

Article 6 (3) Appropriate Assessment Screening Report

Clynan Bog, Co. Longford

Decommissioning and
Rehabilitation Plan 2023





DOCUMENT DETAILS

Client: **Bord na Móna BnM**

Project Title: **Clynan Bog, Decommissioning and Rehabilitation Plan 2023**

Project Number: **230210**

Document Title: **Appropriate Assessment Screening Report**

Document File Name: **AASR F1 – 230210 – 20.03.2023**

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| Rev | Status | Date | Author(s) | Approved By |
|-----|--------|------------|-----------|-------------|
| 01 | Draft | 22/02/2023 | RG | CM |
| 02 | Draft | 16/03/2023 | RG | CM |
| 01 | Final | 20/03/2023 | RG | CM |

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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 decommissioning and rehabilitation of Clynan Bog, Co Longford.

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 ecological surveys of Clynan Bog undertaken by Bord Na Móna ecologists in 2010 and 2018 respectively. Additional ecological monitoring and visits have taken place at Clynan Bog between 2013- 2022 to inform rehabilitation planning, where required including a site visit on the 21st of February 2023 by Rudraksh Gupta (BSc., MSc) and Rachel Minogue (BSc) of MKO. It specifically assesses whether the proposed decommissioning and rehabilitation 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 21/02/2023 by Rudraksh Gupta (BSc., MSc) and Rachel Minogue (B.Sc) of MKO. This report has been prepared by Rudraksh Gupta. Rudraksh is an ecologist with MKO with relevant academic qualifications in Environmental Sciences and Ecology. This report has been reviewed by Colin Murphy (B.Sc., MSc). Colin is an experienced project ecologist and has over 3 years' professional consultancy experience.

2. DESCRIPTION OF THE PROJECT

2.1 Site Location

Clynan Bog is located on the border of counties Westmeath and Longford (Grid reference: N22538 56576). Clynan Bog comprises 405ha of land. It is located approximately 6km east of Ballymahon in Co. Longford, approx. 5.4km south of Ballymore Fen SAC and approx. 10.4km and 10.7km west of Lough Ree SAC and Lough Ree SPA respectively. The site can be accessed via the R392 to the south and L1104 to the north.

The site location is shown in Figure 2.1.

2.2 Site Description

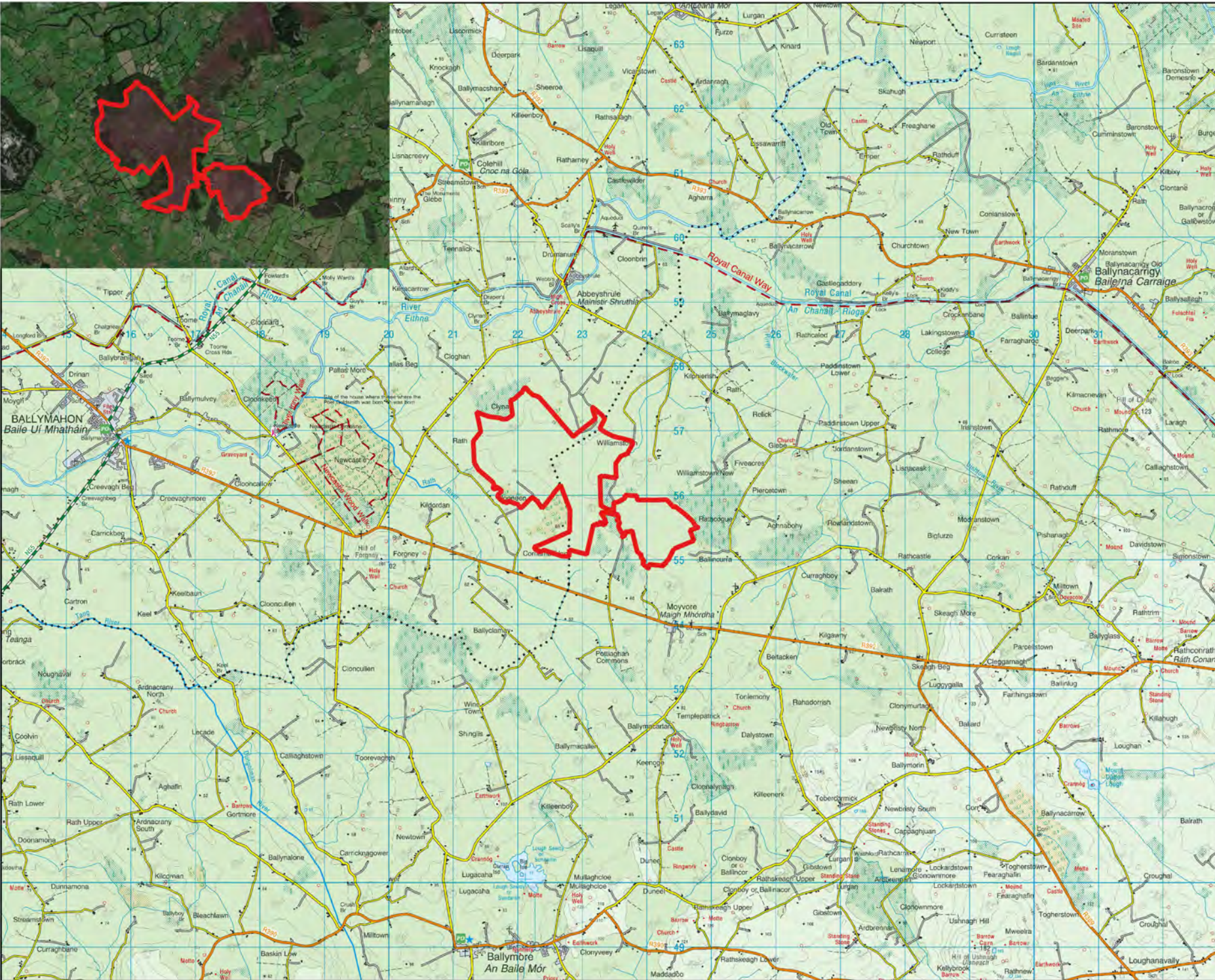
Clynan bog is part of the Mostrim group of bogs. Like some of the other bogs in the Mostrim group, the majority of the site was ditched originally in the 1980s. Clynan Bog was drained for peat production in the early 1980's, and production completely ceased in 2020. Parts of the western section have been re-ditched in the past few years and there has been recently intensification around the margins where sod-peat has been harvested in the past.

