064), located approximately 6 km south of Granaghan Bog.
- Ballykenny-Fisherstown Bog SPA (Site code: 004101), located approximately 6km east of Granaghan Bog
- Corbo Bog SAC (Site code: 002349), located approximately 7.5km south-west of Granaghan Bog.
- Annaghmore Lough (Roscommon) SAC (Site code: 001626, located approximately 9km north-west of Granaghan Bog.

A number of NHA's (Natural Heritage Areas) and pNHA's (proposed Natural Heritage Areas) also occur within 10Km of Granaghan Bog including; Derrycannon Bog NHA (site code: 000605) located 5.5 km west of Granaghan Bog and Lisnanarriagh Bog NHA (site code: 002072) located 4.2Km south west of Granaghan bog. Cordara Turlough pNHA, Fortwilliam Turlough pNHA, Lough Ree pNHA, Royal Canal pNHA, Lough Bannow pNHA, Corbo Bog pNHA and Lough Forbes Complex pNHA are all located within 10Km of Granaghan Bog.

See map book drawing no: BNM-DR-25-10-23: Proximity Designated Sites in the accompanying mapbook.

3.4.1 Other Nature Conservation Designations

The Ramsar Convention entered into force in Ireland on 15th March 1985. Ireland currently has 45 sites/wetlands designated as Wetlands of International Importance (Ramsar Sites). These cover a surface area of 66,994ha.

Lough Gara (site code 852) is the closest Ramsar site to Granaghan Bog and is located approximately 35Km north west.

3.5 Hydrology and Hydrogeology

Granaghan forms part of the Upper Shannon Catchment (Catchment ID : 26C) as defined by the EPA under the Water Framework Directive (WFD) and is primarily situated within the Shannon[Upper]_SC_070 sub-catchment. The bog is located approximately 6km north of Lanesborough. The bog contains several drainage pathways and discharge locations which all drain into the Feorish River, which flows north-east before discharging into the River Shannon.

Granaghan Bog has a partially pumped drainage system. A single automatic pump drains the bog, discharging water into a network on silt ponds on the southeastern side of the bog.

Hydrological modelling (BNM-DR-25-10-09 titled Granaghan **Bog: Depression analysis**) indicates that parts of the bog margins form natural basin with significant potential for re-wetting, with the assumption that all drains would be blocked. It is likely that a portion of the basins in target areas will re-wet with deeper water, creating a mosaic of wetland habitats, when drains are blocked.

Regional hydrological data suggest that Granaghan receives average precipitation of 979mm/yr (1981-2010), with an estimated annual effective rainfall rate of 594 mm/yr based on GSI data. The GSI estimate a recharge rate of 23.8mm/yr for Granaghan. In areas underlain by lacustrine deposits, or where peat thickness is in excess of 1.5m (even where the bog is underlain by limestone till) this is expected to be an accurate estimate. However, in areas where peat depth is less than 1.5m and the area is underlain by an elevated mound of limestone till, losses to depth are expected to be more significant. An estimate of 60mm/yr for these areas would be considered reasonable based on other bogs. In low-lying parts of the bog, underlain by lacustrine deposits with shallow peat (<1.5m), contributions from groundwater are considered likely, with an estimated contribution of 50mm/yr considered reasonable. This is particularly the case for the low-lying depression in the south-west of the bog.

Overall, this suggests that assuming no change in storage, the annual runoff rate for areas with limited losses would be 5,702m³/ha compared to 5,340m³/ha and 6,440 m³/ha for areas with elevated losses and areas with groundwater contributions respectively. In both cases, the average annual runoff rate is relatively high compared to typical midland bogs and therefore ideal water depths can be achieved in areas of where topographic slopes are suitable. Despite this, it may be difficult to rewet the elevated areas, with thin peat underlain by limestone till since there will be a limited contributing catchment area.

Examples of results from other sites with similar hydrogeological settings are outlined below. In the case of deep peat areas underlain by a low permeability substrate, UM_009_S (Ummeras Bog) demonstrates the results that can be expected from deep peat measures in this type of scenario. This location has deep peat (3m) and is underlain by a low permeability substrate. This cell is located at the margin of the bog and is elevated and does not receive any flow from any incoming cells. This is a similar scenario to large parts of Granaghan bog, although the rate of effective rainfall is notably higher at Granaghan than Ummeras, meaning measures would be expected to be even more successful at this bog.

GSI data indicates that the western section of Granaghan Bog is underlain by the Moathill Formation, with most of the remaining area of the bog underlain by the Ballysteen Formation and a small area underlain by Argillaceous Limestone (Visean). All of these bedrock units are classified as locally important aquifers as they are moderately productive in local zones. Geological Survey of Ireland (GSI) mapping does not identify any karst features in close proximity to the bog. No data exists concerning depth to bedrock, however, there are small pockets of bedrock outcrops in close proximity to the bog.

An aquifer is an underground body of water-bearing rock or unconsolidated materials (gravel or sand) from which groundwater can be extracted in useful amounts. GSIs Aquifer classes are divided into three main groups based on their resource potential, and further subdivided based on the type of openings through which groundwater flows. There are nine aquifer categories in total. Locally important aquifers are capable of supplying locally important abstractions (e.g. smaller public water supplies, group schemes), or good yields (100-400 m³/d). This data gives an indication of sub-surface deposits (bedrock and unconsolidated materials) in terms of their groundwater resource potential and dominant groundwater flow type.

Regionally important aquifers are those in which the network of fractures, fissures and joints, through which groundwater flows, is well connected and widely dispersed, resulting in a relatively even distribution of highly permeable zones. There is good aquifer storage and groundwater flow paths can be up to several kilometres in

length. There is likely to be substantial groundwater discharge to surface waters ('baseflow') and large (>2,000 m³/d), dependable springs may be associated with these aquifers.

Groundwater Vulnerability is typically used to indicate the susceptibility to groundwater pollution; however, it can provide a useful proxy indication of likely groundwater flow rates in the surrounding area. Groundwater vulnerability for the surrounding areas is generally moderate to high, with some areas of extreme vulnerability mapped in areas where bedrock outcrop occurs.

3.6 Emissions to surface-water and watercourses

Drainage is an important feature of industrial peat production and there were extensive field drains maintained throughout bog areas to facilitate industrial peat production annually, each of which eventually drains into a terminal silt pond that allows for settlement of suspended solids before entering the main river systems. In accordance with the existing Integrated Pollution Control licence, all drainage water from boglands in a licensed area is discharged via an appropriately designed silt pond treatment arrangement as required in Condition 6.6. of the licence. Industrial peat production has now permanently ceased at Granaghan Bog.

Silt ponds are the key silt control infrastructure to control potential emissions from industrial peat production sites. As required under licence, BNM have a number of procedures for how it manages and maintains its silt pond network. The silt that builds up in silt ponds is excavated on a regular basis by Bord na Móna to facilitate an efficient level of silt control. Silt ponds will continue to be maintained during the rehabilitation and decommissioning. Silt pond decommissioning will be considered when sites are deemed to be on a trajectory of environmental stability and peatland rehabilitation has been completed.

Granaghan bog has four treated surface water outlets from previously active peat extraction catchments, which discharge to the Curraghroe Stream (IE_SH_26C150180 Curraghroe Stream_010) and the Feorish River (IE_SH_26F030400 Feorish (Tarmonbarry)_020).

Details of silt ponds, associated surface water emission points and those being monitored and sampled as part of the PCAS scheme are detailed on the accompanying structures map along with water quality map. See Drawing number BNM-DR-25-10-02 titled **Granaghan Bog: Structures and Sampling**, along with Drawing number BNM-DR-25-10-WQ01 titled **Granaghan Bog: Water Quality Map** included in the accompanying Mapbook, which illustrate the various drainage and water quality infrastructure present at Granaghan.

There is a robust monitoring program to track and verify any changes in baseline water quality conditions pre and post decommissioning and rehabilitation so that the success or otherwise can be tracked and verified for the National Parks & Wildlife Service, Environmental Protection Agency and Local Authority Water Program, amongst a range of stakeholders.

Peat extraction was identified as pressure in the second cycle of the river basin management plan is indicated as remaining so in the third cycle, currently under preparation.

The main emission limit value (ELV) associated with this bog is 35mg/l suspended solids, with trigger levels for ammonia of 1.42mg/l and COD 100mg/l.

From an analysis of any results over number of years of the IPC licence environmental monitoring of some of the discharges from this bog, these indicate that results were under the Emission Limit Value for Suspended Solids, under the trigger level for Ammonia and broadly under the trigger level for COD, excepting an occasion in 2017.

Ammonia averaged 0.31mg/l and ranged from 0.03 to 1.26mg/l with Suspended Solids ranging from 2 to 15 mg/l and averaging 4.41mg/l.

Table 3-2 Decommissioning and Rehabilitation Programme Water Quality Monitoring.

| Bog | SW | Monitoring | pH | SS | TS | Ammonia | TP | COD | Colour |
|------------|--------|------------|-----|----|-----|---------|-------|-----|--------|
| Grannaghan | SW-21 | Q4 22 | 7.2 | 2 | 212 | 0.083 | 0.05 | 46 | 150 |
| Grannaghan | SW-22 | Q4 22 | 6 | 2 | 166 | 0.201 | 0.05 | 60 | 230 |
| Grannaghan | SW-22A | Q4 22 | 5.7 | 8 | 70 | 0.24 | 0.05 | 64 | 289 |
| Grannaghan | SW-23 | Q4 22 | 6.9 | 2 | 252 | 0.057 | 0.058 | 70 | 261 |
| Grannaghan | SW-21 | Q2 20 | 8 | 2 | 317 | 0.14 | 0.05 | 52 | 125 |
| Grannaghan | SW-22 | Q2 20 | 7.2 | 2 | 308 | 0.445 | 0.05 | 93 | 317 |
| Grannaghan | SW-22A | Q2 20 | 7.7 | 2 | 303 | 0.208 | 0.05 | 35 | 146 |
| Grannaghan | SW-23 | Q2 20 | 7.2 | 2 | 201 | 1.26 | 0.05 | 54 | 185 |
| Grannaghan | SW-21 | Q4 17 | 7.8 | 6 | 304 | 0.21 | 0.05 | 98 | 233 |
| Grannaghan | SW-22 | Q4 17 | 7.5 | 15 | 202 | 0.46 | 0.05 | 107 | 193 |
| Grannaghan | SW-22A | Q4 17 | 6.3 | 5 | 82 | 0.44 | 0.05 | 72 | 199 |
| Grannaghan | SW-23 | Q4 17 | 7.5 | 5 | 218 | 0.03 | 0.05 | 89 | 178 |

Rehabilitation of cutaway peatland is closely linked with control of emissions. One of the criteria for successful rehabilitation is stabilisation through re-vegetation, which will stabilise all substrates and in turn remove the need for further silt control measures. Re-wet peat also aids the primary objective of stabilizing peat, as when peat is re-wetted it is not vulnerable to wind erosion. Re-wet peat and the development of wet peatland habitats can also act as sinks for silt and mobile peat, and increases additional retention time for solids, and the peatland vegetation can quickly stabilise this material within blocked drains on site (by acting like constructed wetlands).

Water quality of water discharges from restored peatlands normally improves as a result of bog restoration measures and the restoration of natural peatland processes (Bonn *et al.*, 20017). Bog restoration is also expected to improve water attenuation of the site as the drains are blocked, slowing water movement and water release from the site. Restored peatlands help slow the release of water and aid the natural regulation of floods downstream (Minayeva *et al.*, 2017). The National River Basin Management Plan (NRBMP) 2022-2027 (DHLGH, 2021) is the key national plan for Ireland to achieve the objectives of the Water Framework Directive (WFD). The NRBMP outlines how key actions such as the Bord na Móna peatland rehabilitation is expected to have a positive impact on water quality and help the NRBMP deliver its objectives in relation to the WFD.

Decommissioning and Rehabilitation Programme Water Quality Monitoring.

The licence obligation of quarterly sampling regime on a selected number of discharges to be sampled over a 3-year cycle will not be sufficient to be able to appropriately track the changing water chemistry that will occur as part of this enhanced rehabilitation programme, so this sampling regime will occur on a monthly basis.

In order to assist in monitoring surface water quality from this bog, it was agreed to increase the existing licence monitoring requirements of the IPC Licence, to sampling for the same parameters every month.

This new sampling programme commenced in August 2020 and is enabling a baseline to be established, with sampling to progress during the scheduled works, and for a period of up to 2 years post rehabilitation. Depending on the period required to confirm that the main two parameters, suspended solids and ammonia as remaining compliant with the licence emission and trigger limit values and there is an improving trajectory in these two parameters i.e., reduction in concentration, the monitoring programme and intensity will be periodically reviewed and amended.

Initial monthly results are included in Appendix XIII. These results cover the period from August 2020 to October 2023 and are from some of the surface water outlet from the sections of bog to be rehabilitated in 2023. Peat extraction ceased in this bog in 2020 and as expected some of the key water quality parameters that can impact water quality from peat extraction activities, remain on a relatively static trajectory, with suspended solids indicating a very slight downward trend from SW23 during the period and no trend at SW22A, all well below any limits of concern. During this same period there was a mixed trend in Ammonia for both SW22A and 23, with all other parameters fluctuated slightly, most likely influenced by normal weather patterns, including rainfall.

Monthly ammonia concentrations from both bogs from August 2020 to October 2023 had a range of 0.01 to 0.659 mg/l with an average of 0.140 mg/l. Results for suspended solids for the same period indicate a range of 2 to 10mg/l with an average of 3.45 mg/l.

In the preparation of this monitoring programme, Bord na Móna have been providing the Local Authority Water Programme (LAWPRO) with details of the surface water emissions points associated with this bog and will be amending some of the proposed monitoring locations on foot of this engagement. LAWPRO have in turn provided details of their 2021 monitoring programme and these are included in the Water Quality Map.

This is necessary to ensure that there is alignment with the WFD monitoring programme and that where possible, the monitoring programme will enable any improvements in water quality or establishing trends to be quantified against any available WFD monitoring data. It will also enable the periodic sharing of data which will inform the monitoring reports, success criteria and enable LAWPRO under the Water Framework Directive to track any changes in pressures and be aware of changes in water chemistry.

This enhanced monitoring programme will aim to include a minimum of 70% of a bog's drainage catchments, whatever number of surface water outlets these include.

Monitoring results will be maintained, trended every six months and reported on each year and as required, as part of the requirement to report on Condition 10.1 of the IPC Licence on Bog Rehabilitation in the Annual Environmental Report, and will be provided to LAWPRO and the EPA as required to inform progress and national monitoring requirements under the WFD. These results will also be available in April each year as a requirement of the Annual Environmental Report at www.epa.ie.

The parameters to be included as per condition 6.2 of the IPC Licence include monthly monitoring for pH, Flow, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour & COD. In addition, DOC has been included as a parameter to try and identify any changes in carbon in the surface water, and where required by LAWPRO, to assist in investigating other changes in water chemistry, the series of parameters can be reviewed and amended.

Rehabilitation of cutaway peatland is closely linked with control of emissions. One of the criteria for successful rehabilitation is stabilisation through re-vegetation, which will stabilise all substrates and in turn remove the need for further silt control measures. Re-wetted peat also aids the primary objective of stabilizing peat, as when peat is re-wetted it minimises risk to wind erosion. Re-wetted peat and the development of wet peatland habitats can also act as sinks for any silt and mobile peat, and increases additional retention time for solids, and the peatland vegetation can quickly stabilise this material within blocked drains on site (by acting like constructed wetlands).

Water will still discharge from designated emission points when rehabilitation at Granaghan Bog has been completed. This discharge will have improving water quality and there will be increased wetland attenuation, meaning slower release of water. This is expected to have a positive impact on status of downstream watercourses.

As the monthly monitoring program at Granaghan Bog continues in 2023 and 2024 and during the rehabilitation works planned for 2024, with data from the 2022/23 monitoring program, further trending will be produced to verify any ongoing trends.

3.7 Fugitive Emissions to Air

The bog is no longer in industrial peat production. Rehabilitation of the cutaway peatland will seek to re-wet the dry peat where possible and re-vegetate all areas (whether wet or dry). Collectively, ceasing industrial peat production, re-wetting and re-vegetating will minimise any risk of emission to air from dust.

3.8 Carbon Emissions

Irish peatlands are a huge carbon store, containing more than 75% of the national soil organic carbon (Renou-Wilson et al. 2012). Peatland drainage and extraction transforms a natural peatland which acts as a modest carbon sink (taking in 0.1 to 1.1 t of carbon as CO₂-C /ha/yr) into a cutaway ecosystem which is a large source of carbon dioxide (releasing 1.3 to 2.2 t of carbon as CO₂-C /ha/yr) based on Tier 1 Emission factors (Evans et al. 2017). Renou-Wilson et al. (2018) reported losses of between 0.81 – 1.51 CO₂-C /ha/yr from drained peatlands located in Ireland.

Re-wetting of dry peatlands will increase methane emissions (Gunther et al. 2020) as a consequence of the anoxic conditions within the peat body that provide a suitable environment for the microbial breakdown of plant litter and root exudates. Tanneberger et al. (2021) describes how peatland management has to choose between CO₂ emissions from drained peatlands or increased methane (CH₄) emissions from rewetted industrial peatlands. However, when radiative effects and atmospheric lifetimes of both GHG gases are considered and modelled, postponing rewetting increases the longterm warming effect of continued CO₂ emissions (Gunther et al. 2020). This means the increase in methane due to rewetting of dry peatlands is still negated by the CO₂ emissions reductions. Further, Wilson et al. (2022) confirmed the benefit of rapid rewetting to achieve strong carbon reductions and potentially altering the warming dynamics from warming to cooling depending upon the climate scenario.

It is expected that Granaghan Bog will become a reduced carbon source following rehabilitation. The potential of any cutaway site to develop as a carbon sink in the longer-term depends on the success of the rehabilitation measures, the extent of development of Sphagnum-rich or other peat-forming habitats, the balance of carbon fluxes from different cutaway habitats and future climatic conditions. Much of this bog is expected to develop regenerating wet deep peat vegetation on deep peat areas, and wetland habitats on shallow peat with open water, reed swamp and fen habitats with alkaline emission factors. Birch woodland is expected to develop on the drier mounds and peripheral headlands.

3.9 Current Ecological Rating

(Following NRA (2009) Evaluation Criteria)

The majority of this site is deemed to be of Local Importance (lower value) due to the dominance of bare peat. A small proportion of the site is rated as Local Importance (higher value) as the site supports developing semi-natural habitats and pioneer cutaway habitats.