The majority of the eastern section has been in production for commercial sod-peat. The bog still retains original (but degraded) raised bog vegetation. Ditching and production at this site has had a significant impact on the quality of the habitat and the remaining raised bog is now quite degraded and drying out. A large portion of the site is dominated by degraded, drained, raised bog habitat. The former industrial production area of the site is dominated by a mosaic of heather dominated pioneer vegetation communities and bare peatland. There are several marginal areas dominated by woody vegetation communities including heather, scrub, immature woodland and mature birch dominated woodland.

The surrounding landscape is a mosaic primarily consisting of low-lying agricultural land (pasture), conifer plantations, interspersed with other raised bogs, many of which have also been managed by Bord na Móna for peat production with some areas utilised for domestic turf cutting.

The underlying geology at Clynan Bog is variable. GSI data indicates that Clynan Bog is underlain by Ballysteen Formation (dark muddy limestone, shale), and a small section in the south-eastern section is underlain by Moathill Formation (limestone, calcareous sandstone, shale).

Clynan Bog is also listed in NPWS (2014) and was reviewed as part of the potential raised bog NHA network. The site is expected to be considered for NHA designation in the future.



Map Legend

Site Boundary



Drawing Title

Site Location

Project Title

Clynan Bog, Co. Longford

| | |
|-------------|-------------|
| Drawn By | Checked By |
| RG | CM |
| Project No. | Drawing No. |
| 230210 | Fig 2.1 |
| Scale | Date |
| 1:76,800 | 22.02.2023 |



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2.3

Characteristics of the Peatland Climate Action Scheme (PCAS)

2.3.1

Overview

Bord na Móna operates under an IPC Licence issued and administered by the EPA to extract peat within the Moundillon (Mostrim) bog group (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. The bog is part of the Moundillon Bog Group (Mostrim sub-group). This regulatory requirement is the main driver of the development of this rehabilitation plan.

A document titled ‘Clynan Decommissioning and Rehabilitation Plan 2023’ has been prepared specifically to describe the proposed D & R measures at Clynan Bog and is appended to this document as Appendix 1.

It is proposed by Government that Bord na Móna (BnM) 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 Scheme (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 Scheme 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 BnM estate that has been used for energy production) as peatlands suitable for enhanced rehabilitation – including Clynan 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. P0504-01, 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. 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.”

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 Clynan 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 Clynan 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).

405ha, of the present landcover 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 Clynan rehabilitation 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 but also the experience of 40 years of research on the after-use development and rehabilitation of the BnM cutaway bogs (Clarke & Rieley 2010), including examples such as the BnM 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 Clynan 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.
- 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 Clynan Bog, in particular, optimising climate action benefits.

2.3.2.1 Decommissioning Measures

The proposed **Decommissioning measures** at Clynan Bog include:

- Clean-up of remaining or unconsolidated waste or materials located in Bogs, Yards, Buildings and Offices
- Cleaning Silt Ponds
- Decommissioning peat stockpiles.
- Decommissioning or removal of buildings and compounds
- Decommissioning fuel tanks and associated facilities
- Decommissioning and removal of bog pump sites
- Decommissioning or removal of septic tanks

Enhanced **Decommissioning measures** include:

- Removal of railway lines
- Decommissioning bridges and underpasses
- Decommissioning railway level crossing
- Restricting access (bog and silt ponds)
- Removal of high voltage power lines.

Refer to Appendix VII in the Clynan Rehabilitation Plan in Appendix 1 of this AASR for full details of Decommissioning measures proposed for Clynan Bog.

Refer to Appendix IX in the Clynan Rehabilitation Plan 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 Clynan Bog include:

- Re-wetting some deep peat areas of the bog through field drain blocking using an excavator to create peat barriers (up to seven every 100 m along each field drain)
- Re-alignment of any piped drainage
- Re-wetting the deep peat in the cutover areas and some shallow peat areas of the bog using berms and peat dams. This enhanced measure seeks to create large (c. 45m x 60m) flat areas or cells of shallow (< 10 cm) water conditions on bare peat, across multiple fields that are enclosed by shallow berms to retain shallow surface water.
- Management of water levels in these areas with overflow pipes
- Regular drain blocking (3/100) on cutover bog, along with the management of outfalls and management of water levels
- Inoculation of *Sphagnum* on compatible residual bare deep peat areas, where needed.
- Silt ponds and silt control measures will be retained and maintained during the rehabilitation phase. During the monitoring and verification phase silt ponds and silt control measures will be continually inspected and maintained, where appropriate. When it is deemed that silt ponds are not required, as the bog has been successfully stabilised and water quality parameters meet targets the condition of the silt ponds will be reviewed. Silt ponds will either be de-watered (water levels lowered to a level where the silt pond will naturally develop as a small wetland feature), left in situ, or infilled (where discharges do not require silt control).

Refer to Table 2-1 below and Map BNM-DR-24-09-05 titled 'Clynan Bog Rehabilitation Measures' in Appendix 2 of this AASR for details on the proposed enhanced rehabilitation measures.

Table 2-1 Enhanced rehabilitation measures and target area at Clynan Bog (See table 8.1, Appendix 1)

| Type | Rehab Code | Enhanced Rehabilitation Measure Extent (Ha) |
|-----------------------|------------|---|
| Deep peat cutover bog | DPT2 | More intensive drain blocking (7/100 m) + modifying outfalls and managing overflows |
| | DPT4 | Berms and field re-profiling (45m x 60m cell) + modifying outfalls and managing overflows + drainage channels for excess water + Sphagnum inoculation |
| | DPT6 | Peat dams (2/3 dams per 100 m). DPT6 is adopted rather than DPT2 within areas where the drains are wider and deeper, and a more substantial drain block is required to retain the higher volumes of retained water. |
| Dry Cutaway | DCT2 | Regular drain blocking (3/100 m) + blocking outfalls and managing water levels with overflow pipes + targeted fertiliser treatment |
| Marginal Land | MLT1 | No work required |
| | MLT2 | More intensive drain blocking (max 7/100 m) |
| Additional Work | AW2 | Targeted Drain Blocking |
| Other | | Silt pond |
| Other | | Constrained Areas |
| Other | | Archaeology Constrained Areas |
| Total Area | | 405 ha |

2.3.2.3 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.
- 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.
- This new sampling programme commenced in November 2020 and is enabling a baseline to be established, with sampling to progress during the scheduled decommissioning and rehabilitation, 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.
- 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.

- 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 appropriate assessment process and planning procedures.

Additional monitoring measures are also proposed to monitor ecosystem service benefits that have been derived by rehabilitation. These proposed monitoring measures will be funded by the 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 will be carried out using a 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.
- 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.
- It is proposed to monitor the improvement of some biodiversity ecosystem services. To be defined in relation to monitoring of the overall Scheme and after consultation with stakeholders.

2.3.2.4 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 IPC 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 completed.
- 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.

2.3.2.5 **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 rehabilitation plan in the Clynan Bog Decommissioning and Rehabilitation Plan 2023 in Appendix 1 of this AASR for full details on success criteria, targets, measuring success criteria and expected timeframes.

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).

Bord na Móna carried out a baseline ecological survey of all of its properties in 2009-2012 and developed habitat maps. As part of this exercise, Clynan Bog was surveyed in 2010. A survey of the Raised Bog at Clynan East was carried out in 2018. Additional ecological monitoring and visits have taken place at Clynan Bog between 2013- 2022 to inform rehabilitation planning, where required. This rehabilitation plan is informed by the original baseline survey as well as subsequent confirmatory site walkover surveys and visits, and updates to baseline data. A detailed ecological survey report for Clynan Bog as carried out by BnM ecologists in 2010 is detailed in Appendix III of the Clynan West Bog Decommissioning and Rehabilitation plan 2023 in Appendix 1 of this AASR.

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 follows Atherton et al. (2010). A more detailed BnM 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 walkover survey was conducted on the 21st of February 2023 by Rudraksh Gupta (BSc, MSc) and Rachel Minogue (BSc) to confirm the ecological baseline as identified by Bord na Móna in the preceding surveys and as shown in the attached habitat map (BNM-DR-24-09-17) in Appendix 2 of this AASR.

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 10m 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

The most dominant habitat type recorded on the site was **Raised Bog (PB1)** present in the north, south, east, and western sections (See plate 2.1).

The plant species recorded in the raised bog were bog asphodel (*Narthecium ossifragum*), ling heather (*Calluna vulgaris*), cross leaved heath (*Erica tetralix*), some bog rosemary (*Andromeda polifolia*), hares tail cottongrass (*Eriophorum vaginatum*), cottongrass (*Eriophorum angustifolium*), deergrass (*Trichophorum germanicum*) and purple moor grass (*Molinia caerulea*). Mosses and lichens included *Sphagnum capillifolium*, *Sphagnum cuspidatum*, *Sphagnum papillosum*, *Sphagnum medium*, *Sphagnum rubellum*, *Sphagnum denticulatum*, *Campylopus introflexus*, *Hypnum jutlandicum*, *Cladonia portentosa*, *Cladonia floreakana* and *Cladonia fimbriata*.

Cutover Bog (PB4) (plates 2.2 and 2.3) was recorded in the north, northwest, western and eastern sections of the bog. The cutover bog present had some sections of pioneer vegetation communities

occurring where peat extraction had ceased. Species recorded in the cutover bog were purple moor grass (*Molinia* sp), soft rush (*Juncus effusus*), bracken (*Pteridium aquilinum*), ribwort plantain (*Plantago lanceolata*), annual meadowgrass (*Poa* sp), some spear thistle (*Cirsium vulgare*), knapweed (*Centaurea nigra*), dandelion (*Taraxacum* sp) and *Campylopus introflexus*. Pioneering vegetation including a large amount of ling heather, some *Campylopus introflexus* and a small patch of *Polytrichum juniperum* was recorded at the cutover bog to the west. There was a **conifer plantation (WD4)** and **birch woodland (WN7)** right next to the eastern margins of the site and they were dominated by sitka spruce (*Picea sitchensis*) and silver birch (*Betula pendula*) (plate 2.3).

Drainage ditches (FW4) were recorded within the cutover bog and raised bog areas (plate 2.4). Pondweed (*Potamogeton* sp) was growing inside one of the ditches to the west. Some mosses recorded in cutover bog to east and south were *Rhytidiadelphus squarosus*, *Pseudoscleropodium purum*, *Pleurozium schreberi* and *Calliergonella cuspidata*.

Areas of **scrub (WS1)** (plate 2.5) were recorded along ditches in the north, northwest and eastern sections of the bog. The scrub mainly comprised of reedmace (*Typha latifolia*), gorse saplings (*Ulex europaeus*), ling heather (*C. vulgaris*), silver birch (*B. pendula*), bracken (*P. aquilinum*), purple moor grass (*Molinia* sp) and *Brachythecium rutabulum*.

A **raised bog (PB1) in poor condition** (plate 2.6) was recorded to the southeast of the bog. This area was dominated by heather species including ling heather (*C. vulgaris*), cross leaved heath (*E. tetralix*) purple moor grass (*Molinia* sp) and rushes (*Juncus* sp).

There was a **wet grassland (GS4)** (plate 2.7) to the east of the Bog followed by a **cut over bog (PB4)** (plate 2.8) The wet grassland comprised of annual meadowgrass (*Poa* sp), oxeye daisy (*Leucanthemum vulgare*), soft rush (*J. effusus*), ribwort plantain (*P. lanceolata*), *Rhytidiadelphus squarosus*, *Hypnum jutlandicum*, *Pseudoscleropodium purum* and *Brachythecium rutabulum*. Cutover bog with some ling heather was also recorded to the northwest and south of the site.

2.4.2 Fauna

A number of species or signs thereof have been observed on Clynan Bog by Bord na Móna including golden plover (*Pluvialis apricaria*), snipe (*Gallinago gallinago*), long tailed tit (*Aegithalus caudatus*), hare (*Lepus timidus*) and foxes (*Vulpes vulpes*). More common species recorded during the BnM site visits include meadow pipit (*Anthus pratensis*), pheasant (*Phasianus colchicus*), robin (*Erithacus rubecula*), reed bunting (*Emberiza schoeniclus*), wren (*Troglodytes troglodytes*) and blue tit (*Cyanistes caeruleus*).

A number of species or signs thereof were also recorded during the ecological walkover survey carried out by Rachel Minogue (BSc) and Rudraksh Gupta (BSc, MSc) of MKO, on the 21/02/2023. Signs of mammals (tracks, droppings, burrows) including hare (*Lepus* sp), fox (*Vulpes vulpes*), and probably badger (*Meles meles*) were recorded on the site. No signs of otter were recorded during the survey. 6x snipe (*Gallinago gallinago*) were flushed during the site visit. Some grey crows (*Corvus cornix*) were also recorded on the site.