4. CONSULTATION

4.1 Consultation to Date

Consultation seeks to engage an audience of relevant stakeholders at both a national and local level. National stakeholders have been identified from varied bog restoration and rehabilitation efforts undertaken by Bord na Móna over the past 40 years, with particular emphasis on engagement with stakeholders during their Biodiversity Action Plan programme, since 2010. National Stakeholders includes relevant government departments and agencies, relevant semi-state bodies, NGOs and other environmentally-focused groups with a national remit.

There has been ongoing consultation about rehabilitation, biodiversity and other general issues over the years about Mountdillon bog group, including Granaghan Bog, with various stakeholders in relation to:

- General consultation with range of stakeholders at annual Bord na Móna Biodiversity Action Plan review days 2010-2018.
- Feehan, J. (2004) A Long-Lived Wilderness; the future of the north midlands peatland network UCD/NWWPC.
- Sub-committee on Shannon Flooding Work Programme and Measures (OPW, Waterways Ireland, ESB, LA's, Fisheries Ireland, NPWs etc).
- Midlands & East Regional WFD Operational Committee (River Basin Management Plans).
- Archaeological Liaison Committee (National Museum of Ireland & Dept of Culture Heritage and the Gaeltacht).
- Bird surveys and monitoring carried out by Birdwatch Ireland for Bord na Móna,
- Foss, P.J., Crushell, P. & Gallagher, M.C. (2017). Counties Longford & Roscommon Wetland Study. Report prepared for Longford and Roscommon County Councils.

To inform the current Plan, both national and local stakeholders, including neighbours whose land adjoins Granaghan Bog and local representatives of national bodies (such as Regional National Parks and Wildlife Service staff) and relevant offices in County Councils (such as the Heritage or Environmental Offices) will be contacted. Any identified local interest groups will be sought and informed of the opportunity to engage with this rehabilitation plan, and when identified invited to submit their comments or observations in relation to the proposed rehabilitation at Granaghan Bog or the programme in general (see Appendix XI).

All correspondence received will be acknowledged and evaluated against the rehabilitation work proposed here, and the final draft of the Granaghan Bog Rehabilitation Plan will contain a review of the consultation.

4.2 Issues raised by consultees

N/A Yet as consultation has not commenced.

4.3 Bord na Móna response to issues raised during consultation

N/A Yet as consultation has not commenced.

5. REHABILITATION GOALS AND OUTCOMES

The rehabilitation goals and outcomes outline what Bord na Móna want to achieve by implementing the rehabilitation. These include:

- Meeting conditions of IPC Licence.
- Stabilisation or reduction in water quality parameters of water discharging from the site (e.g., suspended solids).
- Reducing pressure on receiving waterbodies that have been classified as At Risk from peatlands and from peat extraction, via stabilization or improving water-quality from this bog, and therefore, reducing pressures.
- Optimising hydrological conditions for **climate action benefits as part of PCAS**.
- Optimising hydrological conditions for the development of embryonic *Sphagnum*-rich vegetation communities on deep peat where possible, or reed swamp and fen on shallow more alkaline peat and other subsoils, where present.
- Optimising hydrological conditions for the protection of exposed archaeological structures, their retention in situ and preservation into the future.
- Supporting expected future land uses.
- The main goal and outcome of this plan is the successful rehabilitation (environmental stabilisation) of peatlands used for industrial peat production at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.

The rehabilitation goals and outcomes take account of the following issues.

- It will take some time for stable naturally functioning habitats to fully develop at Granaghan Bog. This will happen over a longer timeframe than the implementation of this rehabilitation plan.
- Re-wetting residual peat will initially maintain and enhance the carbon storage capacity of the bog. There is scientific consensus that restoration of hydrology in damaged bog can improve carbon storage, water storage and attenuation and help support biodiversity both on the site and in the catchment (See Section 3.8). This will reduce carbon emissions from the site from a larger carbon source to a smaller carbon source/part Carbon sink. In time, the site has the capacity to develop in part as a carbon sink. PCAS is expected to deliver significant contributions to Ireland's climate action.
- It is not expected that the site has the potential to develop active raised bog (ARB) analogous to the priority EU Habitats Directive Annex I habitat within the foreseeable future (c.50 years). Furthermore, only a proportion of the bog has potential to develop *Sphagnum*-rich habitats in this timeframe. Nevertheless, re-wetting across the entire bog, as part of the Scheme, will improve habitat conditions of the whole bog. Other peatland habitats will develop in a wider mosaic that reflects underlying conditions.
- Rehabilitating boglands that were previously used as an industrial peat source will also in the longer-term support other ecosystem services such as such the development of new habitat to support biodiversity and local attenuation of water flows from the bog.
- WFD status in receiving water bodies can be affected by peatlands and peat extraction but is also affected by other sources such as agriculture. In addition, receiving water bodies that are assessed as At Risk from peatlands and from peat extraction are likely to have several contributory sources of impacts (private peat extraction and Bord na Móna). Reducing pressures due to former peat extraction activities at

Granaghan will contribute to stabilising or improving water quality status of receiving water bodies in general. Ultimately, improving the WFD status of the receiving waterbody will depend on reducing pressure from a range of different sources., including peatlands in general (private and Bord na Móna).

- Bord na Móna are also planning rehabilitation measures in some nearby bogs (e.g., Derryarogue) in 2022-2023. There are expected to be cumulative water quality and other ecosystem service benefits to receiving water bodies such as the River Shannon from rehabilitating more than one bog in the same catchment.
- Re-wetting in general will benefit the future preservation of most known and unknown archaeological features. An Archaeological Impact Assessment (AIA) will be carried out under the PCAS scheme.

DRAFT

6. SCOPE OF REHABILITATION

The principal scope of this enhanced rehabilitation plan is to rehabilitate the bog. This is defined by:

- The area of Granaghan Bog.
- EPA IPC Licence - Ref. P0504-01. As part of Condition 10.2 of this license, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. Granaghan bog is part of the Moundillon bog group.
- The Scheme is designed to exceed the stabilisation requirements as defined by the IPC Licence. This scheme is designed to enhance the ecosystem services of Granaghan Bog, in particular, optimising **climate action benefits**. The proposed interventions will mean that environmental stabilization is achieved (meaning IPC obligations are met) and, in addition, significant other ecosystem service benefits particularly for climate action will be accrued.
- The local environmental conditions of Granaghan Bog mean that deep peat measures along with wetland creation are the most suitable rehabilitation approach for this site. Granaghan Bog does have residual deep peat across much of the cutover area. Granaghan is a partially pumped bog and is likely to develop wetland habitats when pumping is stopped/reduced.
- The key goals and outcomes of rehabilitation set by Bord na Móna. Bord na Móna have defined the key goal and outcome of rehabilitation at Granaghan Bog as **environmental stabilisation, optimising residual peat re-wetting, and the development of embryonic *Sphagnum* moss rich vegetation on deep peat along with wetlands/Reed Swamp and Fen on shallow more alkaline peat and other subsoils**.
- Rehabilitation of Granaghan Bog will support multiple national strategies of climate action, biodiversity action and other key environmental strategies such as the Water Framework Directive.
- The time frame for the delivery of the planned rehabilitation will be undertaken according to available resources and appropriate constraints.
- It is not proposed to carry out rehabilitation on all marginal or peripheral cutover bog zones. Generally, these bog remnants are narrow, or are subject to turbary, and do not have positive bog restoration prospects.

6.1 Key Constraints

- **Bog conditions.** Rehabilitation outcomes of sites are constrained by the environmental characteristics of these particular areas. For example, there is potential for raised bog restoration at some sites where there has not been significant industrial peat extraction and the peat body is largely intact (deep peat sites that are drained). At other sites, most of the peat mass has been removed, the environmental characteristics of these areas have therefore changed radically (peat depths, hydrology, water chemistry, substrate type, nutrient status, etc.) and there will therefore be different habitat outcomes (wetlands, fen, heathland, grassland and Birch woodland).
- **Land-use.** Any proposed enhancement measures (i.e., targeted drain-blocking) will be designed so as not to exclude potential future land-uses, where possible.
- **Surrounding landscape and neighbours.** Another key constraint is the interaction between the Bord na Móna sites and the surrounding landscape. Care will be taken to ensure that no active rehabilitation management is carried out that could negatively and knowingly impact on surrounding land. This includes any hydrological management on neighbouring farmland. It is anticipated that the work proposed here (blocking drains and re-wetting cutaway peatlands) will not have any flooding impacts on adjacent land.

- **Turbary.** Small areas of remnant raised bog occurring around the margins have previously been used by domestic turf cutters to harvest peat. These areas are ecologically and hydrologically linked to the area owned by Bord na Móna where rehabilitation is planned. It is beyond the scope of the rehabilitation plan to address turf cutting issues on Granaghan Bog.
- **Archaeology.** The discovery of monuments or archaeological objects during peatland rehabilitation may potentially constrain the rehabilitation measures proposed for a particular area. While the rehabilitation will optimise hydrological conditions for the protection of exposed archaeological structures, their retention in situ and preservation into the future, any new archaeology may require rehabilitation measures will be reviewed and adapted. If this occurs, rehabilitation measures will be reviewed and adapted. An Archaeological Impact Assessment (Appendix XII) will be carried out to mitigate against any impact on found archaeology at Granaghan Bog. Should any previously unknown archaeological material be uncovered during the rehabilitation works, it should be avoided and reported to Bord na Móna Archaeological Liaison Officer and the National Museum of Ireland.
- **Public Rights of Way.** There are no known rights of way at Granaghan Bog. Where a public right of way or similar burden exists on Bord na Móna property, consideration will be given to ensuring that this remains intact where possible. In some instances, depending upon previous land uses and management, alternative solutions may be required. These will be explored in consultation with local communities and statutory bodies during the consultation work associated with the decommissioning and rehabilitation work described here.
- **Ecological.** Some sensitive ecological receptors if present may require protection through the provision of Environmental Restriction Zones (or ERZ's). However, given the extensive areas of drained bare peat present at Granaghan bog, there are currently no known ecological constraints to the proposed rehabilitation measures.

6.2 Key Assumptions

- It is assumed that Bord na Móna will have all resources required to deliver this project.
- It is expected that weather conditions will be within normal limits over the rehabilitation plan timeframe. Long periods of wet weather have the capacity to significantly affect ground conditions and constrain drain blocking and other ground activities.

6.3 Key Exclusions

The scope of this rehabilitation plan does not cover:

- The longer-term development of stable naturally functioning habitats to fully develop at Granaghan Bog. The plan covers the short-term rehabilitation **actions** and **an additional monitoring and after-care programme** to monitor the rehabilitation and to respond to any needs.
- This plan is not intended to be an after-use or future land-use plan for Granaghan Bog.
- The longer-term management of this site, potentially as a nature conservation site, or for amenity, or for other uses in the future.

7. CRITERIA FOR SUCCESSFUL REHABILITATION

This section outlines what criteria will be used to indicate successful rehabilitation and what critical success factors are needed to achieve successful rehabilitation. All criteria used to indicate successful rehabilitation will be measured to validate the achievement of the rehabilitation goals and outcomes and validate the completion of the rehabilitation.

The key objective of this enhanced rehabilitation plan is **environmental stabilisation** and the stabilisation of any emissions from the site that related to the former industrial peat extraction activities.

Rehabilitation is generally defined by Bord na Móna as

- stabilisation of bare peat areas via targeted active management (e.g., drain-blocking/re-wetting) slowing movement of water across the site and encouraging natural colonisation; and
- mitigation of key emissions (e.g., potential suspended solids run-off).

In addition, Bord na Móna wish to optimise climate action and other ecosystem service benefits via enhanced rehabilitation measures.

7.1. Criteria for successful rehabilitation to meet EPA IPC licence conditions:

- Rewetting of residual peat in the former area of industrial peat production to offset potential run off of suspended solids and to encourage and accelerate development of vegetation cover via natural colonisation and reducing the area of bare exposed peat. See Table 7.1 for a summary of the criteria for successful rehabilitation and associated monitoring. The target will be the delivery of measures, and this will be measured by an aerial survey after rehabilitation is completed.
- That there is a stabilizing/improving concentration of suspended solids and ammonia in discharges from Bord na Móna sites, associated with the measures undertaken to stabilize the peat surface by the blocking of the internal drainage system and the maximized rewetting of the peat surface. This will be demonstrated by developing a stable or downward trajectory of water quality indicators (suspended solids and ammonia) towards what would be typical of a re-wetted cutaway bog. This will be measured via water quality monitoring (suspended solids and ammonia) for at least 2 years after the rehabilitation has been completed.
- Receiving water bodies have been classified under the River Basin Management Plan and this classification includes waters that are At Risk from peatlands and peat extraction. The success criteria will be that the “At Risk” classification will see improvements in the associated pressures from this peatland or if remaining At Risk, that there is an improving trajectory in the pressure from this peatland.

With regard to predicting and estimating likely trends that might materialize or could be considered as a target, monitoring of surface water ammonia emissions from Longfordpass bog in Littleton over 3 years, post cessation of peat extraction with ongoing rehabilitation, were considered. These indicate a downward trend in Ammonia concentrations (Figure 7.1).

Similarly monitoring of surface water ammonia emissions from a Corlea bog in Mountdillon over the past 3 years, post cessation of peat extraction with ongoing rehabilitation, indicate downward trends. Following commencement, and as the monthly monitoring program at Corlea continues in 2022 during the rehabilitation works and data from the 2021 monitoring program is compiled, further trending will be produced to verify any ongoing trends.

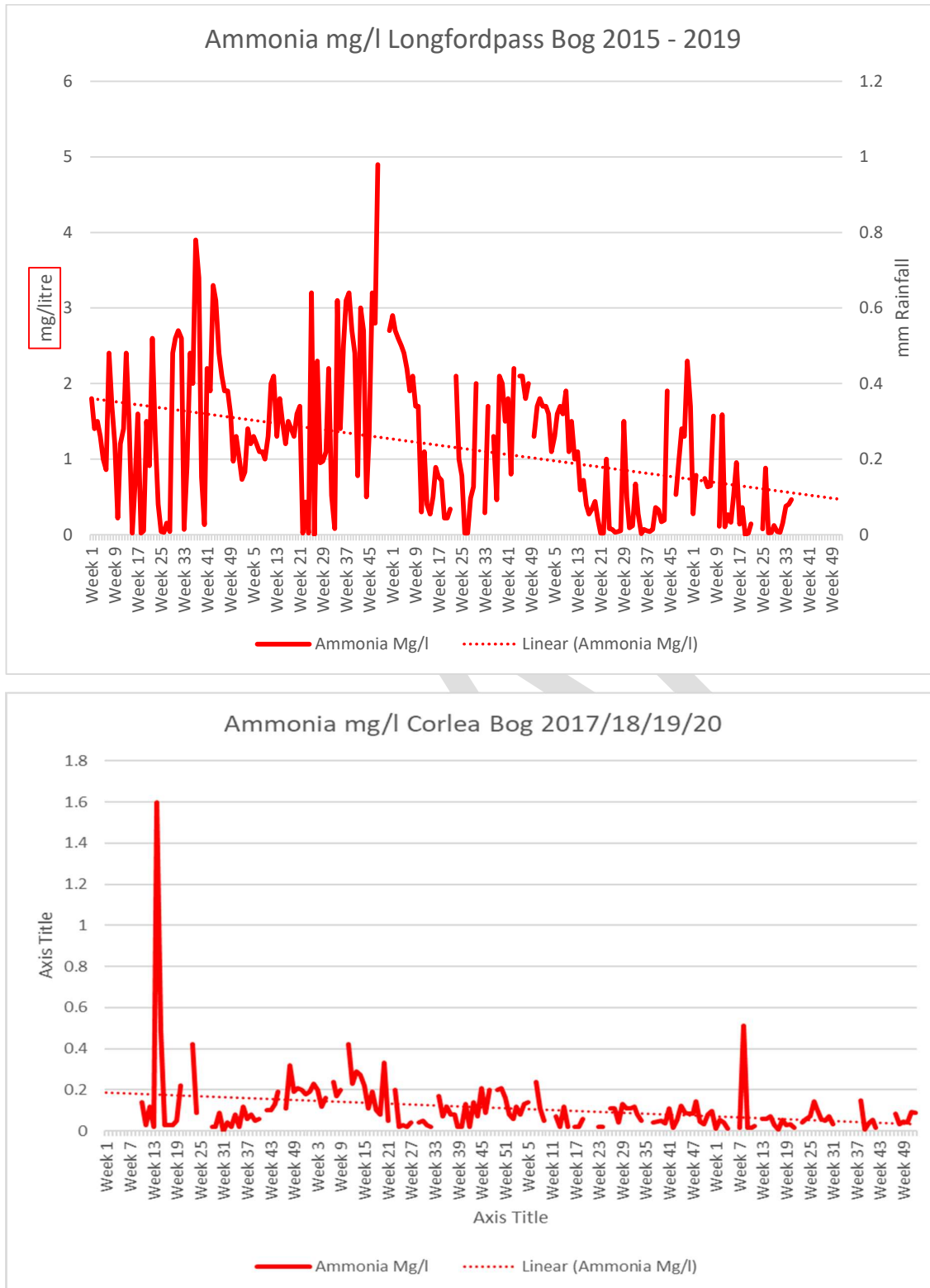


Figure 7.1. Ammonia levels over the period 2015-2019/2020 at Longfordpass and Corlea.

Additional criteria for successful rehabilitation to optimise climate action and other ecosystem service benefits:

- Optimising the extent of suitable hydrological conditions to optimise climate action and other ecosystem service benefits (optimising and maximising residual peat re-wetting). This will be measured by an aerial survey after rehabilitation has been completed.
- Accelerating the trajectory of the bog towards becoming a reduced carbon source/carbon sink. This will be measured through habitat mapping and the development of cutaway bog condition assessment. This cutaway bog condition assessment will include assessment of environmental and ecological indicators such as vegetation cover, vegetation communities, presence of key species, *Sphagnum* cover, bare peat cover and water levels (similar to ecotope mapping). Baseline monitoring will be carried after rehabilitation is completed (during the scheme). It is proposed that sites can be monitored against this baseline in the future.
- Reduction in carbon emissions. This will be estimated via a combination of habitat condition assessment and application of appropriate carbon emission factors derived from other sites. Baseline monitoring (habitat condition) will be carried after rehabilitation is completed (during the scheme). It is proposed that sites can be monitored against this baseline in the future.
- Setting the site on a trajectory towards establishment of a mosaic of compatible habitats including *Sphagnum*-rich regenerating wet deep peat vegetation, Birch woodland, fen, Reed swamp, wet woodland, scrub and heath where conditions are suitable. Some of these habitats have already in part established as pioneer vegetation/wetlands. It will take some time for stable naturally functioning habitats to fully develop at Granaghan Bog. This will be demonstrated and measured via aerial photography, habitat mapping and cutaway/habitat condition assessment. Baseline monitoring will be carried after rehabilitation is completed (during the scheme). It is proposed that sites can be monitored against this baseline in the future.
- Improvement in biodiversity and ecosystem services. This will be demonstrated by metrics outlined in Section 9.1 that can be used to measure changes in ecosystem services (e.g., water quality parameters, development of pioneer habitats, breeding bird monitoring). This will be measured by collecting a range of scientific data that can then quickly be adapted and into metrics that can be used to measure changes in various ecosystem services. Baseline monitoring will be carried after rehabilitation is completed (during the scheme). It is proposed that sites can be monitored against this baseline in the future.

Table 7.1. Summary of Success criteria, targets, how various success criteria will be measured and expected timeframes.

| Criteria type | Criteria | Target | Measured by | Expected Timeframe |
|-----------------------------|---|--|--|--------------------|
| IPC validation | Rewetting in the former area of industrial peat production | Delivery of rehabilitation measures Reduction in bare peat. | Aerial photography after rehabilitation has been completed – to demonstrate measures (drain-blocking) Establishment of a baseline for future monitoring of bare peat, vegetation establishment and habitat condition. | 2023-2025 |
| IPC validation | Key water quality parameters Ammonia, Phosphorous, Suspended solids, pH and conductivity | Reduction or stabilisation of key water quality parameters associated with this bog | Water quality monitoring for a period after rehabilitation has been completed | 2022-2024 |
| IPC validation | Reducing pressure from peat production on the local water body catchment (WFD) | Where this section of the water body, that this bog drains to, has not been identified as under pressure from peat extraction, that the intervening EPA monitoring programme associated with its Programme of Measures for this water body, confirms that its classification remains at not being at risk from peat extraction associated with activities at this bog. | EPA WFD monitoring programme | WFD schedule |
| Climate action verification | Optimising the extent of suitable hydrological conditions to optimise climate action | Optimal extent of suitable hydrological conditions | Aerial photography and Habitat mapping to map extent of suitable hydrological conditions. Baseline monitoring to be carried out during the scheme when rehabilitation is | 2023-2025 |

| Criteria type | Criteria | Target | Measured by | Expected Timeframe |
|-----------------------------|---|---|--|--------------------|
| | | | complete. Sites can be re-monitored in the future and compared against this baseline. | |
| Climate action verification | Reduction in carbon emissions. | Reduction in carbon emissions | Carbon emissions – estimated using a bog condition assessment and appropriate carbon emission factors. | 2023-2025 |
| Climate action verification | Setting the site on a trajectory towards establishment of a mosaic of compatible habitats | Establishment of compatible cutaway habitats | Habitat map, Cutaway bog condition map Baseline monitoring to be carried out during the scheme when rehabilitation is complete. Sites can be re-monitored in the future and compared against this baseline. | 2023-2025 |
| IPC validation | Key water quality parameters Ammonia, Phosphorous, Suspended solids, pH and conductivity | Reduction or stabilisation of key water quality parameters associated with this bog | Water quality monitoring for a period after rehabilitation has been completed | 2022-2024 |

Meeting climate action verification criteria and monitoring of these criteria after the scheme has been completed is dependent on support from the *Climate Action Fund* and Ireland's National Recovery and Resilience Plan or other sources of funding. Note that monitoring and verification of the overall scheme will be stratified – not all these criteria will be measured at each individual site. Baseline monitoring to be carried out during the scheme when rehabilitation is complete. Sites can be re-monitored in the future and compared against this baseline.

7.2. Critical success factors needed to achieve successful rehabilitation as outlined in the plan

The achievement of successful rehabilitation as outlined in the plan requires:

- **Funding to pay for resources required to deliver the planned rehabilitation (Bord na Móna and external).** Bord na Móna maintains a Provision on its balance sheet to pay for these future costs when industrial peat extraction ceases. Bord na Móna is fully committed to meeting its obligations relating to rehabilitation and decommissioning under the Integrated Pollution Control Licence. It is expected that additional costs of enhanced rehabilitation will be supported by Government through the Climate Action Fund and Ireland's National Recovery and Resilience Plan.

- **Bord na Móna to have sufficient resources (staff and training) to deliver the planned rehabilitation with required associated skills and competencies.**
- **Bord na Móna to have sufficient resources (suitable machinery) and staff to maintain this machinery.**
- **Weather conditions to be within normal limits over the rehabilitation plan timeframe.** Long periods of wet weather have the capacity to significantly affect ground conditions and constrain the delivery of rehabilitation. The potential impact of wet weather on ground conditions can be reduced by appropriate planning and management. Bord na Móna have significant experience of managing these issues through 70 years of working in these peatland environments.
- **Rehabilitation measures to be effective.** The rehabilitation measures proposed in this plan are based on 40 years of Bord na Móna experience of peatland management and best practice applied internationally in peatland management. Measures proposed in this plan have already been shown to be effective at other sites. Bord na Móna will apply a flexible and adaptable approach to the more innovative rehabilitation measures proposed in this plan. If measures are not initially effective, Bord na Móna will review any requirement for additional practical rehabilitation.
- **Natural colonisation of vegetation to develop semi-natural habitats at a rate within the normal limits.** The development of naturally functioning semi-natural habitats on degraded bog takes time. It may take 30-50 years for active raised bog vegetation to re-develop on suitable cutaway that was previously bare peat. However, Bord na Móna experience has demonstrated the effectiveness of these type of measures for re-wetting bog and creating carbon sinks (Renou-Wilson et al. 2018).
- Rehabilitation measures have been designed to accelerate and work with natural colonisation and other natural processes. Bord na Móna experience of rehabilitation has shown that re-wetting improves conditions for natural colonisation and that natural colonisation is accelerated where the environmental conditions are most suitable. Rehabilitation measures have been designed to modify the conditions of areas within sites where conditions are less suitable for natural colonisation (modifying hydrology, topography, nutrient status or availability of potential seed sources).
- **Monitoring to be robust and effective.** Rehabilitation Monitoring will be established to validate the success of rehabilitation as required by Condition 10 of the IPC Licence and to verify the benefits of the proposed enhanced measures to optimise climate action. This will focus on collecting a range of scientific data that can then quickly be adapted and into metrics that can be used to measure changes in various ecosystem services.

8. REHABILITATION ACTIONS AND TIME FRAME

Peatland rehabilitation requires detailed planning and the use of data from desktop surveys and field surveys. This data in association with topographical and hydrological modelling will be important in planning the future peatland landscapes and planning the use of the most appropriate rehabilitation methodologies to maximise climate action benefits. Hydrological modelling indicates those areas that are likely to re-wet when drains are blocked, based on the current topography, and areas where water levels may have to be modified, where needed. Enhanced rehabilitation measures will look to optimise hydrological conditions for re-wetting peat in other areas. This planning is also essential for matching the most sustainable rehabilitation methodology to the most suitable cutaway environment to maximise the benefits of the resource outlay (maximising cost/benefit).

A number of illustrative figures have been produced to inform Rehab Planning and Design, including Aerial Photography, Peat Depths, LiDAR Surface Maps, and Depression Analysis modelling; these are included in the accompanying Mapbook as the drawings referenced below:

BNM-DR-25-10-22 titled Granaghan Bog: Aerial Imagery 2020

BNM-DR-25-10-04 titled Granaghan Bog: Peat Depths

BNM-DR-25-10-09 titled Granaghan Bog: Depression Analysis

BNM-DR-25-10-03 titled Granaghan Bog: LiDAR Map

The rehabilitation actions themselves will be a combination of PCAS measures to re-wet peat. The distribution of these measures is provisionally outlined in drawing titled BNM-DR-25-10-05 Granaghan Bog: Enhanced Rehabilitation Measures in the accompanying Mapbook (note that the actual distribution of these measures may be subject to change in response to stakeholder consultation and refinement of the enhanced rehabilitation measures.)

These enhanced measures for areas out of peat extraction at Granaghan bog will include:

- Deep Peat measures including field re-profiling, resulting in bunded areas 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;
- Regular drain blocking (3/100m) on dry cutaway along with the blocking of outfalls and management of water levels, along with organic fertiliser application;
- 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* moss will be undertaken where required.
- Initial hydrological modelling indicates that some parts of the site will develop a mosaic of wetland habitats. 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 small 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.

An indication of the areas for these various measures is shown in Table 8.1 and in mapbook ref. no. BNM-DR-25-10-05: Enhanced Rehab Measures.

Table 8-1 Types of and areas for enhanced rehabilitation measures at Granaghan Bog.

| Type* | Rehab Code | Enhanced Rehabilitation Measure | Extent (Ha) |
|-----------------|------------|--|-------------|
| Deep Peat | DPT 2 | More intensive drain blocking (max 7/100 m) + blocking outfalls and managing overflows | 49.1 |
| Deep Peat | DPT 3 | More intensive drain blocking (max 7/100 m), + field reprofiling + blocking outfalls and managing overflows | 18.2 |
| Deep Peat | DPT 4 | Berms and field re-profiling (45x60m cell), modifying outfalls and managing overflows & drainage channels for excess water & <i>Sphagnum</i> inoculation | 46.3 |
| Dry Cutaway | DCT2 | Regular drain blocking (3/100m) +modifying outfalls and managing water levels with overflow pipes + targeted fertiliser treatment | 15.4 |
| Wetland | WLT4 | More intensive drain blocking (max 7/100 m), + modifying outfalls and managing overflows + transplanting Reeds and other rhizomes | 9.3 |
| Marginal land | MLT1 | No work required | 7.7 |
| Additional Work | AW2 | Targeted Drain Blocking | 2.9 |
| Silt ponds | Silt pond | Silt ponds | 0.4 |
| Constraint | Constraint | Other Constraints | 18.2 |
| Total | | | 168 |

*Note that the types of rehab and areas of rehab may change in response to stakeholder consultation and refinement of the enhanced rehabilitation measures.

8.1 Short-term planning actions (0-1 years)

- Develop a detailed site plan with engineering drawings outlining how the various rehabilitation methodologies will be applied to Granaghan Bog. This will take account of peat depths, topography, drainage and hydrological modelling. (See map for an indicative view of the application of different rehabilitation methodologies).
- A drainage management assessment of the proposed enhanced rehabilitation measures will be carried out and any issues identified resolved and the rehabilitation plan adapted.
- A review of known archaeology and an archaeological impact appraisal of the proposed rehabilitation will be carried out. The results of this assessment will be incorporated into the rehabilitation plan to minimise known archaeological disturbance, where possible.
- A review of issues that may constrain rehabilitation such as known rights of way, turbarry/turfcutting and existing land agreements is to be carried out.
- There are peat stocks remaining on the bog. This stock will be moved into existing field drains or where possible will be used in the rehabilitation in the construction of cells.
- An ecological appraisal of the potential impacts of the planned rehabilitation on the presence of sensitive ground-nesting bird breeding species (e.g., breeding waders) is to be carried out. The scheduling of rehabilitation operations will be adapted, where required.
- Ensure all activities comply with the environmental protection requirements of the IPC Licence.
- Carry out Appropriate Assessment of the Rehabilitation Plan.

- Track implementation and enforcement of the relevant IPC Licence conditions, the mitigation measures (AA) and other environmental control measures during the implantation of the rehabilitation plan.

8.2 Short-term Practical Actions (0-2 years)

- Carry out proposed measures as per the detailed site plan. This will include a combination of drain blocking, and fertiliser applications targeting bare peat areas of headlands, high fields and other areas (where required) in addition to wetland creation and management prescriptions. All rehabilitation will be carried out with regard to best practice environmental control measures (Appendix IV).
- Monitor the success of rehabilitation measures in relation to developing suitable hydrological conditions.
- Carry out the proposed monitoring, as outlined.
- While natural colonisation is expected to commence almost immediately once peat production ceases, Phase 2 actions will be carried out in targeted areas to accelerate re-vegetation and colonisation of target species. Phase 2 actions may include seeding of targeted vegetation and inoculation of Sphagnum.
- Silt ponds will be monitored during this period and there will be continued maintenance and cleaning to prevent potential suspended solids run-off from the site during the rehabilitation phase.
- Submit an ex post report to the Scheme regulator to verify the eligible measures to be carried out in year 1 of the Scheme, and an ex ante estimate for year 2 of the Scheme; and so on for each year of the Scheme.

8.3 Long-term (>3 years)

- Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.
- Delivery of a monitoring, aftercare and maintenance programme (See section 10.2 below).
- Decommissioning of silt-ponds will be assessed and carried out, where required.
- Reporting to the EPA will continue until the IPC License is surrendered.

8.4 Timeframe

- **2022-2023:** Short-term planning actions.
- **2023-2024:** Short-term practical actions.
- **2024-2025:** Long term practical actions. Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.
- **2025:** Decommission silt-ponds, if necessary.

8.5 Budget and Costing

Bord na Móna (BnM) appreciates the Minister's intention to support Bord na Móna in developing a package of measures, 'the Scheme', for enhanced decommissioning, rehabilitation and restoration of cutaway peatlands referred to as, the Peatlands Climate Action Scheme'. *However, only the additional costs associated with the additional and enhanced rehabilitation, i.e., measures which go beyond the existing standard mandatory decommissioning and rehabilitation requirements arising from Condition 10 will be eligible for support.*

The enhanced decommissioning, rehabilitation and restoration of the peatlands funded by the Scheme will deliver benefits across climate action (GHG mitigation through reduced carbon emissions and acceleration

towards carbon sequestration), enrich the State's natural capital, increase eco-system services, strengthen biodiversity, improve water quality and storage attenuation as well as developing the amenity potential of the peatlands.

Bord na Móna maintains a provision on its balance sheet to pay for the future costs of **standard** rehabilitation and decommissioning when industrial peat extraction ceases. This is updated every year - for more information see the Bord na Móna Annual Report (Bord na Móna, 2022). Bord na Móna is fully committed to meeting its obligations relating to rehabilitation and decommissioning under the Integrated Pollution Control Licence.

At this time, a 'standard' rehabilitation provision (sufficient to discharge the requirement of Condition 10 in the licence) has been allocated to the site based on the area of different cutaway types across the site (See Appendix I).

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9. AFTERCARE AND MAINTENANCE

9.1 Programme for monitoring, aftercare and maintenance

This programme for monitoring, aftercare and maintenance has been designed to meet the Conditions of the IPC Licence. This is defined as:

- There will be **initial quarterly monitoring assessments** of the site to determine the general status of the site, the condition of the silt ponds, assess the condition of the rehabilitation work, monitoring of any potential impacts on neighbours land, general land security, boundary management, dumping and littering.
- The number of these site visits will reduce after 2 years to bi-annually and then after 5 years to annual visits.
- These monitoring visits will also consider any requirements for further practical rehabilitation measures.
- The **baseline condition of the site will be established** post-rehabilitation implementation by using an aerial survey to take an up to date aerial photo, when rehabilitation is completed. This will be used to verify completion of rehabilitation measures. The extent of bare peat will be assessed using this baseline data, and habitat maps will be updated, if needed. It is proposed that sites can be monitored against this baseline in the future.
- **Water quality monitoring** at the bog will be established. The main objective of this water quality monitoring will be to establish a baseline and then monitor the impact of peatland rehabilitation on water quality from the bog.
- In order to assist in monitoring surface water quality from this bog, it is planned to increase the existing licence monitoring requirements to sampling for the same parameters to every month during the scheduled activities and for a period up to two years post rehabilitation, depending on the period required to confirm that the main two parameters, suspended solids and ammonia are remaining compliant with the licence emission and trigger limit values and there is an improving trajectory in these two parameters i.e. reduction in concentration.
- Enhanced water quality monitoring will aim to include up to 70% of a bogs drainage catchments.
- Monitoring results will be maintained, trended and reported on each year as part of the requirement to report on Condition 10.1 of the IPC Licence on Bog Rehabilitation in the Annual Environmental Report, which will be available in April each year at www.epa.ie.
- The parameters to be included (as per condition 6.2 of the IPC Licence) include monthly monitoring for pH, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour, and COD and DOC.
- This monthly sampling regime on a selected number of silt ponds will be carried out over a two-year cycle. The original (licence) requirement was for a quarterly sampling regime, but this has been increased to a monthly regime to appropriately track the changing water chemistry that will occur as part of this enhanced rehabilitation. In addition, DOC will be included as a parameter to try and identify any changes in carbon in the surface water.
- If, after two years, key criteria for successful rehabilitation are being achieved and key targets are being met, then the water quality monitoring will be reviewed, with consideration of potential ongoing research on site. The water quality data, the aerial surveys and the habitat mapping will be collated and will be submitted to the EPA as part of the final validation report.
- If, after two years, key criteria for successful rehabilitation have **not** been achieved and key targets have **not** been met, then the rehabilitation measures and status of the site will be evaluated and enhanced, where required. This evaluation may indicate no requirement for additional enhancement of

rehabilitation measures but may demonstrate that more time is required before key criteria for rehabilitation has been achieved. Monitoring of water quality will then also continue for another period to be defined.

- Where other uses are proposed for the site that are compatible the provision of biodiversity and ecosystem services, these will be assessed by Bord na Móna in consultation with interested parties. Other after-uses can be proposed for licensed areas and must go through the required assessment process and planning procedures.

Additional monitoring measures are also proposed to monitor ecosystem service benefits that have been derived by enhanced rehabilitation. These proposed monitoring measures will be funded by the proposed Climate Action Fund Scheme or additional other funding. Monitoring of climate action and other ecosystem service benefits will be designed to take account of the requirements of monitoring benefits of the overall Scheme and will be stratified; that is not all monitoring will be carried out in each site. These are defined as:

- Vegetation and habitat monitoring after rehabilitation is completed using a cutaway bog condition assessment. This assessment will include assessment of on environmental and ecological indicators such as vegetation cover, vegetation communities, presence of key species, *Sphagnum* cover, bare peat cover and water levels. It is proposed that sites can be monitored against this baseline in the future.
- The condition of the bog can be assessed using the condition assessment and suitable Greenhouse Gas (GHG) emission factors can be assigned to different habitats. GHG emission factors have been determined for various peatland habitats in Ireland (Wilson *et al.*, 2015) and are constantly being refined with more and more research. BnM is actively supporting research into GHG fluxes in different rehabilitated peatland habitats. This means that potential GHG emissions can be estimated from the site, as the site continues along its trajectory towards a naturally functioning peatland ecosystem.

9.2 Rehabilitation plan validation and licence surrender – report as required under condition 10.4

IPC License Condition 10.4. *A final validation report to include a certificate of completion for the Rehabilitation Plan, for all or part of the site as necessary, shall be submitted to the Agency within six months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment.*

Reporting to the EPA will continue until the IPC License is surrendered. The bog will be included in the full licence surrender process as per the Guidance to Licensees on Surrender, Cessation and Closure of Licensed Sites EPA, 2012, when:

- The planned rehabilitation has been completed;
- The key criteria for successful rehabilitation has been achieved and key targets have been met;
- Water quality monitoring demonstrates that water quality of discharge is stabilising or improving; and
- The site has been environmentally stabilised.