2.4.3 Drainage and Connection to European Sites

Clynan Bog currently has a gravity-based drainage regime. Clynan Bog discharges via adjacent drains to the north to the Inny[Shannon] River. It also discharges via adjacent drains to the south west to the Rath River, and to the north east to the Abbeyshrul stream both of which flow to the Inny[Shannon] River. The Kildornan stream drains the bog in the western part of the site, and lies outside the bog boundary, flowing in a south-westerly direction and merging with the Rath River ca. 625m downstream. The Abbeyshrul Stream flows outside the eastern site boundary in a north-easterly direction, flowing into the Irishtown River approximately 1.5km downstream. Both the Rath and the Irishtown River are tributaries of the Inny (Shannon) River. The site contains open drainage channels, as shown on map BNM-DR-24-09-13 titled General Drainage Map in the Appendix 2 of this AASR.

The Inny [Shannon] River flows in a south westerly direction through Lough Ree SAC and Lough Ree SPA, approximately 10.4km and 10.7km west of Clynan Bog. The Inny [Shannon] River then merges with the Shannon [Upper] River which flows in a southerly direction and into River Shannon Callows SAC and Middle Shannon Callows SPA, both located approx. 23.5km southwest of Clynan Bog. Further, the River Shannon [Lower] flows in a southerly direction into Lough Derg North-East Shore SAC and Lough Derg (Shannon) SPA, both located approx. 63.3km southwest of Clynan Bog. Finally, the River Shannon [Lower] flows into the Lower River Shannon SAC, approx. 98km southwest of Clynan Bog and the River Shannon and River Fergus Estuaries SPA, approx. 118km southwest of Clynan Bog before discharging into the Shannon Estuary.

2.4.4

Consequences of Proposed Rehabilitation for Current Habitats

Clynan Bog 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). However, only a proportion of the bog has potential to develop Sphagnum-rich habitats and active raised bog (about 27 ha based on hydrological modelling) in this timeframe. Nevertheless, re-wetting across the entire bog, as part of the PCAS, will improve habitat conditions of the whole bog.

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



Plate 2-1 An area of Raised Bog (PB1) to the west of the site.



Plate 2-2 An area of Cutover Bog (PB4) to the west of the site



Plate 2-3 Conifer plantation (WD4), Birch Woodland (WN7) and Cutover Bog (PB4)) with some recolonizing pioneer vegetation to the east of the site.



Plate 2-4 A Drainage Ditch (FW4) with pondweed (*Potamogeton sp*) to the west of the site



Plate 2-5 An area of Scrub (WS1) dominated by Ling Heather (*Calluna vulgaris*), Gorse (*Ulex europaeus*), Bracken (*Pteridium aquilinum*) and Silver Birch (*Betula pendula*) along a drain.



Plate 2-6 An area of Raised Bog (PB1) in poor condition dominated by Purple Moor Grass (*Molinia sp*), Ling Heather (*Calluna vulgaris*) and rushes (*Juncus sp*) to the southeast of the site.



Plate 2-7 An area of Wet Grassland (GS4) dominated by *Rhytiadelphus squarossus*, *Hypnum jutlandicum*, *Pseudoscleropodium purum*, Annual Meadowgrass (*Poa* sp) and Soft Rush (*Juncus effusus*) to the east of the site.



Plate 2-8 An area of cut over bog (PB4) to the east of the site.

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

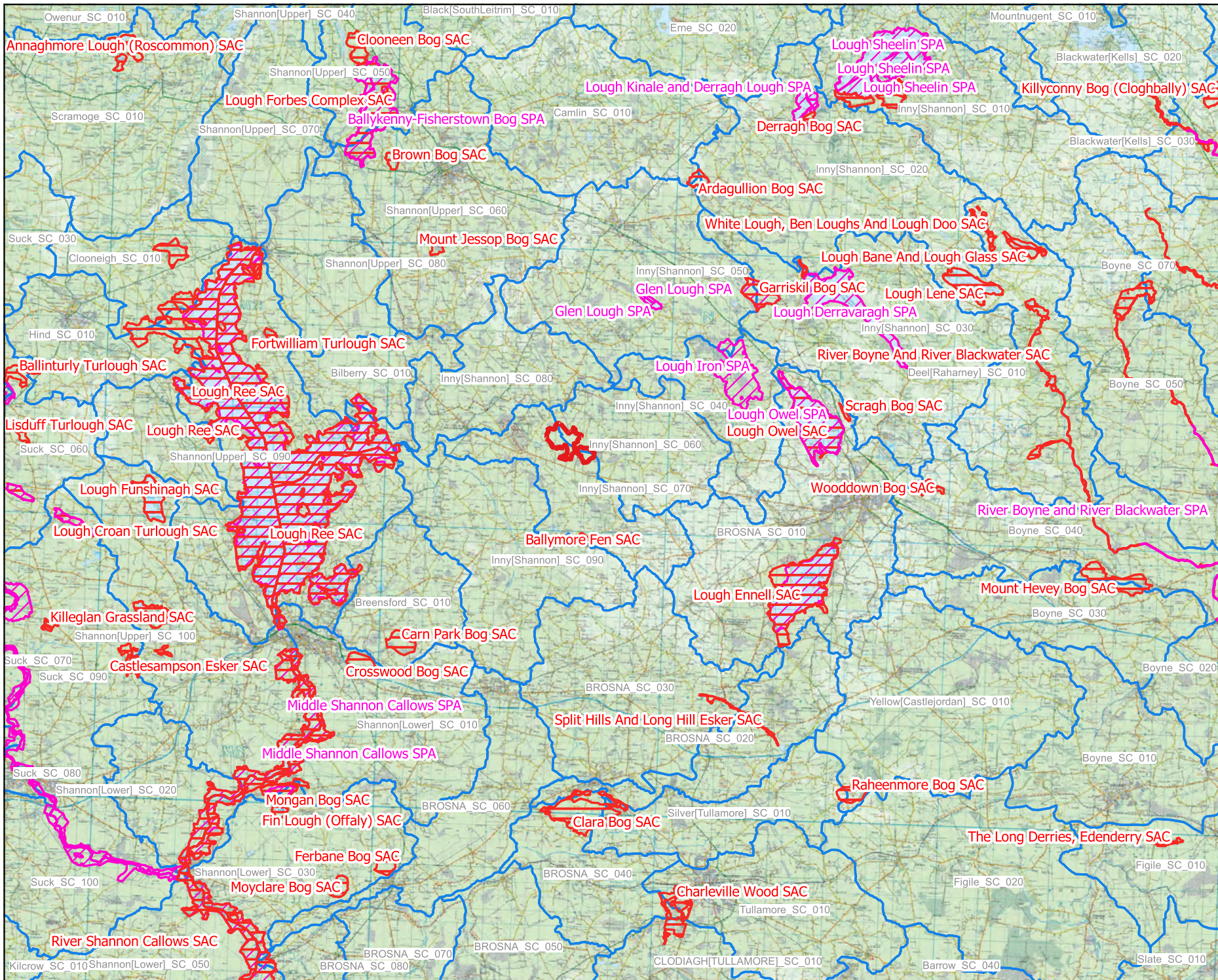
3.1 Identification of the European Sites within the Likely Zone of Impact