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GRANAGHAN DECOMMISSIONING AND REHABILITATION PLAN - ADDENDUM 1

Bord na Móna operates under IPC Licence issued and administered by the EPA to extract peat within the Mount Dillon bog group (Ref. P0504-01). As part of Condition 10.2 of this license, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. Granaghan bog is part of the Mount Dillon bog group and is located in Co. Longford.

This addendum outlines the findings of the Appropriate Assessment reporting carried out in respect of proposed PCAS activities at Granaghan Bog.

Appropriate Assessment Reporting findings

To follow

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APPENDIX I: A STANDARD PEATLAND REHABILITATION PLAN TO MEET CONDITIONS OF THE IPC LICENCE

In the event that the Scheme (PCAS) is not supported by additional funding, Bord na Móna is still obligated to carry out peatland rehabilitation to meet the conditions of the IPC Licence. Under its EPA licences and following cessation of peat extraction, BnM is mandated to ‘decommission’ its operations by removing materials ‘that may result in environmental pollution’ and establish that ‘rehabilitation’ measures have environmentally stabilised former peat extraction areas.

This proposed standard peatland rehabilitation plan is outlined here to **estimate potential costs**. Bord na Móna will still be expected to cover the costs that would have accrued from standard decommissioning and rehabilitation activities, as part of its original obligations. The existing costs associated with both the removal of potentially polluting materials and the environmental stabilisation of the peatlands resides with Bord na Móna. However, the expenditure necessary to deliver the additional and enhanced decommissioning, rehabilitation and restoration and the benefits that flow from these measures and interventions/improvements will be eligible for funding by government through the Climate Action Fund and Ireland’s National Recovery and Resilience Plan.

The same process as outlined in Section 2 will be followed.

Scope of rehabilitation

The principal scope of this rehabilitation plan is to rehabilitate the bog. This is defined by:

- The area of Granaghan Bog
- EPA IPC Licence - Ref. P0504-01. As part of Condition 10.2 of this licence, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. Granaghan bog is part of the Moundillon bog group.
- The current condition of Granaghan Bog. This site has pumped drainage.
- The key objective of rehabilitation, as defined by this licence, is **environmental stabilisation** of the bog.
- To minimise potential impacts on neighbouring land. Some boundary drains around Granaghan Bog will be left unblocked as blocking boundary drains could affect adjacent land.

Rehabilitation goals and outcomes

The key rehabilitation goal and outcome for Granaghan Bog is environmental stabilisation of the site via wetland creation. This is defined as:

- Carrying out drain blocking to re-wet peat and slow runoff.
- Stabilising potential emissions from the site (e.g. suspended solids).
- Environmental stabilisation.

The outcome is setting the site on a trajectory towards establishment of natural habitats.

Criteria for successful rehabilitation:

- Rewetting of residual peat in the former area of industrial peat production to offset potential run-off of suspended solids and to encourage development of vegetation cover via natural colonisation, and reducing the area of bare exposed peat.
- That there is a stabilising/improving concentration of suspended solids and ammonia associated with the measures undertaken to stabilise the peat surface by the blocking of the internal drainage system and the maximised rewetting of the peat surface. This will be demonstrated by developing a stable or downward trajectory of water quality indicators (suspended solids and ammonia) towards what would be typical of a re-wetted cutaway bog. This will be measured via water quality monitoring (suspended solids and ammonia).
- Receiving water bodies have been classified under the River Basin Management Plan and this classification includes waters that are *At Risk* from peatlands and peat extraction. The success criteria will be that the *At Risk* classification will see improvements in the associated pressures from this peatland or if remaining *At Risk*, that there is an improving trajectory in the pressure from this peatland.

Rehabilitation indicators

- Demonstrating the delivery of the rehabilitation through site visits and through updated aerial photography (indicating presence of peat blockages and re-wetting). This will be demonstrated by a post rehab survey.
- Stabilising potential emissions from the site (e.g. suspended solids). The key target will be developing a stable or downward trajectory of water quality indicators (suspended solids and ammonia). This will be demonstrated by water quality monitoring results.

Rehabilitation measures: (see Mapbook drawing no. BNM-DR-25-10-20: Standard Rehab Measures)

- Blocking field drains in the drained raised bog remnant area to create regular peat blockages (three blockages per 100 m) along each field drain;
- No measures are planned for the other surrounding marginal peatland habitats.
- Silt ponds will continue to be maintained during the rehabilitation and decommissioning phase.
- Evaluate success of short-term rehabilitation measures and enhance where necessary.
- Decommissioning of silt-ponds will be assessed and carried out, where required.

Timeframe:

- 2023-2024 1st phase of rehabilitation. Field drain blocking.
- 2025. 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.
- 2025-2026. Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.
- 2025-2026. Decommission silt-ponds, if necessary.

Table AP-1. Rehabilitation measures and target area.

| Type | Code | Description | Area (Ha) |
|---------------|------------|--|------------|
| Deep peat | DPT1 | Regular drain blocking (3/100 m) + blocking outfalls and managing water levels with overflow pipes | 113.6 |
| Dry cutaway | DCT1 | Blocking outfalls and managing water levels with overflow pipes | 15.4 |
| Wetland | WLT1 | Turn off or reduce pumping to re-wet cutaway + blocking outfalls and managing water levels with overflow pipes | 9.3 |
| Marginal Land | MLT1 | No work required | 10.6 |
| Other | Silt Pond | Silt ponds | 0.4 |
| Other | Constraint | Constrained areas/buffers/Archaeology | 18.6 |
| Total | | | 168 |

See Drawing number BNM-DR-25-10-20 titled **Granaghan Bog: Standard Rehab Measures** included in the accompanying Mapbook which illustrates the standard rehab measures to be applied.

Monitoring, after-care and maintenance

- There will be initial quarterly monitoring assessments of the site to determine the general status of the site, the condition of the silt-ponds, assess the condition of the rehabilitation work, assess the progress of natural colonisation, monitoring of any potential impacts on neighbouring land and general land security. The number of site visits will reduce after 2 years to bi-annually. These site visits will assess the need to additional rehabilitation.
- Water quality monitoring will be established.
- Monitoring results will be maintained, trended and reported on each year as part of the requirement to report on Condition 10.1 of the IPC Licence on Bog Rehabilitation in the Annual Environmental Report, which will be available in April each year at www.epa.ie.
- The parameters to be included (as per condition 6.2 of the IPC Licence) include monthly monitoring for pH, Flow, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour, and COD.
- This sampling regime on a selected number of silt ponds will be carried out over a two-year cycle. The original (licence) requirement was for a quarterly sampling regime.
- Where other uses are proposed for the site, these will be assessed by Bord na Móna in consultation with interested parties. Other after-uses can be proposed for licensed areas and must go through the required assessment and planning procedures.

Validation and IPC Licence surrender

Reporting to the EPA will continue until the IPC License is surrendered. The bog will be included in the full licence surrender process as per the Guidance to Licensees on Surrender, Cessation and Closure of Licensed Sites (EPA, 2012) when:

- The planned rehabilitation has been completed;

- Water quality monitoring demonstrates that water quality of discharge is stabilising or improving; and
- The site has been environmentally stabilised.

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APPENDIX II: BOG GROUP CONTEXT

The Mount Dillon Bog Group IPC Licensed area is made up of two sub-groups (Lough Ree (the Mount Dillon Energy Peat Group) and Mostrim) and have been in industrial peat production for several decades. There are 28 defined sites covering a total area of 11,322 ha. Of the 28 sites, 23 mainly straddle the River Shannon within counties Roscommon and Longford, with five sites partially in County Westmeath to the east. Each bog area further comprises a range of habitats from bare milled peat production areas to re-colonising cutaway to workshops areas and transport infrastructure. Industrial peat extraction from these sites mainly supplied ESB power stations at Lanesborough (LRP) or for horticultural peat products.

Industrial peat extraction in the Mount Dillon Bog Group ceased in 2019. Remaining milled peat stocks were supplied to Lanesborough (LRP) in 2020. Both power stations ceased using peat by the end of 2020. All remaining horticultural peat stocks were also removed during 2020. Intensive decommissioning and rehabilitation for the Mount Dillon Bog Group started in 2020/2021.

One bog site, Cloonmore, was never used for industrial peat production and several bogs in the Mostrim group have been drained but never fully developed and still retain typical high bog characteristics. These include Clonwhelan, Glenlough and a section of Mostrim. These sites have been zoned for biodiversity and a high bog drain blocking will be used to re-wet the high bog and encourage restoration of the raised bog habitat. Several sites (Glenlough, Mostrim, Clonwhelan and Clynan) were assessed by consultants for NPWS as part of the review of the raised bog Natural Heritage Area network (NPWS 2014).

The rehabilitation plan for the Mount Dillon Bog Group encompasses all areas involved in industrial peat production including industrial production areas and associated facilities. It also includes rehabilitation measures for those bogs that were initially drained but not fully developed.

A breakdown of the component bog areas for the Mount Dillon Bog Group IPC License Ref. PO-504-01-01 is outlined in Table Ap-2.

Industrial peat production history varies across the Mount Dillon bog group, so there is a wide range of peat depths at present. Bogs close to Lanesborough tend to have shallower peat depths or have been cutaway, while some bogs on the periphery of the group tend to have deeper peat reserves. Several sites such as Mount Dillon and Garryduff have been mostly cutaway to the fen peat layers or in some cases to expose the underlying gravel/sub-soil. Several bogs in the Mostrim group have only been partially developed or have had no industrial peat production and have relatively deep peat depths.

Table Ap-2: Mount Dillon Bog Group names, area and indicative status (Mount Dillon Energy Peat sub-group)

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|----------|-----------|--|--|---------------------------|---|
| Begnagh | 265 | Cutover Bog Industrial peat production commenced at Begnagh Bog in 1977 and ceased in 2020. Deep peat reserves remain on much of the former production area. Begnagh is considered a deep peat cutover bog. | Begnagh Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power Some areas of cutaway on site are developing pioneer cutaway vegetation communities. | 2020 | Finalised 2022 Rehab started in 2022 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|-------------------------|-----------|---|--|---------------------------|---|
| Clooneeny | 358 | Cutover Bog Industrial peat production commenced at Clooneeny Bog in 1985 and ceased in 2020. Deep peat reserves remain on much of the former production area. Clooneeny is considered a deep peat cutover bog. | Clooneeny Bog formerly supplied a range of commercial functions including; horticultural peat and fuel peat for Lough Ree Power Most of the former production area on site is bare peat. Some areas of cutaway on site are developing pioneer cutaway vegetation communities. | 2020 | Finalised 2022 Rehab started in 2022 |
| Cloonmore | 102 | N/A | Never developed for industrial peat production; scattered plots. | N/A | N/A |
| Cloonshannagh | 494 | Cutover Bog Industrial peat production commenced at Cloonshannagh Bog in 1985 and ceased in 2020. Deep peat reserves remain across the former production area. Cloonshannagh is considered a deep peat cutover bog. | Cloonshannagh Bog formerly supplied a range of commercial functions including; horticultural peat and fuel peat for Lough Ree Power Restoration work has been carried out on a 38ha section of high bog within Cloonshannagh Bog. Some of the former production area on site is developing pioneer cutaway vegetation communities, the remainder of the site is bare peat. | 2020 | Draft 2023 |
| Cloonshannagh Rail Link | 28 | Cloonshannagh rail link is a link between sites. | N/A | N/A | N/A |
| Corlea | 163 | Cutaway Bog Industrial peat production commenced at Corlea Bog in 1960 and ceased in 2018. Long-term peat extraction has reduced peat reserves on this bog. Corlea is considered a shallow peat cutaway bog. | The former production area at Corlea has already extensively colonised. Pioneer wetland and scrub development has occurred over much of the site. Some wetland and rehabilitation management was undertaken between 2016-2018. Part of site leased to local community development group to develop amenity walkway in association with Longford County Council. | 2018 | Draft 2019 To be Finalised in 2023 |
| Derraghan | 289 | Cutover Bog Industrial peat production commenced at Derraghan Bog in the 1940's and ceased in 2020. Most of the former production area has shallow peat reserves. Some pockets of deep peat remain. Derraghan is considered a shallow peat cutover bog. | Derraghan Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power Much of the former production area at Derraghan has been out of production for some time. These areas have already extensively colonised with pioneer wetland and scrub vegetation communities. | 2020 | Plan Finalised 2021 Rehab commenced 2022 |
| Derryadd | 653 | Cutover Bog Industrial peat production commenced at Derryadd Bog in 1960 and ceased in 2020. Long-term peat extraction has reduced peat reserves on this bog. Most of the former production area has shallow peat reserves. Some pockets of deep peat remain. Derryadd is considered a shallow peat cutover bog. | Much of the former production area at Derryadd has been out of production for some time. These areas have already extensively colonised with pioneer wetland and scrub vegetation communities Derryadd Bog will form part of the footprint of Derryadd Windfarm for which planning permissions were granted in 2020. | 2020 | Draft 2023 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|---------------|-----------|---|--|---------------------------|--|
| Derryadd2 | 328 | Cutover Bog Industrial peat production commenced at Derryadd 2 Bog in 1960 and ceased in 2020. Long-term peat extraction has reduced peat reserves on this bog. Most of the former production area has shallow peat reserves. Some pockets of deep peat remain. Derryadd 2 is considered a shallow peat cutover bog. | Much of the former production area at Derryadd 2 has been out of peat production for some time. These areas have already extensively colonised with pioneer wetland and scrub vegetation communities Derryadd 2 Bog will form part of the footprint of Derryadd Windfarm for which planning permissions were granted in 2020. | 2020 | Rehab Plan Draft 2022 To be Finalised in 2023 |
| Derryarogue | 895 | Cutover Bog Industrial peat production commenced at Derryarogue Bog in 1941 and ceased in 2020. Long-term peat extraction has reduced peat reserves on this bog. Most of the former production area has shallow peat reserves. Some pockets of deep peat remain. Derryarogue is considered a shallow peat cutover bog. | Much of the former production area at Derryarogue has been out of production for some time. These areas have already extensively colonised with pioneer wetland, cutaway and scrub vegetation communities. Derryarogue Bog will form part of the footprint of Derryadd Windfarm for which planning permissions were granted in 2020. An amenity walkway through part of Derryarogue is proposed for the Derryadd Windfarm project | 2020 | Rehab Plan Draft 2022 To be Finalised in 2023 |
| Derrycashel | 388 | Cutover Bog Industrial peat production commenced at Derrycashel Bog in 1951 and ceased in 2018. Long-term peat extraction has reduced peat reserves on this bog. Most of the former production area has shallow peat reserves. Some pockets of deep peat remain. Derrycashel is considered a shallow peat cutover bog. | Derrycashel Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power Much of the former production area at Derryarogue has been out of production for some time. These areas have already extensively colonised with pioneer wetland and scrub vegetation communities. Some wetland and rehabilitation management was undertaken (c.60ha) between 2014-2015. | 2018 | Finalised 2021 Rehab started in 2021 |
| Derrycolumb | 454 | Cutover Bog Industrial peat production commenced at Derrycolumb Bog in the 1980's and ceased in 2019. Most of the former production area still has deep peat reserves. Derrycolumb is considered a deep peat cutover bog. | Derrycolumb Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power Much of the former production area at Derrycolumb has been out of production for some time. These areas have already extensively colonised with pioneer wetland and scrub vegetation communities. | 2018 | Finalised 2021 Rehab started in 2021 |
| Derrymoylin | 356 | Cutover Bog Industrial peat production commenced at Derrymoylin Bog in 1985 and ceased in 2020. Long-term peat extraction has reduced peat reserves on this bog. Derrymoylin is considered a shallow peat cutover bog. | Derrymoylin Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power. Most of the former production area on site is bare peat. | 2020 | Rehab Plan Draft 2023 To be Finalised in 2024 |
| Derryshannoge | 452 | Cutover Bog Industrial peat production commenced at Derryshannoge Bog in 1985 and ceased in 2020. Deep peat reserves remain across most of the site. Derryshannoge is considered a deep peat cutover bog. | Derryshannoge Bog formerly supplied a range of commercial functions including fuel peat for Lough Ree Power. Much of the former production area at Derryshannoge has been out of production for some time. These areas have already extensively colonised with pioneer cutaway and scrub vegetation communities. | 2020 | Rehab Plan Draft 2022 To be Finalised in 2023 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|--------------|-----------|--|--|---------------------------|--|
| Edera | 281 | Cutover Bog Development for industrial peat production commenced at Edera Bog in 1990's. Active extraction from Edera began in 2003 and ceased in 2018. Edera is considered a deep peat cutover bog. | Edera Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power. The majority of Edera Bog former production area is bare peat. | 2020 | Finalised 2021 Rehab started in 2021 |
| Erenagh | 93 | Cutover Bog Development for industrial peat production commenced at Erenagh Bog in 1970's. Erenagh is considered a deep peat cutover bog. | Erenagh Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power. Much of the former production area at Erenagh has been out of production for some time. These areas have already extensively colonised with pioneer cutaway and scrub vegetation communities. | 2020 | Draft 2017 |
| Granaghan | 212 | Cutover Bog Development for industrial peat production commenced at Granaghan Bog in 1980's. Long-term peat extraction has reduced peat reserves on this bog but deep peat reserves remain on site. Granaghan is considered a deep peat cutover bog. | Granaghan Bog formerly supplied a range of commercial functions including; horticultural peat and fuel peat for Lough Ree Power. The majority of Granaghan Bog former production area is bare peat. | 2020 | Rehab Plan Draft 2022 To be Finalised in 2023 |
| Killashee | 110 | Cutover Bog Development for industrial peat production commenced at Killashee Bog in 1985. Killashee is considered a deep peat cutover bog. | Killashee Bog formerly supplied a range of commercial functions including; horticultural peat and fuel peat for Lough Ree Power. The majority of Killashee Bog former production area is bare peat. Some areas have colonised with pioneer cutaway and scrub vegetation communities. | 2020 | Rehab Plan Draft 2022 To be Finalised in 2023 |
| Knappoge | 313 | Cutaway Bog Peat Production at Knappoge bog commenced in 1963, and finished in 2018. Peat depths on the former production area are generally shallow. There are some pockets of deeper peat. Knappoge is considered a shallow peat cutaway bog. | Knappoge Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power. The majority of Knappoge Bog former production area is bare peat. Some areas have colonised with pioneer cutaway and scrub vegetation communities. | 2018 | Finalised 2021 Rehab started in 2022 |
| Lough Bannow | 739 | Cutaway Bog Peat Production at Lough Bannow bog commenced in the 1960'S, and finished in 2020. Peat depths on the former production area are generally shallow. There are some pockets of deeper peat. Lough Bannow is considered a shallow peat cutaway bog. | Much of the former production area at Lough Bannow has been out of production for some time. These areas have already extensively colonised with pioneer cutaway and scrub vegetation communities. A small (35ha) conifer plantation was established in 1980's. Lough Bannow will form part of the footprint of Derryadd Windfarm for which planning permissions were granted in 2020. | 2020 | Draft 2023 |
| Moher | 483 | Cutover Bog Peat Production at Moher bog commenced in the 1960'S, and finished in 2020. Peat depths on the former production area remain relatively deep. Moher is | Moher Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power. Much of the former production area at Moher has been out of production for some time. These areas have already extensively colonised | 2020 | Draft 2021 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|--------------|-----------|---|---|---------------------------|-------------------|
| | | considered a deep peat cutover bog. | with pioneer cutaway and scrub vegetation communities. | | |
| Mount Dillon | 592 | Cutaway Bog Peat Production at Mount Dillon bog commenced in the 1940'S, and finished in 2020. Peat depths on the former production largely shallow and the peat is considered cutaway. Some deep peat remains on the west of the site. Mount Dillon is considered a shallow peat cutaway bog. | Mount Dillon Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power. Much of the former production area at Mount Dillon has been out of production for some time. These areas have already extensively colonised with pioneer cutaway, wetland and scrub vegetation communities. | 2020 | Draft 2017 |

See Drawing number BNM-DR-25-10-24 titled **Mount Dillon Bog Group**, included in the accompanying Mapbook which illustrates the location of Granaghan Bog and the Mount Dillon Bog Group in context to the surrounding area

APPENDIX III: ECOLOGICAL SURVEY REPORT

| | | | |
|---|---------------------|--|------------------------------|
| Ecological Survey Report | | | |
| <i>Note: This report outlines an ecological survey of the bog. This report should not be taken as a management plan for the site as other land-uses may still be considered. Information within this report may inform the development of other land-uses and identify areas with particular biodiversity value.</i> | | | |
| Bog Name: | <u>Granaghan</u> | Area (ha): | 203ha |
| Works Name: | Mount Dillon | County: | Roscommon |
| Recorder(s): | BnM Ecology Section | Survey/ monitoring Date(s): | 22 nd August 2012 |
| Habitats present (in order of dominance) | | | |
| The most common habitats present at this site include: | | | |
| <ul style="list-style-type: none"> • Bare peat (BP) (Codes refer BnM classification of pioneer habitats of production bog). • Pioneer dry heath communities (dHeath) • Scrub (eBir, OBir and CBir). • Silt Ponds (Silt) with associated habitats such as scrub, Bracken, rank grassland (GS2), dry calcareous grassland (gCal) and typical pioneer communities of disturbed areas (disTuss). | | | |
| The most common habitats present around the margins at this site include: | | | |
| <ul style="list-style-type: none"> • Birch woodland (WN7) (Codes refer to Heritage Council habitat classification, Fossitt 2000). • Scrub (WS1) (Gorse scrub and Birch scrub developing of dry high bog around margins) • Raised bog (PB1) • Cutover bog (PB4) (several small fragments) • Wet grassland (GS4). | | | |
| Description of site | | | |
| <p>Granaghan Bog is located approximately 7km to the North of Lanesborough in County Roscommon, just off the R371 Lanesborough to Strokestown road. This site is located within one main block; however, a narrow section to the south of the site connects Granaghan with Mount Dillon. A small section of active production bog to the south is part of Granaghan despite being located immediately next to Mount Dillon Bog. Two minor public roads cross the site.</p> <p>A rail link connects the site with Mount Dillon Bog to the South. Granaghan was initially put into full industrial peat production in the late 1980's.</p> <p>The majority of the site is classed as bare peat. A large proportion of the site contains in excess of 2.6m of peat. The deeper peat is referred to as "red" or "Sphagnum" peat.</p> <p>The Curraroe Stream flows across the site. This watercourse is highly modified and has been canalised. No aquatic vegetation was recorded from this stream, however the stream was in flood at the time of the ecological survey.</p> | | | |

| |
|--|
| <p>An Otter spraint was located next to the stream and bankside vegetation consisted of a mix of scrub and wet grassland. The Curraroe Stream is a tributary of the Feorish River which in turn flows into the River Shannon.</p> <p>The mid-section of the site between the two public roads. A rail line and a travel path are located in this area and are used to connect Granaghan and Mount Dillon main bog. The main habitats in this area are wet grassland (GS4), scrub (WS1) and remnant sections of raised bog (PB1). The largest section of remnant raised bog in this area is in moderate condition with approximately 50% Sphagnum cover (<i>Sphagnum capillifolium</i>, <i>S. subnitens</i>, <i>S. cuspidatum</i> and <i>S. magellanicum</i>). No areas of active bog remain in this area and BnM do not own the entire section of bog. Domestic turf cutting is also carried out in this area.</p> <p>Habitats along the margins of the site include Birch woodland (WN7), scrub (WS1), remnant sections of raised bog (PB1), lowland depositing river (FW2) and wet grassland. The areas of Birch woodland and scrub are poorly developed and are dominated by Birch, Gorse, Willow, Bracken and Bramble. The wet grassland areas are managed by local farmers.</p> |
| <p>Designated areas on site (cSAC, NHA, pNHA, SPA other)</p> <p>None</p> |
| <p>Adjacent habitats and land-use</p> <p>Adjacent habitats include lowland depositing river (FW2), wet grassland (GS4), improved agricultural grassland (GA1), cutaway bog (PB4), conifer plantation and raised bog (PB1).</p> |
| <p>Watercourses (major water features on/off site)</p> <ul style="list-style-type: none"> • The Curraroe Stream flows through the site. The stream is a tributary of the Feorish River which in turn is a tributary of the River Shannon. |
| <p>Peat type and sub-soils</p> <p>Granaghan is a relatively young bog in terms of industrial peat production. The majority of the site contains in excess of 2.6m of peat.</p> <p>The bog is underlain with marl.</p> |
| <p>Fauna biodiversity</p> <p>Birds</p> <p>Several bird species were noted on the site during the survey.</p> <ul style="list-style-type: none"> • Mallard • Snipe • Other more common species include Grey Crow, Swallow, Blackbird, Robin, Thrush and Magpie. <p>Mammals</p> <p>Signs of several mammal species were noted on the site during the survey.</p> |

- Badger
- Fox
- Otter
- Hare

Other species

Peacock Butterfly

DRAFT

APPENDIX IV: ENVIRONMENTAL CONTROL MEASURES TO BE APPLIED TO BOG REHABILITATION

- Bog restoration/rehabilitation measures will be restricted to within the footprint of the proposed rehabilitation area.
- The proposed rehabilitation will have due regard to noise limits and hours of operation (i.e. dusk and dawn) to minimise any potential disturbance on resident and local fauna that utilise the site and immediate environs.
- All plant and equipment for use will comply with the Construction Plant and Equipment Permissible Noise Levels Regulations (SI 359/1996).
- The proposed activities will be restricted to daylight hours and there will be no requirement for artificial lighting.
- Silt ponds will be inspected and maintained as per the IPC Licence.
- During periods of heavy precipitation and run-off, activities will be halted.
- Measures will be carried out using a suitably sized machine and in all circumstances, excavation depths and volumes will be minimised where possible.
- All machines will be regularly checked and maintained prior to arrival at the site to prevent hydrocarbon leakage.
- Hoses and valves will be checked regularly for signs of wear and will be closed and securely locked when not in use.
- Fuelling and lubrication of equipment shall only be carried out in designated areas away from surface water drainage features and ecologically sensitive areas.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling.
- Vehicles will never be left unattended during refuelling.
- No direct discharges to waters will be made. No washings from vehicles, plant or equipment will be carried out on site.
- All plant refuelling will take place using mobile fuel bowsers. Only dedicated trained and competent personnel will carry out refuelling operations.
- Mobile storage such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked. All pumps using fuel or containing oil will be locally and securely bunded where there is the possibility of discharge to waters.
- Potential impacts caused by spillages etc. during rehabilitation will be reduced by keeping spill kits and other appropriate equipment on-site.
- Site activities will be carried out in accordance with 'best practice'. In order to ensure compliance and implementation of 'best practice', these measures will be communicated to relevant Bord na Móna staff and updated as required.

APPENDIX V: BIOSECURITY

The potential for importation or introduction of non-native plant species (such as Japanese Knotweed, Himalayan Balsam, etc.) during future rehabilitation management, such as drain-blocking using excavators, has the potential to result in the establishment of invasive species within the site. Section 49 of the European Communities (Birds and Natural Habitats) Regulations 2011 prohibits the introduction and dispersal of invasive alien species (particularly plant species) listed on Part 1 (third column) of the 'Third Schedule'.

This section aims to reduce the risk from, and impacts of, invasive species and protecting biodiversity on lands under Bord na Móna ownership. Rehabilitation and decommissioning in the bog will have due regard to the relevant biosecurity measures outlined below:

- Records of problematic invasive species within the various bog units will be marked out with signs to highlight areas of infestation to personnel.
- All plant machinery will be restricted from disturbing known colonies of invasive species.
- All plant machinery will avoid unnecessary crossings to adjoining lands.
- Good site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (i.e. Japanese Knotweed (*Fallopia japonica*), Himalayan Balsam (*Impatiens glandulifera*), Himalayan Knotweed (*Persicaria wallichii*), etc.) by thoroughly washing vehicles prior to entering the area.

The biosecurity measures outlined above are in line with best practice guidelines issued by the National Roads Authority (NRA, 2010) – The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads and broadly based on the Environment Agency's (2013) – The Knotweed Code of Practice: Managing Japanese Knotweed on Development Sites (Version 3, amended in 2013).

In addition to the above, Best Practice measures around the prevention and spread of Crayfish plague³ will be adhered with throughout all rehabilitation measures and activities.

³ <https://www.biodiversityireland.ie/projects/invasive-species/crayfish-plague/>

APPENDIX VI: POLICY AND REGULATORY FRAMEWORK

Bord na Móna Plc is a publicly owned company, originally established in 1934 to develop some of Ireland's extensive peat resources for the purposes of economic development and to support energy security. In the decades since its establishment the company has employed tens of thousands of people in its fuel, energy, and horticultural growing media businesses. For much of its history the company's support of important national policy aims has been enabled and encouraged in a variety of ways by Government.

Today, Bord na Móna is undertaking a number of highly significant actions in support of climate policy. These actions involve a radical transformation and decarbonisation of nearly the entire Bord na Móna business. This transformation will be driven by unlocking the full potential of our land and creating significant value for Ireland and the Midlands in particular.

Bord na Móna is an integral part of the economic, social, and environmental fabric of Ireland and Irish life. As a key employer in the Midlands, the company is conscious that its obligations go beyond purely commercial and environmental – there is also a social responsibility to employees and the communities served by Bord na Móna. It is the company's role and absolute priority to ensure that its long-term strategy delivers on all of these important areas in a robust and balanced way.

There are a wide range of policies, plans, legislation and land designations that inform the development of this Bord na Móna peatland rehabilitation plan. Bord na Móna have also developed and operate various policies and strategies that also inform the development of this rehabilitation plan.

1 EPA IPC Licence

Bord na Móna operates under IPC Licence issued and administered by the EPA to extract peat within the Mount Dillion bog group (Ref. PO-504-01). As part of Condition 10.2 of this license, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. The bog is part of the Mount Dillion group. This regulatory requirement is the main driver of the development of this rehabilitation plan.

2 The Peatlands Climate Action Scheme (PCAS)

Bord na Móna (BnM) understand that it is the Minister's (DECC) intention to impose an obligation on Bord na Móna to develop a programme of measures, 'the Scheme', for the enhanced decommissioning, rehabilitation and restoration of boglands previously used to supply peat for electricity generation within the State. The enhanced decommissioning, rehabilitation and restoration of the peatlands funded by the Scheme (PCAS) will deliver benefits across climate action (GHG mitigation through reduced carbon emissions and acceleration towards carbon sequestration), enrich the State's natural capital, increase eco-system services, strengthen biodiversity, improve water quality and storage attenuation as well as developing the amenity potential of the peatlands.

It is envisaged that Bord na Móna carry out an enhanced decommissioning, rehabilitation and restoration, under the Scheme (PCAS), and supported by the Climate Action Fund and Ireland's National Recovery and Resilience Plan across a footprint of 33,000 ha. This scheme will significantly go beyond what is required to meet rehabilitation and decommissioning obligations under existing EPA IPC licence conditions. Interventions and measures supported by the Scheme will ensure that environmental stabilisation is achieved (meaning IPC obligations are met), and importantly, significant additional benefits, particularly relating to climate action and other ecosystem services, will also be delivered. However, only the additional costs associated with the additional

and enhanced rehabilitation, i.e., those activities which go beyond the existing decommissioning and rehabilitation requirements arising from Condition 10 will be eligible for support under the Scheme.

The proposed enhanced rehabilitation detailed in this document, are predicated on the understanding that the element of the activities, over and above the 'standard' rehabilitation necessary to comply with pre-existing Condition 10 IPC Licence requirements, will be deemed eligible costs by the Scheme regulator and funded by the Climate Action Fund and Ireland's National Recovery and Resilience Plan.

For the avoidance of doubt, should the Scheme and the associated statutory obligation on Bord na Móna not materialise, Bord na Móna will not carry out the enhanced decommissioning, rehabilitation and restoration measures described in this plan. Bord na Móna will instead plan to complete an adapted standard decommissioning and rehabilitation measures required under Condition 10 and outlined in Appendix I.

3 National and EU Climate and Biodiversity Policy

The National Policy Position establishes the fundamental national objective of achieving a transition to a competitive, low carbon, climate-resilient and environmentally sustainable economy by 2050. It sets out:

- the context for the objective;
- clarifies the level of GHG mitigation ambition envisaged; and
- establishes the process to pursue and achieve the overall objective.

The evolution of climate policy in Ireland will be an iterative process based on the adoption by government of a series of national plans over the period to 2050. GHG mitigation and adaptation to the impacts of climate change are to be addressed in parallel national plans – respectively through the National Climate Action Plan. The plans will be continually updated, as well as being reviewed on a structured basis at appropriate intervals and, at a minimum, every five years. This will include early identification and ongoing updating of possible transition pathways to 2050 to inform sectoral strategic choices.

Bord na Móna is following a decarbonisation programme aimed at reducing the carbon emissions from its activities. Industrial peat production has now ceased, and several other decarbonisation measures are being implemented. The company aims to further develop renewable energy and resource recovery markets with a key objective of reducing the carbon intensity of all products. In addition, the carbon emission mitigation benefits associated with the post-peat extraction rehabilitated peatland following re-wetting, revegetation and colonisation of significant areas with native woodland will make a significant contribution to achieving the State's carbon emission reduction targets.

Peatlands rehabilitation and restoration is referenced in Section 17.3.3 of the Land Use, Land Use Change, Forestry and Marine Chapter of the National Climate Action Plan 2021 as follows:

"The rehabilitation of degraded peatlands to a condition in which they regain their ability to deliver specific ecosystem services has considerable potential for initial mitigation gains, and future carbon sequestration. Additional benefits of peatland restoration include positive socio-economic outcomes for the Midlands, increased natural capital, enriched biodiversity, improved water quality, and flood attenuation."

The scheme is included as Action 33 in the Climate Action Plan 2021 Annex of Actions - Deliver the Enhanced Decommissioning, Rehabilitation and Restoration (EDRR) Scheme for Bord na Mona Peatlands.

EDRRS is also referenced in the Climate Action Plan 2021 as a measure to deliver a Just Transition in the Midlands. International research and scientific understanding of peatlands is now reflected in key Irish national policy and strategy documents such as the National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017 - 2022 (Department of Arts, Heritage and the Gaeltacht 2017), The National Peatland Strategy (Department of Arts, Heritage and the Gaeltacht 2015), The National Biodiversity Action Plan (National Parks and Wildlife Service 2017), The River Basin Management Plan for Ireland 2018-2021 (Department of Housing, Planning and Local Government 2018), and the Biodiversity – Climate Change Sectoral Action Plan (Department of Arts, Heritage and the Gaeltacht 2019). Each of the national plans, which are also complemented with the recently published EU Green Deal communication on Biodiversity Strategy for 2030 (COM 2020) have overlapping objectives and actions that focus on the restoration of peatlands damaged by turf-cutting, drainage and other impacts, as well as the re-wetting of Bord na Móna industrial peat extraction bogs.

While not specifically identified as a restoration implementor, EDRRS objectives are in line with those of the United Nations Decade on Ecosystem Restoration 2021-2030 of Preventing, Halting and Reversing the Degradation of Ecosystems worldwide.

EDRRS is also in line with the EU Commission proposal for a Nature Restoration Law which will apply legally binding targets for nature restoration in different eco-systems to every Member State. The aim is to cover at least 20% of the EU's land and sea areas by 2030 with nature restoration measures and eventually extend these to all ecosystems in need of restoration by 2050.

4 National Peatlands Strategy

The National Peatlands Strategy (2015) contains a comprehensive list of actions, necessary to ensure that Ireland's peatlands are preserved, nurtured and become living assets within the communities that live beside them. It sets out a cross-governmental approach to managing issues that relate to peatlands, including compliance with EU environmental law, climate change, forestry, flood control, energy, nature conservation, planning, and agriculture. The Strategy has been developed in partnership between relevant Government Departments/State bodies and key stakeholders through the Peatlands Council.

The strategy recognises that Ireland's peatlands will continue to contribute to a wide variety of human needs and to be put to many uses. It aims to ensure that Ireland's peatlands are sustainably managed so that their benefits can be enjoyed responsibly. It aims to inform appropriate regulatory systems to facilitate good decision making in support of responsible use. It also aims to inform the provision of appropriate incentives, financial supports and disincentives where required. The strategy attempts to strike an appropriate balance between different needs, including local stakeholders like turf-cutters and semi-state bodies such as Bord na Móna.

In line with a National Peatlands Strategy recommendation, a Peatlands Strategy Implementation Group (PSIG), was established, assisted in the finalisation of the Strategy, is overseeing subsequent implementation and will report to Government on an annual basis on the implementation of the actions and principles contained within the Strategy.

Bord na Móna is a key stakeholder in the National Peatlands Strategy and the Peatlands Strategy Implementation Group. The strategy recognises the potential for some Bord na Móna sites to be restored and to contribute to the national SAC and NHA network of protected raised bog sites. The strategy (agreed in 2015) also recognises the various different values of cutaway bog and developed six key principles (with Bord na Móna) for the after-use of cutaway bog.