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 the 24/02/2023.
- 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 on these sites according to the site-specific conservation objectives is provided in Table 3-1. The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed Decommissioning and Rehabilitation and any European Sites. The hydrological catchments are also shown in Figure 3.1. In this case connectivity with sites that were further downstream in the catchment was identified. These included River Shannon Callows SAC (approx. 23.5km), Lough Derg North- East Shore SAC (approx. 63.3km), Lower River Shannon SAC (approx. 98km), Middle Shannon Callows SPA (approx. 23.5km), Lough Derg (Shannon) SPA (approx. 63.3km), and River Shannon and River Fergus Estuaries SPA (approx. 118km). However, given the nature, scale and location of the proposed Decommissioning and Rehabilitation and the attenuating properties of the of the intervening waterbodies, no potential pathway for significant effects on the above listed European sites was identified.
- Sites that were further away from the proposed Decommissioning and Rehabilitation were also considered and no complete source-pathway-receptor chain for significant effect was identified for any other European Site
- In relation to Special Protection Areas, 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 proposed Decommissioning and Rehabilitation 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, 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 were considered in this assessment.

- 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 24/02/2023.
- Where potential pathways for Likely Significant Effect are identified, the site is included within the Likely Zone of Impact and considered in the screening statement below.
- The potential for the proposed decommissioning and rehabilitation to result in cumulative impacts on any European Sites in combination with other plans and projects was considered in the assessment that is presented in Table 3.1.



Map Legend

-  Site Boundary
-  Special Areas of Conservation (SAC)
-  Special Protection Areas (SPA)
-  EPA Hydrological Subcatchments




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Drawing Title
European Designated Sites within Zone of Likely Influence

Project Title
Clynan Bog, Co. Longford

| | |
|------------------------------|-------------------------------|
| Drawn By RG | Checked By CM |
| Project No. 230210 | Drawing No. Fig 3.1 |
| Scale 1:351,000 | Date 22.02.23 |