- Bord na Móna will continue to assess and evaluate the potential of the company's land bank, using a land use review system. The assessment will help prepare a set of evidence-based management plans for the various areas of peatland. These plans will also inform its cutaway bog rehabilitation.
- The policy of Bord na Móna is not to open up any undrained new bogs for peat production.
- Lands identified by Bord na Móna as having high biodiversity value and/or priority habitats will be reserved for these purposes as the principal future land use.
- Generally, Bord na Móna cutaway bogs that flood naturally will be permitted to flood unless there is a clear environmental and/or economic case to maintain pumped drainage.
- In deciding on the most appropriate afteruse of cutaway peatlands, consideration shall be given to encouraging, where possible, the return to a natural functioning peatland ecosystem.
- This will require re-wetting of the cutaway peatlands which may lead in time to the restoration of the peatland ecosystem.
- Environmentally, socially and economically viable options should be analysed to plan the future use of industrial cutaway peatlands, in conjunction with limiting factors as outlined in Bord na Móna's Strategic Framework for the Future Use of Peatlands.

The National Peatlands Strategy highlights the importance and value of developing peatland rehabilitation plans for Bord na Móna cutaway sites and implementing this peatland rehabilitation. Some of these principles have now been superseded by the company's decision to cease industrial peat extraction. The National Peatlands Strategy is currently being reviewed by Government.

5 Draft National River Basin Management Plan 2022-2027 (Water Framework Directive)

The National River Basin Management Plan (Department of Housing, Planning, Community and Local Government 2017) is the key national plan for Ireland to achieve the objectives of the Water Framework Directive (WFD). In broad terms, the objectives of the WFD are (1) to prevent the deterioration of water bodies and to protect, enhance and restore them with the aim of achieving at least good status and (2) to achieve compliance with the requirements for designated protected areas.

The NRBMP 2018-2021 outlined how peat extraction can be a potentially significant pressure on various water quality parameters. Peatland rehabilitation of Bord na Móna cutaway (in addition to other measures) was part of the WFD (2018-2021) programme of measures. The NRBMP 2018-2021 takes account of the fact that Bord na Móna was in the process of phasing out the extraction of peat for energy production, that it set a target to rehabilitate 9,000 ha of cutaway bogs (covering 25 peatlands) by 2021 (in 2018) and will look to implement best-available mitigation measures to further reduce water quality impacts caused by peat extraction while the phasing-out process is taking place. This NRBMP 2018-2021 rehabilitation target was superseded by the acceleration of the Bord na Móna de-carbonisation programme and the Scheme (**PCAS**).

The development of site rehabilitation plans and the delivery of peatland rehabilitation by Bord na Móna was expected to have a positive impact on water quality and will help the NRBMP 2018-2021 deliver its objectives in relation to the Water Framework Directive and is one of the five key principle actions.

The draft NRBMP 2022-2027 describes how the number of waterbodies impacted by peat, industry and forestry have decreased by 10, 10 and 5 waterbodies, respectively since the second cycle. Impacts on water quality and river habitat arising from peat and peat extraction and associated drainage include the release of ammonium and

fine-grained suspended sediments, and physical alteration of aquatic habitats. Drainage of peatlands also results in changes to the hydromorphological condition of rivers.

The draft NWBMP 2022-2027 outlines how maintaining and restoring Irish bogs will lead to a decrease in waterborne carbon leaching to levels comparable with intact bogs as well as reducing losses of peat silt and ammonia. Vegetation on the surface of the peat can also slow the flow of water over the land surface. Based on the EPA's most recent reports, peat extraction and drainage is impacting on 106 water bodies across the country, with peat the single pressure on 28 of these water bodies. However, compared to the data in the second-cycle plan, the number of water bodies impacted by peat has decreased.

The cessation of industrial peat extraction by Bord na Móna in 2021 was expected to have a significant positive impact on water quality of receiving water courses by reducing the impact of peat extraction as a key pressure on particular water courses. This is now being supported by the results and conclusions of the draft NWBMP 2022-2027.

6 National Biodiversity Action Plan 2016-2021

The National Biodiversity Action Plan 2016-2022 has a vision that biodiversity and ecosystems in Ireland are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally. Ireland's 2nd National Biodiversity Action Plan outlines the main policies, strategies, actions and targets in relation to biodiversity. This plan has several Bord na Móna specific objectives and actions including implementing the BnM Biodiversity Action Plan 2016-2021 and overlaps with both the National Peatlands Strategy and the National Raised Bog Special Areas of Conservation Management Plan 2017-2022.

The delivery of rehabilitation via PCAS is expected to significantly contribute in the future to actions and targets of the National Biodiversity Action Plan 2016-2021, particularly in relation to peatland restoration and creation of new habitats such as wetlands and woodlands.

A new National Biodiversity Action Plan is currently being developed.

7 National conservation designations

Bord na Móna operates in a wider landscape that also includes a network of European and National nature conservation sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs), National Heritage Areas (NHAs, cNHAs) and National Nature Reserves). Bord na Móna will take account of this network of conservation objectives and their conservation objectives when developing these rehabilitation plans. It is expected that peatland rehabilitation will, in general, benefit the conservation objectives of this network of nature conservation sites.

8 National Raised Bog Special Area of Conservation Management Plan 2017-2022.

The National Raised Bog Special Area of Conservation Management Plan 2017-2022 sets out a roadmap for the long-term management, restoration and conservation of protected raised bogs in Ireland. The Plan strikes an appropriate balance between the need to conserve and restore Ireland's raised bog network as part of Ireland's commitments towards the EU Habitats Directive, and the needs of stakeholders and gives recognition to the

important role that communities have to play in the conservation and restoration of raised bogs. The National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017-2022 is part of the measures being implemented in response to the on-going infringement action against Ireland in relation to the implementation of the EU Habitats Directive, with regard to the regulation of turf cutting on the Special Areas of Conservation (SACs). The then Minister for Arts, Heritage and the Gaeltacht, also published a **Review of Raised Bog Natural Heritage Area Network** in 2014.

Bord na Móna has played a key role in the development of the National Raised Bog Special Area of Conservation Management Plan 2017-2022 and the Review of the Raised Bog Natural Heritage Area Network. Several Bord na Móna sites were assessed by the National Parks and Wildlife Service as part of the above Plan and Review and there is an expectation that several Bord na Móna sites will be designated as SACs and NHAs in the future. This will reinforce the network of protected raised bog sites and replace in part sites that will be de-designated as they have been deemed to be significantly damaged and are deemed to have no raised bog restoration prospects. PCAS is expected to restore several sites that will contribute to The National Raised Bog Special Areas of Conservation (SACs) Management Plan 2017-2022 targets in relation to the restoration of raised bog habitat.

Bord na Móna has also responded to the needs of the NRBMP and provided several sites to the government for the relocation of turf-cutters from SACs. This is part of a suite of ongoing bog conservation measures in the NRBMP to manage turf-cutting in protected sites. Bord na Móna and the National Parks and Wildlife Service continues to engage regarding the ongoing relocation of turf-cutters from protected raised bog sites.

9 All-Ireland Pollinator Plan 2021-2025

The All-Ireland Pollinator Plan 2021-2025 outlines key objectives and actions to protect and support pollinating insects and the habitats they rely on. A Bord na Móna specific action in this plan includes the adoption of pollinator-friendly management within the Bord na Móna network of sites. One action to help achieve this objective is habitat rehabilitation and restoration, where possible, of pollinator-friendly habitats, including peatland habitats.

10 Land-use planning policies

As Bord na Móna operates in many counties across Ireland, it is important to note the respective development plans in these counties. Many of the existing development plans recognise the potential that exists in the after-use of cutover/cutaway peatlands. Bord na Móna seeks to work with all of the relevant local authorities to ensure that the most appropriate after-uses are reflected in local planning policy. The following areas of consistent importance are of both direct and indirect relevance to Bord na Móna: heritage, tourism, biodiversity/conservation, landscape, renewable energy, and economy/enterprise.

11 National Archaeology Code of Practice

Bord na Móna operates under an agreed Code of Practice regarding archaeology with the Department of Arts, Heritage and the Gaeltacht and the National Museum of Ireland which provides a framework to enable the

Company to progress peat extraction whilst carrying out archaeological mitigation. (<https://www.archaeology.ie/sites/default/files/media/publications/cop-bord-na-mona-en.pdf>)

The Code replaced a set of Principles agreed with the Department of Arts, Heritage and the Gaeltacht in the 1990s. Under the Code Bord na Móna, the Minister and Director work together to ensure that appropriate archaeological mitigation is carried out in advance of peat extraction.

- BNM must ensure that any monuments or archaeological objects discovered during peat extraction are protected in an appropriate manner by following the Archaeological Protection Procedures.
- BNM must ensure that any newly discovered monuments on Bord na Móna lands are reported in a timely manner to the National Monuments Service of the Department of Arts, Heritage and the Gaeltacht.
- BNM must ensure that any archaeological objects discovered on Bord na Móna lands are reported immediately to the Duty Officer of the National Museum of Ireland.
- Bord na Móna will adhere to the Archaeology Code of Practice relating to management of any archaeological finds that may arise during cutaway peatland rehabilitation and decommissioning.

12 Bord na Móna Biodiversity Action Plan 2016-2021

Rehabilitation of industrial peatlands is a key objective of the Bord na Móna Biodiversity Action Plan 2016-2021. This action plan outlines the main objectives and actions around biodiversity on Bord na Móna lands. The Bord na Móna Biodiversity Action Plan also outlines key International and European policy in relation to biodiversity. This includes the **United Nations Convention on Biodiversity 2011-2020 (CBD)** and **European Biodiversity Strategy to 2020**. Further details of these policies and Bord na Móna's responses can be found in the Bord na Móna Biodiversity Action Plan (Bord na Móna, 2016). Both policy documents highlight targets such as reducing pressure on biodiversity, promoting sustainability, habitat restoration and benefits of ecosystem services.

One example of a key CBD target is:

- *“Restore at least 15% of degraded areas through conservation and restoration activities.”*

The EU's headline target for progress by 2020 is to:

- *“halt the loss of biodiversity and the degradation of ecosystems in the EU by 2020, restore them as far as feasible, while stepping up the EU contribution to averting global biodiversity loss.”*

This rehabilitation plan is aligned to the CBD target and the EU Biodiversity Strategy target and will help Ireland meet its commitment to these international Biodiversity policies.

13 Bord na Móna commitments

Bord na Móna made the commitment in 2009 not to develop any new peatland sites for industrial peat production. The company has continued to work with different stakeholders.

The company announced that industrial peat production would be cut by over 50 percent in 2019 and would entirely cease over most of its lands by the mid-2020s. Rehabilitation measures would continue to be carried out with the focus on re-wetting and rehabilitation of cutover and cutaway areas in line with national policies (such as the National Peatland Strategy, the National Biodiversity Action Plan, the Climate Action Plan 2019, the Water Framework Directive, etc.) and rehabilitation guidelines set down by the Environmental Protection Agency. To

date, 15,000 hectares of cutaway and cutover bog have been rehabilitated using this approach with 5,000 hectares in active rehabilitation.

In line with Bord na Móna's accelerated decarbonisation programme, the company made a further commitment to a significantly larger rehabilitation target. This was reflected in our plans to rehabilitate a further 20,000 hectares of cutaway and cutover bog to wetland and woodland mosaics by 2025. In addition, we planned to restore a further 1,000 hectares of raised bog habitat by 2025.

The above commitments have now been followed by the decision by the company to cease industrial peat extraction and rehabilitate a target of 33,000 ha between 2021-2025.

These commitments outline the importance of peatland rehabilitation to Bord na Móna. The company will continue to demonstrate environmental responsibility and continue to deliver on these commitments in relation to peatland rehabilitation and in relation to the future management of these lands to maximise their benefits, particularly their ecosystem service benefits, along with the sustainable development of a portion of the land bank for other uses, such as renewable energy.

14 Bord na Móna Strategic Framework for the future use of cutaway peatlands 2020 (Draft)

The general after-use strategy of Bord na Móna is outlined in the Bord na Móna Strategic Framework for Future-Use of Cutaway Bogs 2020 (draft document). This document outlines how Bord na Móna's cutover peatland estate is complex in nature with great variability in terms of peat depths, peat types, drainage, subsoil condition and environmental value. Thus, future options require consideration on a site-specific basis, also bearing in mind the considerable internal variation within bogs. The development of the land-bank will also take account of national needs, while also taking account of the various national legislation, policies and plans related to the management of peatlands. In general, Bord na Móna will seek to balance and optimise commercial, social, and environmental value of these sites, and develop integrated land-uses, while taking account of the need for sustainability and their biodiversity value.

Any consideration of other future after-uses for Bord na Móna land such as development or other mixed uses will be conducted following the relevant planning guidelines and consultation with relevant authorities and will be considered within the framework of this peatland rehabilitation plan.

APPENDIX VII: DECOMMISSIONING

1. Condition 10 Decommissioning

This is a requirement of the applicable Integrated Pollution Control Licence issued by the Environmental Protection Agency. This condition 10.1 requires the following:

10.1 Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall:

10.1.1 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.

The main success criteria pertaining to successfully complying with this condition is ensuring that no environmental liability remains from this infrastructure and material and that the bog can be deemed suitable for surrender of the license under section 95 of the EPA Acts. This is achieved by Bord na Móna identifying and quantifying any mechanical and infrastructural resources that were installed in the bog to enable the development and production operation at the site. This list is then refined to identify any items that would be deemed as possibly resulting in environmental pollution, should they not be removed.

Typically, these items/infrastructures would be any remaining, unconsolidated plant, equipment and attachments, waste materials, unused raw materials such as land drainage pipes, remaining peat stockpiles, stock pile covering, pumps, septic tanks and fuel tanks.

In relation to this bog, the list and tasks would be as follows:

| Item | Description | Granaghan Decommissioning Plan |
|------|--|----------------------------------|
| 1 | Clean-up of remaining or unconsolidated waste or materials located in Bogs, Yards, Buildings and Offices | Clean-up of Bog |
| 2 | Cleaning Silt Ponds | Cleaning Silt Ponds |
| 3 | Decommissioning Peat Stockpiles | Peat Stockpile Management |
| 4 | Decommissioning or Removal of Buildings and Compounds | Not relevant |
| 5 | Decommissioning Fuel Tanks and associated facilities | Not relevant |
| 6 | Decommissioning and Removal of Bog Pump Sites | Where feasible |
| 7 | Decommissioning or Removal of Septic Tanks | De-sludge Septic Tank, if needed |

In addition, condition 7 of the licence requires these now defined waste items to be disposed of or recovered as follows:

7.1 Disposal or recovery of waste shall take place only as specified in *Schedule 2(i) Hazardous Wastes for Disposal/Recovery* and *Schedule 2(ii) Other Wastes for Disposal/Recovery* of this licence and in accordance with the appropriate National and European legislation and protocols. No other waste shall be disposed of/recovered either on-site or off-site without prior notice to, and prior written agreement of, the Agency.

7.2 Waste sent off-site for recovery or disposal shall only be conveyed to a waste contractor, as agreed by the Agency, and only transported from the site of the activity to the site of recovery/disposal in a manner which will not adversely affect the environment.

7.3 A full record, which shall be open to inspection by authorized persons of the Agency at all times, shall be kept by the licensee on matters relating to the waste management operations and practices at this site. This record shall as a minimum contain details of the following:

7.3.1 The names of the agent and transporter of the waste.

7.3.2 The name of the persons responsible for the ultimate disposal/recovery of the waste.

7.3.3 The ultimate destination of the waste.

7.3.4 Written confirmation of the acceptance and disposal/recovery of any hazardous waste consignments sent off-site.

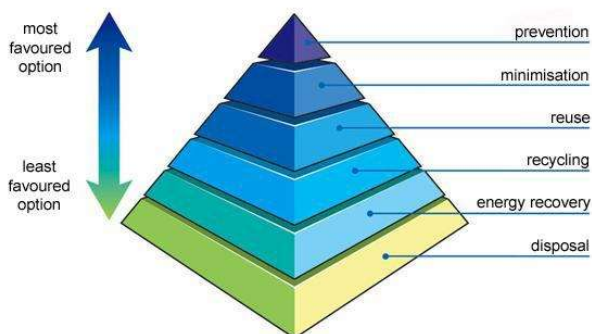
7.3.5 The tonnages and EWC Code for the waste materials listed in *Schedule 2(i) Hazardous Wastes for Disposal/Recovery* and *Schedule 2(ii) Other Wastes for Disposal/Recovery* sent off-site for disposal/recovery.

7.3.6 Details of any rejected consignments.

A copy of this Waste Management record shall be submitted to the Agency as part of the AER for the site.

As required by the licence, these waste items will be removed for recycling or disposal, using external contractors with the required waste collection permits, approved under 7.2, with waste records maintained as required under 7.3.

Where possible, Bord na Móna will utilize the appropriate waste hierarchy to identify waste that can reused or recycled ahead of disposal.



The validation of the success of condition 10.1 is carried out through an Independent Closure Audit (ICA), followed by and EPA Exit Audit (EA) and the eventual partial or full surrender of the licence.

2. Enhanced Decommissioning.

The remaining infrastructure does not constitute a risk to the environment and would not be a requirement of condition 10 of the license. The removal of these are deemed as enhanced measures. These may enhance the future after-use of the bog for amenity value, security against access for illegal and unsocial activities and general State and community benefit. In relation to this bog, this would include the infrastructure defined below:

| Item | Enhanced Decommissioning Type | Granaghan Decommissioning Plan |
|------|--|--------------------------------|
| 1 | Removal of Railway Lines | Removal of Railway Lines |
| 2 | Decommissioning Bridges and Underpasses | Not Applicable |
| 3 | Decommissioning Railway Level Crossing | Not Applicable |
| 4 | Restricting Access (bogs and silt ponds) | Restricting Access to Bog |
| 5 | Removal of High Voltage Power Lines | If feasible |

APPENDIX VIII: GLOSSARY

Cutaway Bog: A Bord na Móna site generally becomes cutaway when it is economically unviable to continue industrial peat extraction or when the majority of peat has been removed.

Deep peat cutover bog. Deep peat cutover bog is defined as former raised bogs that have been in industrial peat production, where production has ceased but the residual peat depth is typically in excess of 2m. *Sphagnum* mosses are key species of raised bogs and the majority of the peat mass is formed from these mosses. *Sphagnum* species and other raised bog species are a key part of raised bog habitat function and prefer more acidic, nutrient poor, water-logged conditions. Typical raised bog *Sphagnum* mosses and other bog species do not thrive with the more typical alkaline water chemistry of cutaway bog but do grow well in these more acidic conditions where peat has been re-wetted. There is potential to re-develop embryonic *Sphagnum*-rich plant communities in these conditions if the peat can be re-wetted. This brings the opportunity of re-developing embryonic *Sphagnum*-rich vegetation communities that are considered Carbon sinks or peat-forming habitats and restoring the carbon sequestration function of these sites.