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Table 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|---|---|--|---|
| Special Areas of Conservation (SAC) | | | |
| <p>Ballymore Fen SAC [002313]</p> <p>Distance: 4.9km</p> | <ul style="list-style-type: none"> Transition mires and quaking bogs [7140] | <p>Detailed conservation objectives for this site, (Version 1, October 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 project footprint is located entirely outside the boundary of this designated site.</p> <p>Due to the absence of a hydrological connection, and the buffering distance of 4.9km from the project footprint to this SAC, no complete source-pathway was identified for this 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>Lough Ree SAC [000440]</p> <p>Distance: 10.4km</p> <p>Surface Water Distance: 15.6km</p> | <ul style="list-style-type: none"> Otter (<i>Lutra lutra</i>) [1355] Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] Semi-natural dry grasslands and scrubland facies on calcareous substrates | <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 project footprint is located entirely outside the designated site.</p> <p>The is no complete source-impact-pathway for the following habitats due to their terrestrial nature and the 10.4km buffering distance from the project footprint of this SAC:</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|-------------------------|---|
| Special Areas of Conservation (SAC) | | | |
| | <p>(<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</p> <ul style="list-style-type: none"> • Degraded raised bogs still capable of natural regeneration [7120] • Alkaline fens [7230] • Limestone pavements [8240] • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] • Bog woodland [91D0] | | <ul style="list-style-type: none"> • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco- Brometalia</i>) (* important orchid sites) [6210] • Degraded raised bogs still capable of natural regeneration [7120] • Limestone pavement [8240] • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] • Bog woodland [91D0] <p>As such, there is no potential for indirect effects on these habitats.</p> <p>Clynan Bog and Lough Ree SAC are hydrologically connected via the the Inny (Shannon) River and its tributary streams close to Clynan, Kildornan, Rath & Abbeyshrule. This European Designated site is located approx. 15.6km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog. As such, following the precautionary principle, a potential pathway for effect on the following QI habitats and species was identified:</p> <ul style="list-style-type: none"> • Otter (<i>Lutra lutra</i>) [1355] • Natural eutrophic lakes with <i>Magnopota- mion</i> or <i>Hydrocharition</i>-type vegetation [3150] |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|-------------------------|---|
| Special Areas of Conservation (SAC) | | | |
| | | | <ul style="list-style-type: none"> Alkaline fens [7230] <p>However, the objective of the proposed Decommissioning and Rehabilitation involved is to stabilise the bog. The proposed Decommissioning and Rehabilitation measures are 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 be similar in intensity to the active production that was undertaken until recently but will be less invasive. There is no potential for these proposed Decommissioning and Rehabilitation to result in significant effects on downstream watercourses and ecological receptors as the Decommissioning and Rehabilitation primarily involve the blocking of drainage pathways from the bog.</p> <p>Further, due to the assimilative capacity of the intervening watercourse, and following the implementation of the PCAS, there will be no possibility of further effects. As such, in the absence of any mitigation, there is no potential for any significant effect on these QI receptors as a result of water pollution or change to the hydrological regime within the SAC.</p> <p>The potential for disturbance to otter, where it occurs outside the SAC was also assessed.</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|--|--|
| Special Areas of Conservation (SAC) | | | |
| | | | <p>Otter has been recorded within 10km of Clynan Bog during the surveys undertaken at the site by BnM. However, the decommissioning and rehabilitation will not result in any loss of otter habitat, as it is short term and will not be occurring over the entire bog at any one time, leaving much of the bog and potential otter habitat completely undisturbed. Hence there is no potential for the 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 Owel SAC [000688]</p> <p>Distance: 14.1km</p> | <ul style="list-style-type: none"> • White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092] • Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] • Transition mires and quaking bogs [7140] | <p>Detailed conservation objectives for this site, (Version 1, May 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 project footprint is located entirely outside the boundary of this designated site.</p> <p>Due to the absence of a hydrological connection, and the buffering distance of 14.1km from the project footprint 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> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|---|---|
| Special Areas of Conservation (SAC) | | | |
| | <ul style="list-style-type: none"> Alkaline fens [7230] | | <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: 14.5km</p> | <ul style="list-style-type: none"> Degraded raised bogs still capable of natural regeneration [7120] Bog woodland [91D0] | <p>This site has the generic conservation objective:</p> <p>‘To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.’</p> <p>NPWS (2022) Conservation objectives for Mount Jessop Bog SAC [002202]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage</p> | <p>There will be no direct effects on this SAC as the project footprint is located entirely outside the boundary of this designated site.</p> <p>Due to the terrestrial nature of the QI habitats, the buffering distance of 14.5km from the project footprint to this SAC, no complete source pathway was identified for these QI 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>Lough Ennell SAC [000685]</p> <p>Distance: 14.9km</p> | <ul style="list-style-type: none"> Alkaline fens [7230] | <p>Detailed conservation objectives for this site, (Version 1, Jan 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 project footprint is located entirely outside the boundary of this designated site.</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|---|---|--|--|
| Special Areas of Conservation (SAC) | | | |
| | | | <p>Due to the absence of a hydrological connection, and the buffering distance of 14.9km from the project footprint to this SAC, no complete source-pathway was identified for this 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>River Shannon Callows SAC [000216]</p> <p>Distance: 23.5km</p> <p>Surface Water Distance: 37.0km</p> | <ul style="list-style-type: none"> • Otter (<i>Lutra lutra</i>) [1355] • <i>Molinia</i> meadows on calcareous, peaty, or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] • Alkaline fens [7230] • Limestone pavements*[8240] | <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 project footprint is located entirely outside the boundary of this designated site.</p> <p>Clynan Bog and the River Shannon Callows SAC are hydrologically connected via the Inny (Shannon) River, its tributary streams and the River Shannon [Upper]. This European Designated site is located approx. 37km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog.</p> <p>Although there is potential hydrological connectivity to the River Shannon Callows SAC via the River Shannon [Upper],</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|--|--|
| Special Areas of Conservation (SAC) | | | |
| | <ul style="list-style-type: none"> Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) *[91E0] | | <p>the SAC is located approx. 37km downstream. Therefore, due to the distance of greater than 23.5km, the assimilative capacity of the intervening watercourses and the small nature and scale of the proposed Decommissioning and Rehabilitation at Clynan Bog, there is no potential for indirect effects on the River Shannon Callows SAC.</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> |
| <p>Lough Derg, North-East Shore SAC [002241]</p> <p>Distance: 63.3km</p> <p>Surface Water Distance: 87km</p> | <ul style="list-style-type: none"> <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davalliana</i> [7210] Alkaline fens [7230] Limestone pavements [8240] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, | <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 project footprint is located entirely outside the boundary of this designated site.</p> <p>Clynan Bog and Lough Derg, North-East Shore SAC are hydrologically connected via the Inny (Shannon) River, its tributary streams, the River Shannon [Upper] and River Shannon [Lower]. This European Designated site is located approx. 87km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog.</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|---|--|
| Special Areas of Conservation (SAC) | | | |
| | <p><i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</p> <ul style="list-style-type: none"> • <i>Taxus baccata</i> woods of the British Isles [91J0] | | <p>Although there is potential hydrological connectivity to Lough Derg, North-East Shore SAC via the River Shannon [Lower], the SAC is located approximately 87km downstream. Therefore, due to the distance of greater than 63.3km, the assimilative capacity of the intervening watercourses and the small nature and scale of the proposed Decommissioning and Rehabilitation at Clynan Bog, there is no potential for indirect effects on the Lough Derg, North-East Shore SAC.</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> |