Dry cutaway bog: Cutaway bog is categorised as dry cutaway where it is not practical or feasible to re-wet these areas completely. It is inevitable that some areas of cutaway will remain relatively dry due to the heterogenous topography of the cutaway, as well as requirements for continued drainage on site for identified after-uses, or off site in relation to neighbouring lands or other infrastructure. Ridges and mounds of glacial deposits can become exposed during peat extraction and form a heterogenous topographical mosaic separated by basins. Dry cutaway may have very thin or no residual peat where ridges and mounds have been exposed. The exposed sub-soils are a mix of glacial gravels, muds and tills that can be quite free-draining. Dry cutaway may also have deeper residual peat but in a location (ie. at the margin) where the peat cannot be re-wetted due to boundary constraints. Dry cutaway may also develop in situations where there a relatively steep slope that inhibits re-wetting. The majority of dry cutaway will develop towards grassland, heath, scrub and dry woodland habitats.

Enhanced decommissioning: This is defined as decommissioning carried out under Scheme, which is proposed to externally funded.

Enhanced rehabilitation: This is defined as rehabilitation carried out under Scheme, which is proposed to be externally funded. It is proposed by Government that Bord na Móna be obligated to carry out enhanced decommissioning, rehabilitation and restoration on peatlands. This Scheme will significantly go beyond what is required to meet rehabilitation and decommissioning obligations under existing EPA IPC licence conditions. Interventions and activities supported by the Scheme will ensure that environmental stabilisation is achieved (meaning IPC obligations are met), and importantly, significant additional benefits, particularly relating to climate action and other ecosystem services, will also be delivered. However, only the costs associated with the additional, enhanced and accelerated measures, i.e., those interventions which go beyond the existing decommissioning and rehabilitation requirements arising from Condition 10 will be eligible for support under the Scheme.

Environmental stabilisation: The key objective of peatland rehabilitation is environmental stabilisation. This means developing habitats and vegetation back onto the bare peat, slowing water movement across the bog, minimising effects to downstream waterbodies and meeting the conditions of the IPC Licence. This is achieved by a combination of re-wetting, where possible, and natural colonisation of the former cutaway, with or without intervention. Habitats will develop that reflect the underlying environmental conditions. Other after-use development may also serve to act as environmental stabilisation.

Marginal land. Marginal land is defined as land around the margin of the industrial peat production area. This margin generally contains a range of habitats including scrub, Birch woodland, cutover bog and raised bog remnants. It has a variety of land-uses including turf-cutting (private turbary). The Scheme will consider potential rehabilitation and restoration actions (e.g. drain blocking) within marginal land zones, where appropriate.

Rehabilitation: Rehabilitation is defined in general by Bord na Móna as environmental stabilisation of the former cutaway. This is generally achieved via re-wetting, where possible, and natural colonisation of the former cutaway, with or without intervention. It is not possible to restore raised bog habitats on BnM cutaway in general in the short-term. In general, most of the peat mass has been removed from many BnM cutaway sites and the environmental characteristics of these areas have therefore changed radically (peat depths, hydrology, water chemistry, substrate type, nutrient status. This means there will therefore be different habitat outcomes (wetlands, fen, heathland, grassland and Birch woodland). Other after-use development may also serve to act as rehabilitation.

Restoration: Ecological restoration is defined as the process of re-establishing to the extent possible the structure, function and integrity of indigenous ecosystems and the sustaining habitats they provide" (SER 2004). Defined in this way, restoration encompasses the repair of ecosystems (Whisenant 1999) and the **improvement of ecological conditions in damaged wildlands** through the **reinstatement of ecological processes**. In general, Bord na Móna cutaway peatlands cannot be restored back to raised bog in a reasonable timeframe as their environmental conditions has changed so radically (with the removal of the acrotelem – the living layer and much of the peat mass). However, they can be returned to a **trajectory** towards a naturally functioning peatland system (Renou-Wilson 2012). **Raised bog restoration** is an objective of some BnM sites where there is residual natural raised bog vegetation and where the majority of the peat is still intact.

Standard rehabilitation: This is defined as rehabilitation that is designed to meet the conditions of the EPA IPC Licence. The key objective of rehabilitation is environmental stabilisation. This is achieved by a combination of re-wetting, where possible, and natural colonisation of the former cutaway, with or without intervention. Other after-use development may also serve to act as rehabilitation.

Standard decommissioning: This is defined as decommissioning that is designed to meet the conditions of the EPA IPC Licence. This is defined as to 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.

Wetland cutaway bog. Wetland cutaway bog is defined as former raised bogs that have been in industrial peat production, where production has ceased and the majority of peat has been cutaway, and where this cutaway has the potential to be re-wetted. A significant number of Bord na Móna sites have pumped drainage and these sites are likely to develop a mosaic of wetland habitats when pumping is reduced or stopped. The water chemistry of wetland cutaway frequently is strongly influenced by the more alkaline sub-soils that have been exposed during peat production. This means that pioneer vegetation is more typical of fen and wetland, rather than raised bog. Wetland cutaway will have a broad range of hydrological conditions depending on the local topography. In some cases, these wetlands may form deep water (> 0.5 m) whilst other areas may have the water table at or just below the surface of the ground.

APPENDIX IX: EXTRACTIVE WASTE MANAGEMENT PLAN

(Minimisation, treatment, recovery and disposal)

Objective:

The objective of this generic plan is to comply with the requirements of regulation 5 of the Waste Management (Management of Waste from Extractive Industries) Regulations, and to prevent or reduce waste production and its harmfulness.

Scope:

This plan covers IPPC Licence's Ref P0504-01, Mountdillon Group of Bogs in Counties Longford, Roscommon and Westmeath.

1.0 Extractive Waste:

Waste classified as extractive waste from peat extraction operations arise from three operations associated with this activity.

1.1 Silt Pond excavations and maintenance.

All peat extraction activities are serviced by a silt lagoons/ponds. During the excavation of these silt ponds, pre IPPC Licensing in 1999 and since licensing, the excavated material is stored adjacent to the silt pond, where it either remains in situ or levelled out. As required by condition 6.6, these silt lagoons are cleaned twice per annum or more often if inspections dictate. These silt cleanings are also deposited on the same location, adjacent to the silt pond, where they may be levelled periodically to allow room for subsequent cleanings. These mounds of silt pond excavation material and cleanings are generally no higher than 2-3 metres.

1.2 Power Station screenings:

Lough Ree Power Ltd screens the peat from the bogs prior to processing. This screening removes oversized peat, stones and bog timbers. Schedule 3 (ii) of the IPPC licence permits disposal of these peat screenings back to the bog, where it is levelled and graded into the surrounding peat landscape. These locations have been agreed with the Agency as per condition 7.4 of the IPPC Licence, and as per the attached locations.

1.3 Bog Timbers:

During peat extraction operations, bog timbers often arise in the bog surface and are required to be cleared. These timbers consist of bog pine, oak and some yew. Some of these timbers, such as the oak and yew are removed for use in the wood craft industry, with the remaining bog pine stockpiled in locations at the opposite end of each bog, where it generally becomes a habitat for flora and fauna. These piles of timber are generally no higher than 1-2 metres.

2.0 P0504-01 IPPC Licence Extractive Waste Conditions

2.1 Condition 7.5 Extractive Waste Management

The licensee shall draw up a Waste Management Plan (to be known as an Extractive Waste Management Plan) for the minimisation, treatment, recovery and disposal of extractive waste. This Plan shall meet the requirements of regulation 5 of the Waste Management (Management of Waste from the Extractive Industries) Regulations, 2009. The Plan shall be submitted for agreement by the Agency by the 31st December 2012. The Plan shall be reviewed at least once every five years thereafter in a manner agreeable to the Agency and amended in the event of substantial changes to the operation of a waste facility or to the waste deposited. Any amendments shall be notified to the Agency.

All extractive waste shall be managed in accordance with the Extractive Waste Management Plan. A report on the implementation of the Extractive Waste Management Plan shall be provided in the AER.

2.2 Condition 7.6 Waste Facility

- (i) No new waste facility may be developed or an existing waste facility modified unless agreed by the Agency.
- (ii) The licensee shall ensure that all existing waste facilities are managed and maintained to ensure their physical stability and to prevent pollution or contamination of soil, air, surface water or groundwater.
- (iii) The licensee shall ensure that all new waste facilities are constructed, managed and maintained to ensure their physical stability and to prevent pollution or contamination of soil, air, surface water or groundwater.
- (iv) Operational measures shall be continuously employed to prevent damage to waste facilities from personnel, plant or equipment.
- (v) The licensee shall establish and maintain a system for regular monitoring and inspection of waste facilities.
- (vi) All records of monitoring and inspection of waste facilities, as required under the licence, shall be maintained on-site in order to ensure the appropriate handover of information in the event of a change of operator or relevant personnel.

2.3 Condition 7.7 Excavation Voids

7.7.1 Unless otherwise agreed by the Agency, only extractive waste shall be placed in excavation voids.

7.7.2 When placing extractive waste into excavation voids for rehabilitation and construction purposes, the licensee shall, in accordance with regulation 10 of the Waste Management (Management of Waste from the Extractive Industries) Regulations, 2009, and the Extractive Waste Management Plan:

- Secure the stability of the waste
- Put in place measures to prevent pollution of soil, surface water and ground water.
- Carry out monitoring of the extractive waste and excavation void.

Condition 7.5. Extractive Waste Management Plan. 5 (1)

3.0 Minimisation.

3.1 Silt pond excavation material and cleanings.

IPPC Licence conditions require all production areas to be serviced by an appropriately designed silt pond based on storage volume and retention time. Condition 6.6 requires all ponds to be cleaned bi-annually and more often if inspections dictate, so the only opportunity for minimisation of same is

through Standard Operating Procedures. These are required under condition 2.2.2 (i) regarding minimisation of suspended solids, and are in-place to minimise the generation of silt, which in-turn will minimise the generation of silt pond waste.

3.2 Power Station Screenings.

These screenings cannot be minimised as they are a consequence of peat production, stones, timbers and oversize peat materials are naturally occurring on the bog, and are required to be removed prior to processing.

3.3 Bog Timbers.

Bog timbers are also naturally occurring materials within a bog and are required to be removed prior for production. The volume of these bog timbers varies from bog to bog and as such their minimisation is not controllable or quantifiable.

4.0 Treatment

4.1 Silt pond excavation material and cleanings.

The silt pond excavation material and silt cleanings do not require any treatment for its end use which will be either backfilling these silt pond voids as per condition 7.7.1 above as part of the Bog Rehabilitation Plan, or reincorporated into the surrounding peatlands.

4.2 Power Station Screenings.

The factory screenings are permitted to be returned to the bog as they were naturally occurring materials from the bog, and as such do not require any treatment to serve this purpose.

4.3 Bog Timbers

As per 1.3 above, these timbers are stockpiled at two locations in each bog, as per the attached list of sites and become habitats for various flora and fauna.

5.0 Recovery

5.1 Silt pond excavation material and cleanings.

Condition 2.2.2 (vi) requires the reuse of silt pond waste to be examined. This was undertaken in 2006, the outcome of which was that this waste peat silt material, as a fuel, was contaminated with sub-soils, rendering it unsuitable for combustion. In addition, volumes are small compared to overall peat production volumes.

5.2 Power Station Screenings.

Given the nature of these screenings as outlined in 1.2 above, there is no further use identified and they are permitted to be disposed of back to the bog.

5.3 Bog Timbers

Investigations into processing these materials into smaller fractions for potential heating purposes did not yield any viable results. In addition, these older stockpiles are now classified as habitats and as such would not be considered for reuse as a fuel.

6.0 Disposal

6.1 Silt pond excavation material and cleanings.

Schedule 3 (ii) permits the disposal of silt pond cleanings (Lagoon Sediments) to the bog and these locations, adjacent to the silt pond site, are presented in the attached spreadsheet, with associated grid coordinates.

6.2 Power Station Screenings.

Schedule 3 (ii) permits the disposal of screenings (Peat Screenings) to the bog at designated locations agreed under Condition 7.4, and these locations, are presented in the attached spreadsheet, with associated grid coordinates.

6.3 Bog Timbers

These naturally occurring bog timbers are stockpiled at locations in each bog, grid coordinates attached.

7.0 Extractive Waste Management Plan

5 (2a)(i)

The vast majority of peat extraction bogs were all designed and drained for production prior to the 1960's and as such the production fields layout cannot be altered. Under our Cleaner Reduction Procedures, various design changes have been implemented to the production machines and process to reduce lost peat which eventually is captured in the silt ponds and requires removal as waste peat silt. This along with training and ongoing research and development will continuously reduce waste peat and subsequently waste silt pond cleanings. Bog timbers are present naturally in various volumes and quantities in different bogs and as peat production involves stripping peat in layers, the exposure, generation and removal of these timbers is unavoidable. Work has been undertaken recently into project looking at grinding of these bog timbers in situ using a timber miller, and if this project becomes viable it will contribute to the reduction of bog timbers.

5 (2a)(ii)

Given the nature and expanse of peat bogs, the stockpiling and storage of these waste materials do not present a visual, storage or stability problem. As required under Condition 10 of the IPPC Licence, the silt pond excavations and screenings will be utilised to backfill the silt pond voids once the bogs have finished and stabilised in accordance with our Bog Rehabilitation Plan. Storage of these wastes in the interim, open to the elements does not present a change on the nature of these wastes that will threaten the environment or prevent their reuse during the bog rehabilitation process.

5 (2a)(iii)

Under Condition 10 of the IPPC Licence, all silt ponds will be decommissioned once the bog surface has stabilised, in agreement with the Agency. This will involve the removal of weirs and flow controls, returning the silt pond back to its original drain or removing the silt pond from the drainage system. Both of these activities will involve placing the silt pond extraction and cleaning material back into the excavation void.

5 (2a)(iv)

The peat bogs do not contain any topsoil, so this is not required.

5 (2a)(v)

Peat mineral resources do not undergo any treatment.

5 (2b)

These three extractive waste are all being reused and recovered back to their original extraction points and have not undergone any physical, chemical, or biological change.

5 (2c)(i, ii & iii)

These three extractive wastes, stored on the bog for reuse or recovery during the bog rehabilitation phase, do not require any management or monitoring during the operation of these bogs. Silt pond excavations and cleanings are stored adjacent to the silt pond and quickly revegetated and stabilise, the screenings are graded back into the bog at the agreed locations upon disposal and the bog timbers do not prevent any water or airborne danger to the environment.

5 (3)

The three extractive wastes arising from peat extraction operations at this site are classified wastes from mineral non-metalliferous excavation, with an EWC code of 0101 02. The materials are not classified as hazardous under Directive 91/689/EEC20, and do not contain substances or preparations classified as dangerous under Directives 67/548/EEC5 or 1999/45/EC6 above a certain threshold. The peat excavations and cleanings are stored in locations and in a manner that they could not collapse, and are remote in their nature. The stockpiles are located adjacent to silt ponds that are cleaned regularly and as such these stockpiles are managed and levelled to facilitate further cleanings. Therefore the material stored at these waste facilities would not be considered to be a Category A waste facility.

Classification in accordance Annex II.

| Waste Material | Description | Classification | Chemical Process treatment | Deposition description | Transport System |
|-------------------------------------|---|----------------|----------------------------|--|----------------------|
| Silt Pond Excavations and cleanings | Peat and mineral soils associated with peatlands. Stored for reuse during bog rehabilitation, with no displacement of overburden | 01 01 02 | None | Excavated from silt ponds by excavator and deposited adjacent to the silt pond. | Excavator |
| Peat Screenings | Stones, timbers and oversized peat particles, reincorporated into low areas, agreed with the Agency, and stabilized under normal natural bog conditions | 01 01 02 | None | Removed by screen at the factory and transported by tractor and trailer to the designated and agreed locations | Tractor and trailer. |
| Bog Timbers | Pine, Oak and Yew species, stored at locations in each bog. Not subject to any stability issues due to exposure to atmospheric/meteorological conditions. | 01 01 02 | None | Removed from the bog surface by excavator and transported by tractor and trailer to the agreed locations | Tractor and Trailer |

Description of operations.

Silt pond excavations arise from the requirement to have silt ponds treating all peat extraction sites. Silt pond cleanings arise from the removal of peat silt from silt ponds as required under IPPC Licence. Bog timbers arise from preparation of the bogs surface for peat production. Estimated quantities of materials are below:

Closure plan. (Bog Rehabilitation Plan).

Condition 10.1 – 10.3 of the IPPC Licence requires the following:

- 10.1 Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall:
 - 10.1.1 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.
 - 10.1.2 Implement the agreed cutaway bog rehabilitation plan (refer Condition 10.2).

10.2 Cutaway Bog Rehabilitation Plan:

- 10.2.1 The licensee shall prepare, to the satisfaction of the Agency, a fully detailed and costed plan for permanent rehabilitation of the cutaway boglands within the licensed area. This plan shall be submitted to the Agency for agreement within eighteen months of the date of grant of this licence.

- 10.2.2 The plan shall be reviewed every two years and proposed amendments thereto notified to the Agency for agreement as part of the AER. No amendments may be implemented without the written agreement of the Agency.

10.3 The Rehabilitation Plan shall include as a minimum, the following:

- 10.3.1 A scope statement for the plan; to include outcome of consultations with relevant Agencies, Authorities and affected parties (to be identified by the licensee).
- 10.3.2 The criteria which define the successful rehabilitation of the activity or part thereof, which ensures minimum impact to the environment.
- 10.3.3 A programme to achieve the stated criteria.
- 10.3.4 Where relevant, a test programme to demonstrate the successful implementation of the rehabilitation plan.
- 10.3.5 A programme for aftercare and maintenance.

10.4 A final validation report to include a certificate of completion for the Rehabilitation Plan, for all or part of the site as necessary, shall be submitted to the Agency within six months of execution of the plan. The licensee shall carry out such tests, investigations or submit certification, as requested by the Agency, to confirm that there is no continuing risk to the environment. This plan including maps and ecological classifications are available on file at the Mountdillon IPPC Licence Coordinators office.

The location in relation to the silt pond excavations and cleanings are adjacent to the silt ponds, which are considered under the Shannon River Basin Management Plan in accordance with the requirements of Directive 2000/60/EC.

Screenings and bog timbers are all naturally occurring elements of peatland and their placement back to the bog in smaller concentrated designated waste facilities does not constitute a risk to the prevention of water compliance.

The lands under where these materials are deposited are peatlands and are un-effected by the placing of this material.

Review.

This plan will be reviewed every five years, the first review to take place in September 2017. This review will entail an inspection of these waste facilities to ensure their placing, management, maintenance and stability comply with the requirements of the Extractive Waste Management requirements and condition 7.5, 7.6 and 7.7 of the Mountdillon IPPC Licence P0504-01.