| <p>Lower River Shannon SAC [002165]</p> <p>Distance: 98km</p> <p>Surface Water Distance: 116.0km</p> | <ul style="list-style-type: none"> • Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1029] • Sea Lamprey (<i>Petromyzon marinus</i>) [1095] • Brook Lamprey (<i>Lampetra planeri</i>) [1096] | <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 project footprint is located entirely outside the boundary of this designated site.</p> <p>Clynan Bog and the Lower River Shannon SAC are hydrologically connected via the Inny (Shannon) River, its tributary streams, the River Shannon [Upper] and River Shannon [Lower]. This European Designated site is located</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|-------------------------|--|
| Special Areas of Conservation (SAC) | | | |
| | <ul style="list-style-type: none"> • River Lamprey (<i>Lampetra fluviatilis</i>) [1099] • Atlantic Salmon (<i>Salmo salar</i>) (only in fresh water) [1106] • Sandbanks which are slightly covered by sea water all the time. [1110] • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide. [1140] • *Coastal lagoons [1150] • Large shallow inlets and bays [1160] • Reefs [1170] • Perennial vegetation of stony banks [1220] • Vegetated Sea cliffs of the Atlantic and Baltic coasts [1230] • <i>Salicornia</i> and other annuals colonizing mud and sand. [1310] | | <p>approx.116km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog.</p> <p>Although there is potential hydrological connectivity to the Lower River Shannon SAC via the River Shannon [Lower], the SAC is located approximately 116km downstream. Therefore, due to the distance of greater than 98km, the assimilative capacity of the intervening watercourses and the small nature and scale of the proposed Decommissioning and Rehabilitation at Clynan Bog, there is no potential for indirect effects on the Lower River Shannon SAC.</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> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|-------------------------|---|
| Special Areas of Conservation (SAC) | | | |
| | <ul style="list-style-type: none"> • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] • Bottlenose Dolphin (<i>Tursiops truncatus</i>) [1349] • Otter (<i>Lutra lutra</i>) [1355] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis and Callitriche-Batrachion</i> • Vegetation [3260] • Molinia meadows on calcareous, peaty, or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion, Alnion incanae, Salicion albae</i>) [91E0 *] | | |
| Special Protection Area (SPA) | | | |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|--|--|
| Special Areas of Conservation (SAC) | | | |
| <p>Glen Lough SPA [004045]</p> <p>Distance: 10.2km</p> | <ul style="list-style-type: none"> Whooper Swan (<i>Cygnus cygnus</i>) [A038] | <p>This site has the generic conservation objective:</p> <p>‘To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.’</p> <p>NPWS (2022) Conservation objectives for Glen Lough SPA [004045]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</p> | <p>There will be no direct effects on this SPA as the project footprint is located entirely outside the boundary of this designated site.</p> <p>The project footprint is located 10.2km from this SPA, as such is outside of the core foraging range of 5km for Whooper Swan (<i>Cygnus cygnus</i>) (SNH 2016).</p> <p>Further, due to the absence of a hydrological connection, and the buffering distance of 10.2km from the project footprint to this SPA, there is no potential for ex situ disturbance or displacement related impacts on this SCI species during the construction and operation of the proposed project.</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 Iron SPA [004046]</p> <p>Distance: 10.2km</p> | <ul style="list-style-type: none"> Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] | <p>This site has the generic conservation objective:</p> <p>‘To maintain or restore the favourable conservation condition of the bird species</p> | <p>There will be no direct effects on this SPA as the project footprint is located entirely outside the boundary of this designated site.</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|---|---|
| Special Areas of Conservation (SAC) | | | |
| | <ul style="list-style-type: none"> • Shoveler (<i>Anas clypeata</i>) [A056] • Coot (<i>Fulica atra</i>) [A125] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] • Wetland and Waterbirds [A999] | <p>listed as Special Conservation Interests for this SPA.’</p> <p>NPWS (2022) Conservation objectives for Lough Iron SPA [004046]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</p> | <p>The project footprint is located 10.2km from this SPA, as such is outside of the core foraging ranges of 5km for Whooper Swan (<i>Cygnus cygnus</i>) (SNH 2016) and of 5-8km for the Greenland White-Fronted Goose (<i>Anser albifrons flavirostris</i>) (SNH 2016).</p> <p>The potential for disturbance to the SCI species, where they occur outside the SPA was also assessed.</p> <p>Clynan is a raised bog with no wetlands or open waterbodies. Therefore, there is no suitable habitat on or adjacent to the Clynan Bog Decommissioning and Rehabilitation site for the following SCI species:</p> <ul style="list-style-type: none"> • Wigeon (<i>Anas penelope</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Shoveler (<i>Anas clypeata</i>) [A056] • Coot (<i>Fulica atra</i>) [A125] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Wetland and Waterbirds [A999] <p>Clynan is predominantly a raised bog and in the absence of any significant wetlands on site, there is limited habitat available for any other SCI species. Deep wetlands/open water bodies will also not form on the high bog or the</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|---|--|
| Special Areas of Conservation (SAC) | | | |
| | | | <p>surrounding cutover bog, so it is unlikely that Clynan Bog will be used by birds associated with this SPA. Further, there are no pumps on this bog and it's also not on a floodplain.</p> <p>Therefore due to the absence of a hydrological connection, and the buffering distance of 10.2km from the project footprint to this SPA, there is no potential for ex situ disturbance or displacement related impacts on these SCI species during the construction and operation of the proposed project. Further, the Decommissioning and Rehabilitation will not result in any loss of habitat, are 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 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 the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| Lough Ree SPA [004064] | <ul style="list-style-type: none"> Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] | This site has the generic conservation objective: | There will be no direct effects on this SPA as the project footprint is located entirely outside the designated site. |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|---|---|--|---|
| Special Areas of Conservation (SAC) | | | |
| <p>Distance: 10.7km</p> <p>Surface Water</p> <p>Distance: 16.1km</p> | <ul style="list-style-type: none"> • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Wigeon (<i>Anas penelope</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Mallard (<i>Anas platyrhynchos</i>) [A053] • 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] • Wetland and Waterbirds [A999] | <p>‘To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA’.</p> <p>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.</p> | <p>Clynan Bog and Lough Ree SPA are hydrologically connected via via the Inny (Shannon) River and its tributary streams close to Clynan – Kildornan, Rath & Abbeyshrule. This European Designated site is located approx. 16.1km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog. As such, following the precautionary principle, a potential pathway for effect on the listed SCI species and their habitats was identified.</p> <p>However, the objective of the proposed Decommissioning and Rehabilitation involved is to stabilise the bog. The proposed Decommissioning and Rehabilitation measures are 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 be similar in intensity to the active production that was undertaken until recently but will be less invasive. There is no potential for the proposed Decommissioning and Rehabilitation to result in significant effects on downstream watercourses and ecological receptors as the Decommissioning and Rehabilitation primarily involve the blocking of drainage pathways from the bog.</p> <p>Further, due to the assimilative capacity of the intervening watercourses, and following the implementation of the PCAS, there will be no possibility of further effects. As such, in the</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|-------------------------|---|
| Special Areas of Conservation (SAC) | | | |
| | | | <p>absence of any mitigation, there is no potential for any significant effect on these SCI receptors 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>Clynan is a raised bog with no wetlands or open waterbodies. Therefore, there is no suitable habitat on or adjacent to the Clynan Bog Decommissioning and Rehabilitation site for the following SCI species:</p> <ul style="list-style-type: none"> • Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] • Wigeon (<i>Anas penelope</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Mallard (<i>Anas platyrhynchos</i>) [A053] • 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] • Wetland and Waterbirds [A999] |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|-------------------------|--|
| Special Areas of Conservation (SAC) | | | |