APPENDIX X: MITIGATION MEASURES FOR THE APPLICATION OF FERTILISER

- Any fertiliser used will be Rock Phosphate and will not be applied in the following conditions:
 1. The land is waterlogged;
 2. The land is flooded, or it is likely to flood;
 3. The land is frozen, or covered with snow;
 4. Heavy rain is forecast within 48 hours (forecasts will be checked from Met Éireann).
 5. The ground slopes steeply and there is a risk of water pollution, when factors such as surface run-off pathways, the presence of land drains, the absence of hedgerows to mitigate surface flow, soil condition and ground cover are taken into account.
- No fertiliser will be spread on land within 2 metres of a surface watercourse.
- Buffer zones in respect of waterbodies, as specified on <https://www.epa.ie/about/faq/name,57156,en.html>, will be adhered with at all times with regard to fertiliser application. Reproduced as follows:

| Water body / Feature | Buffer zone |
|---|---|
| Any water supply source providing 100m ³ or more of water per day, or serving 500 or more people | 200 metres (or as little as 30 metres where a local authority allows) |
| Any water supply source providing 10m ³ or more of water per day, or serving 50 or more people | 100 metres (or as little as 30 metres where a local authority allows) |
| Any other water supply for human consumption | 25 metres (or as little as 30 metres where a local authority allows) |
| Lake shoreline | 20 metres |
| Exposed cavernous or karstified limestone features (such as swallow holes or collapse features) | 15 metres |
| Any surface watercourse where the slope towards the watercourse exceeds 10% | 10 metres |
| Any other surface waters | 5 metres* |

| Bog Name | Contact Organisation | Contact Name | Date of Issue | Format | Date Response Received | Response Format |
|----------|----------------------|--------------|---------------|--------|------------------------|-----------------|
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Table APX -2 Response summary from Consultees contacted

| Organisation | Summary of Response by Stakeholder | BnM Response |
|--------------|------------------------------------|--------------|
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APPENDIX XII: ARCHAEOLOGY

Role of the Archaeological Liaison Officer

1. To communicate this Code of Practice and the *Archaeological Protection Procedures* (Appendix IV) to all personnel operating on the bog.
2. To ensure that all notices relating to the *Archaeological Protection Procedures* are posted and maintained at appropriate locations on the bog.
3. To report any stray finds, presented to the Liaison Officer from his/her group of bogs, to the Duty Officer of the National Museum of Ireland.
4. To provide for the appropriate protection of the stray find, whether in-situ or removed from the bog, as directed by the Duty Officer of the National Museum of Ireland.



Code of Practice

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Code of Practice

5. To arrange for the delivery or collection of the stray find, as directed by the Duty Officer of the National Museum of Ireland.
6. To complete the Report of Discovery of Archaeological Object(s) in Bogs (Appendix V), as directed by the Duty Officer of the National Museum of Ireland.
7. To maintain a file of all stray finds and associated documentation and provide copies to the Project Archaeologist.
8. To provide assistance, where required, to the Department during archaeological surveys.
9. To provide assistance, where required, to Bord na Móna's Consultant Archaeologists, during investigation and mitigation of monuments.
10. To report to the Bord na Móna members on the Archaeology Management Liaison Committee any planned developments or new activities on cutaway peatland areas within his/her group of bogs.



| | | |
|---------------------------------------|--------------------------|---------------|
| Bord na Móna | Procedure: ENV017 | Rev: 1 |
| Title: Archaeological Findings | Approved: EM | Date: |

1) Purpose

The purpose of this procedure is to describe the arrangements in Bord na Móna for findings of Archaeological material (Stray Finds).

All objects, sites or monuments, no matter how fragmentary, are important elements of our heritage.

2) Procedure

1. Check whether there are any known archaeological monuments in your area.
2. Be vigilant at all times - objects or traces of structures can be found on the field surfaces, in the drain faces, on the bog margins or caught within the mechanics of machinery.
3. If an object is found leave it in place, if it is safe to do so, note its position and immediately contact your Archaeological Liaison Officer who will assess the situation and contact the Duty Officer of the National Museum of Ireland.
4. Resist the temptation to investigate the find spot as this may disturb fragile archaeological deposits.
5. If the object is already dislodged or is in imminent danger, remove it carefully, mark its find spot and report it immediately to your Archaeological Liaison Officer.
6. Objects made of wood, leather or textile, which are removed from peat should be kept in conditions similar to those in which they are found. This can be done by packing them in peat or, if waterlogged, placing them in a clean basin of water and sealing the container. Resist the temptation to clean or remove peat from the object.
7. If timbers or other materials, such as gravel or stones, which could be part of a man-made structure are noted on the bog, mark the location and report it immediately to your Archaeological Liaison Officer. If you suspect the find is of archaeological importance, resist the temptation to expose it any further as this could result in damage to the structure.
8. Report anything that looks unnatural in the bog – your Archaeological Liaison Officer will decide whether it should be referred to the appropriate authorities.

NOTE: Our archaeological heritage is a finite, non-renewable resource. Once a site is destroyed its information is lost forever and we have lost the chance to understand a little more about our past, where we have come from and perhaps the opportunity to learn for the future.

Your Archaeological Liaison Officer is

3) Records

| Revision Index | | | |
|----------------|------|-----------------------|----------|
| Revision | Date | Description of change | Approved |
| 1 | | | |
| 2 | | | |

APPENDIX XIII: INITIAL WATER QUALITY DATA FROM GRANAGHAN

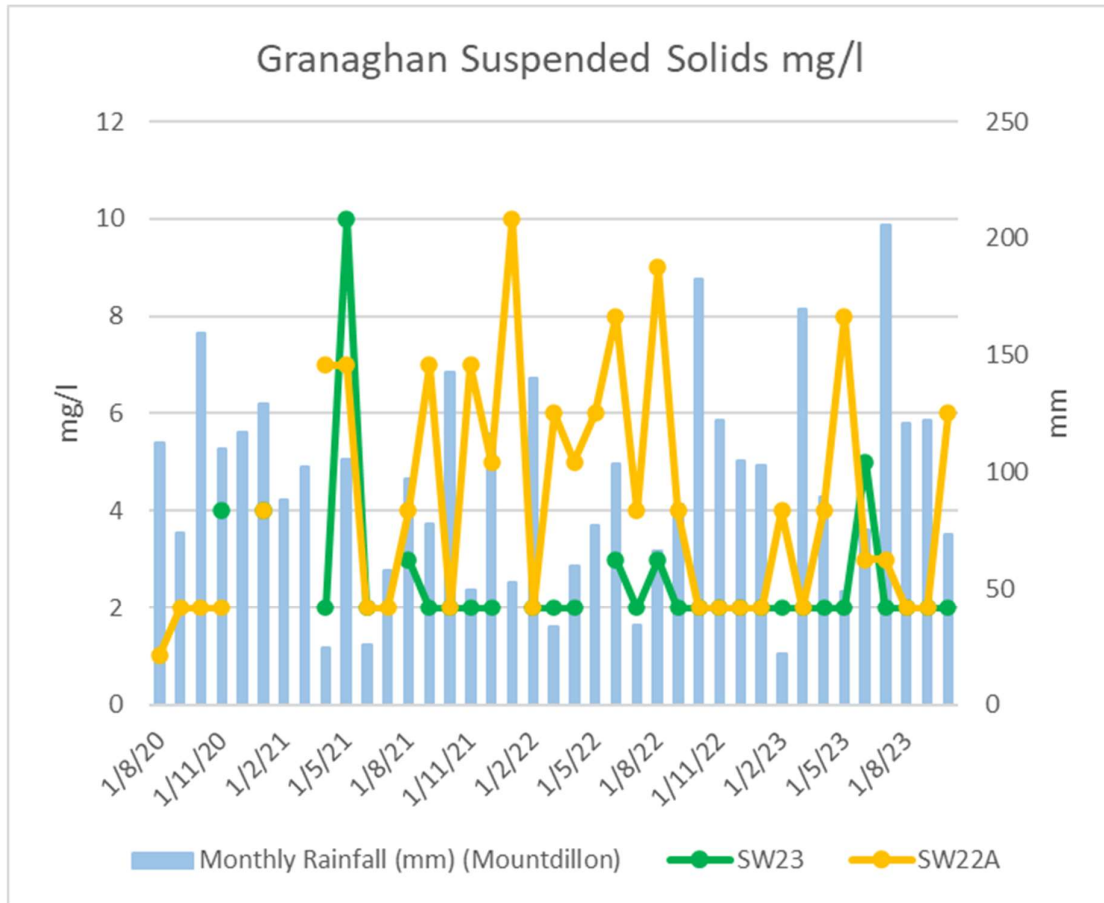


Plate 0-1 Granaghan suspended solids sampling results

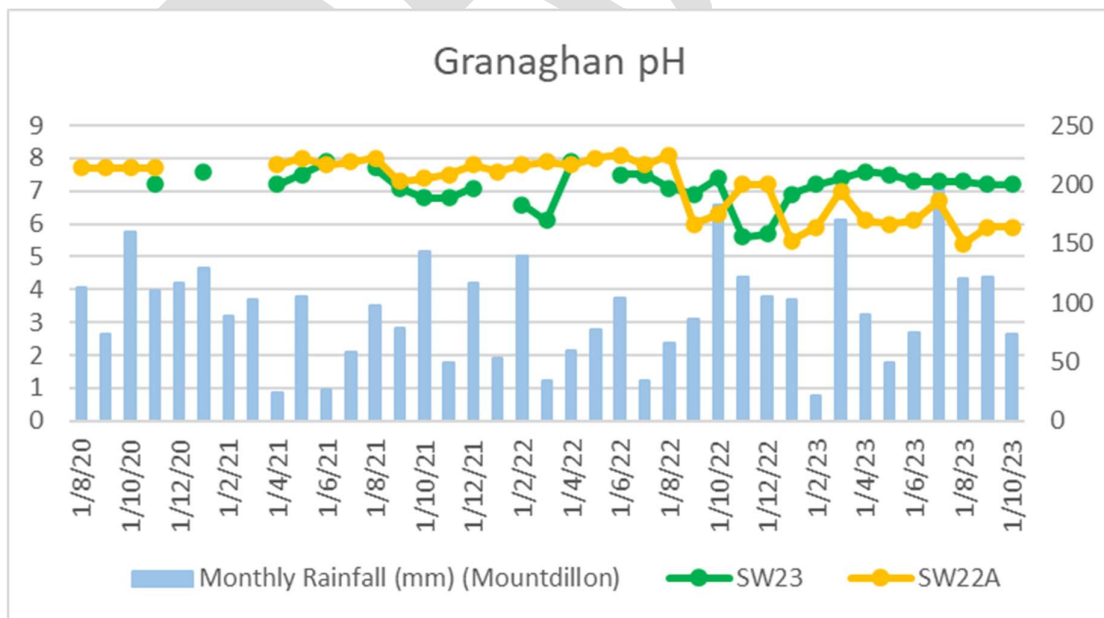


Plate 0-2 Granaghan pH sampling results

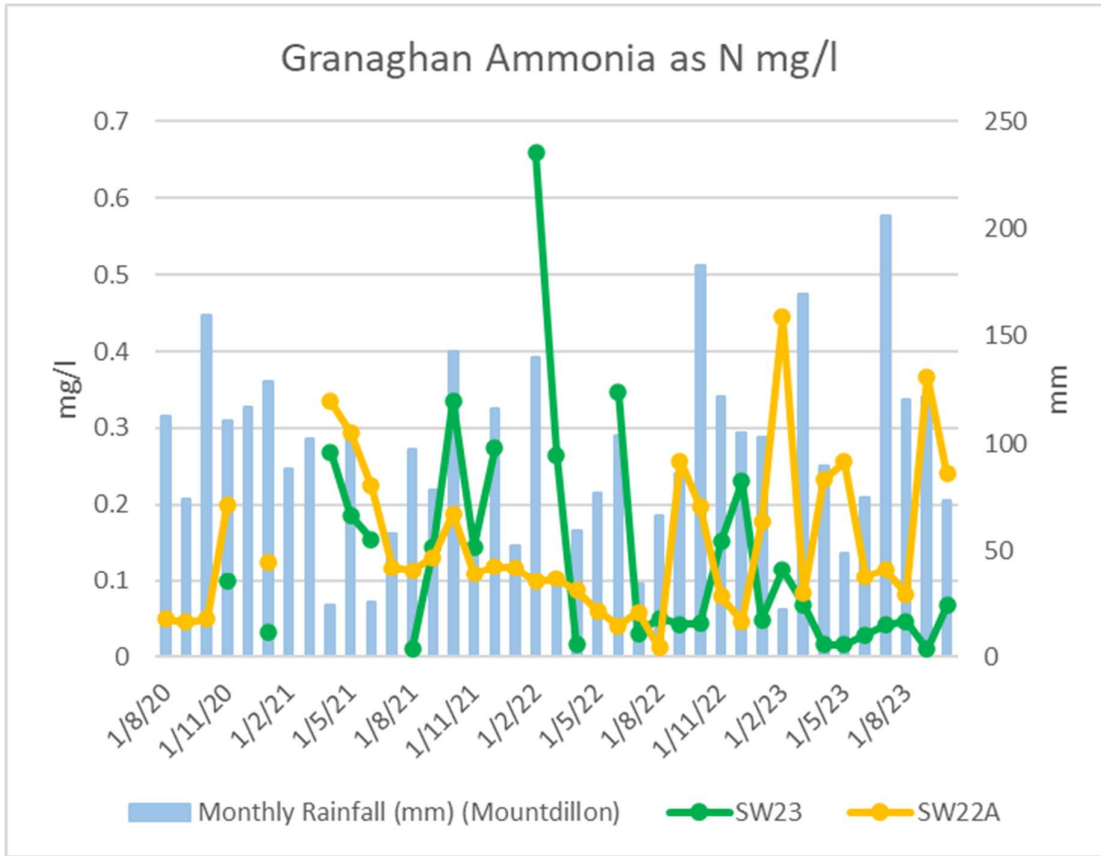


Plate 0-3 Granaghan Ammonia sampling results

Plate 0-4 Granaghan water quality monitoring data (continued)

| PCAS SW Sampling Scheme | | | | Suspended Solids | Suspended Solids | Suspended Solids | Suspended Solids | Suspended Solids | Suspended Solids | Suspended Solids | Suspended Solids | Suspended Solids | Suspended Solids |
|-------------------------|------------|------------|----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Bog Group | Licence No | Bog Name | SW Code -GIS | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 2 | 2 | 2 | 2 | 2 | 5 | 2 | 2 | 2 | 2 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 2 | 4 | 2 | 4 | 8 | 3 | 3 | 2 | 2 | 6 |
| | | | Monthly Rainfall (mm) (Mou | 102.9 | 21.7 | 169.8 | 89.4 | 48.6 | 74.9 | 206 | 120.7 | 121.8 | 73.3 |
| PCAS SW Sampling Scheme | | | | Colour | Colour | Colour | Colour | Colour | Colour | Colour | Colour | Colour | Colour |
| Bog Group | Licence No | Bog Name | SW Code -GIS | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co | mg/l Pt Co |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 245 | 201 | 179 | 230 | 254 | 239 | 293 | 302 | 317 | 310 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 162 | 207 | 328 | 258 | 332 | 382 | 320 | 267 | 438 | 342 |
| PCAS SW Sampling Scheme | | | | COD | COD | COD | COD | COD | COD | COD | COD | COD | COD |
| Bog Group | Licence No | Bog Name | SW Code -GIS | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 47 | 62 | 51 | 73 | 57 | 74 | 104 | 82 | 80 | 71 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 30 | 48 | 65 | 66 | 27 | 82 | 115 | 55 | 85 | 92 |
| PCAS SW Sampling Scheme | | | | pH | pH | pH | pH | pH | pH | pH | pH | pH | pH |
| Bog Group | Licence No | Bog Name | SW Code -GIS | pH Units | pH Units | pH Units | pH Units | pH Units | pH Units | pH Units | pH Units | pH Units | pH Units |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 6.9 | 7.2 | 7.4 | 7.6 | 7.5 | 7.3 | 7.3 | 7.3 | 7.2 | 7.2 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 5.5 | 5.9 | 7 | 6.1 | 6 | 6.1 | 6.7 | 5.4 | 5.9 | 5.9 |
| | | | Monthly Rainfall (mm) (Mou | 102.9 | 21.7 | 169.8 | 89.4 | 48.6 | 74.9 | 206 | 120.7 | 121.8 | 73.3 |
| PCAS SW Sampling Scheme | | | | TP as P | TP as P | TP as P | TP as P | TP as P | TP as P | TP as P | TP as P | TP as P | TP as P |
| Bog Group | Licence No | Bog Name | SW Code -GIS | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 0.05 | 0.05 | 0.05 | 0.07 | 0.05 | 0.05 | 0.06 | 0.05 | 0.11 | 0.05 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.11 | 0.1 | 0.05 | 0.19 | 0.15 |
| PCAS SW Sampling Scheme | | | | T5 | T5 | T5 | T5 | T5 | T5 | T5 | T5 | T5 | T5 |
| Bog Group | Licence No | Bog Name | SW Code -GIS | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 183 | 276 | 246 | 228 | 248 | 242 | 246 | 250 | 322 | 333 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 54 | 104 | 277 | 97 | 101 | 154 | 159 | 132 | 110 | 108 |
| PCAS SW Sampling Scheme | | | | Ammonia as N | Ammonia as N | Ammonia as N | Ammonia as N | Ammonia as N | Ammonia as N | Ammonia as N | Ammonia as N | Ammonia as N | Ammonia as N |
| Bog Group | Licence No | Bog Name | SW Code -GIS | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 0.048 | 0.114 | 0.068 | 0.016 | 0.016 | 0.029 | 0.042 | 0.046 | 0.01 | 0.067 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 0.177 | 0.445 | 0.083 | 0.232 | 0.256 | 0.105 | 0.114 | 0.082 | 0.367 | 0.24 |
| | | | Monthly Rainfall (mm) (Mou | 102.9 | 21.7 | 169.8 | 89.4 | 48.6 | 74.9 | 206 | 120.7 | 121.8 | 73.3 |
| PCAS SW Sampling Scheme | | | | DOC | DOC | DOC | DOC | DOC | DOC | DOC | DOC | DOC | DOC |
| Bog Group | Licence No | Bog Name | SW Code -GIS | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | 1/1/23 | 1/2/23 | 1/3/23 | 1/4/23 | 1/5/23 | 1/6/23 | 1/7/23 | 1/8/23 | 1/9/23 | 1/10/23 |
| Mountdillon | P0504-01 | Grannaghan | SW23 | 18.8 | 22.2 | 22.1 | 20.6 | 21.9 | 28.5 | 28.6 | 28.8 | 30.5 | 29.3 |
| Mountdillon | P0504-01 | Grannaghan | SW22A | 9.93 | 16.8 | 24.3 | 17.6 | 22.6 | 29.6 | 29.2 | 19.8 | 32.3 | 30.7 |

Any period with no samples results were either during extended dry weather periods or receiving water being back up in flood conditions.