| | | | <p>Clynan is predominantly a raised bog and in the absence of any significant wetlands on site, there is limited habitat available for any other SCI species. Deep wetlands/open water bodies will also not form on the high bog or the surrounding cutover bog, so it is unlikely that Clynan Bog will be used by birds associated with this SPA. Further, there are no pumps on this bog and it's also not on a floodplain.</p> <p>The following species has been recorded within 10km of Clynan Bog during BnM surveys:</p> <ul style="list-style-type: none"> Whooper Swan (<i>Cygnus cygnus</i>) [A038] <p>However, Clynan Bog is outside the core foraging range of 5km for Whooper swan (SNH, 2016) so it is unlikely that it will be used by this SCI species.</p> <p>Further, the Decommissioning and Rehabilitation will not result in any loss of habitat, are 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 in the absence of any mitigation, to result in significant disturbance to these SCI species.</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|--|--|
| Special Areas of Conservation (SAC) | | | |
| | | | <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 Owel SPA [004047]</p> <p>Distance: 14.2km</p> | <ul style="list-style-type: none"> • Shoveler (<i>Anas clypeata</i>) [A056] • Coot (<i>Fulica atra</i>) [A125] • Wetland and Waterbirds [A999] | <p>This site has the generic conservation objective:</p> <p>‘To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA’.</p> <p>NPWS (2022) Conservation objectives for Lough Owel SPA [004047]. First Order Site-specific Conservation Objectives Version 1.0. Department of Housing, Local Government and Heritage.</p> | <p>There will be no direct effects on this SPA as the project footprint is located entirely outside the boundary of this designated site.</p> <p>The potential for disturbance to the SCI species, where they occur outside the SPA was also assessed.</p> <p>Clynan is a raised bog with no wetlands or open waterbodies. Therefore, there is no suitable habitat on or adjacent to the Clynan Bog Decommissioning and Rehabilitation site for the following SCI species:</p> <ul style="list-style-type: none"> • Shoveler (<i>Anas clypeata</i>) [A056] • Coot (<i>Fulica atra</i>) [A125] • Wetland and Waterbirds [A999] |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|---|---|
| Special Areas of Conservation (SAC) | | | |
| | | | <p>Therefore, due to the absence of a hydrological connection, and the buffering distance of 14.2km from the project footprint to this SPA, there is no potential for ex situ disturbance or displacement related impacts on these SCI species during the construction and operation of the proposed project.</p> <p>Further, the Decommissioning and Rehabilitation will not result in any loss of habitat, are 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 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 the site is not within the Likely Zone of Impact and is not considered further in this Screening assessment.</p> |
| <p>Middle Shannon Callows SPA [004096]</p> <p>Distance: 23.5km</p> | <ul style="list-style-type: none"> Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] | <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 project footprint is located entirely outside the boundary of this designated site.</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|-------------------------|--|
| Special Areas of Conservation (SAC) | | | |
| Surface Water Distance: 37.0km | <ul style="list-style-type: none"> • Corncrake (<i>Crex crex</i>) [A122] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Lapwing (<i>Vanellus vanellus</i>) [A142] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] • Wetlands and Waterbirds [A999] | | <p>Clynan Bog and the Middle Shannon Callows SPA are hydrologically connected via Inny (Shannon) River, its tributary streams and the River Shannon [Upper]. This European Designated Site is located approx. 37.0km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog.</p> <p>Although there is potential hydrological connectivity to the Middle Shannon Callows SPA via the River Shannon [Upper], the SPA is located approximately 37.0km downstream. Therefore, due to the distance of greater than 23.5km, the assimilative capacity of the intervening watercourses and the small nature and scale of the proposed Decommissioning and Rehabilitation at Clynan 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 Clynan Bog, the distance of greater than approx 23.5km, there is no potential for ex situ disturbance or displacement related impacts on the SCI species during the construction of the proposed Decommissioning and Rehabilitation on the Middle Shannon Callows SPA.</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|---|---|--|--|
| Special Areas of Conservation (SAC) | | | |
| | | | <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</p> <p>Distance: 63.3km</p> <p>Surface Water Distance: 87km</p> | <ul style="list-style-type: none"> • Cormorant (<i>Phalacrocorax carbo</i>) [A017] • Tufted Duck (<i>Aythya fuligula</i>) [A061] • Goldeneye (<i>Bucephala clangula</i>) [A067] • Common Tern (<i>Sterna hirundo</i>) [A193] • Wetland and Waterbirds [A999] | <p>Detailed conservation objectives for this site, (Version 1, October 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 project footprint is located entirely outside the boundary of this designated site.</p> <p>Clynan Bog and Lough Derg (Shannon) SPA are hydrologically connected via the Inny (Shannon) River, its tributary streams, the River Shannon [Upper] and River Shannon [Lower]. This European Designated Site is located approx. 87km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog.</p> <p>Although there is potential hydrological connectivity to Lough Derg (Shannon) SPA via the River Shannon [Lower], the SPA is located approximately 87km downstream. Therefore, due to the distance of greater than 63.3km, the assimilative capacity of the intervening watercourses and the small nature and scale of the proposed Decommissioning and Rehabilitation at Clynan Bog, in the absence of any mitigation, there is no potential for any significant effect on</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|---|-------------------------|--|
| Special Areas of Conservation (SAC) | | | |
| | | | <p>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 Clynan Bog, the distance of greater than approx 63.3km, there is no potential for ex situ disturbance or displacement related impacts on the SCI species during the construction of the proposed Decommissioning and Rehabilitation 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> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|--|--|
| Special Areas of Conservation (SAC) | | | |
| <p>River Shannon and River Fergus Estuaries SPA [004077]</p> <p>Distance: 118km</p> <p>Surface Water Distance: 145km</p> | <ul style="list-style-type: none"> • Cormorant (<i>Phalacrocorax carbo</i>) [A017] • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Light-bellied Brent Goose <i>Branta bernicla hrota</i>[A046] • Shelduck (<i>Tadorna tadorna</i>) [A048] • Wigeon (<i>Anas 44etanus44</i>) [A050] • Teal (<i>Anas crecca</i>) [A052] • Pintail (<i>Anas acuta</i>) [A054] • Shoveler (<i>Anas clypeata</i>) [A056] • Scaup (<i>Aythya marila</i>) [A062] • Ringed Plover (<i>Charadrius hiaticula</i>) [A137] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Grey Plover (<i>Pluvialis squatarola</i>) [A141] • Lapwing (<i>Vanellus vanellus</i>) [A142] | <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 project footprint is located entirely outside the boundary of this designated site.</p> <p>Clynan Bog and River Shannon and River Fergus Estuaries SPA are hydrologically connected via the Inny (Shannon) River, its tributary streams, the River Shannon [Upper] and River Shannon [Lower]. This European Designated Site is located approx.145km downstream of the proposed Decommissioning and Rehabilitation at Clynan Bog.</p> <p>Although there is potential hydrological connectivity to the River Shannon and River Fergus Estuaries SPA via the River Shannon [Lower], the SPA is located approximately 145km downstream. Therefore, due to the distance of greater than 118km, the assimilative capacity of the intervening watercourses and the small nature and scale of the proposed Decommissioning and Rehabilitation at Clynan 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 Clynan Bog, the</p> |

| 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 24/02/2023 | Conservation Objectives | Identification of Source-Pathway-Receptor chain and Likely Zone of Impact Determination |
|--|--|-------------------------|--|
| Special Areas of Conservation (SAC) | | | |
| | <ul style="list-style-type: none"> • Knot (<i>Calidris canutus</i>) [A143] • Dunlin (<i>Calidris alpina</i>) [A149] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] • Curlew (<i>Numenius arquata</i>) [A160] • Redshank (<i>Tringa 45etanus</i>) [A162] • Greenshank (<i>Tringa nebularia</i>) [A164] • Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] • Wetlands and Waterbirds [A999] | | <p>distance of greater than approx 118km, there is no potential for ex situ disturbance or displacement related impacts on the SCI species during the construction of the proposed Decommissioning and Rehabilitation on the. 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 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. 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:

- County Longford Development Plan 2021-2027
- County Westmeath Development Plan 2021-2027
- National Biodiversity Action Plan 2017-2021

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>County Longford Development Plan 2021-2027</p> | <p>CPO 12.1: Protect, conserve, and enhance to the County’s natural heritage and biodiversity. This includes wildlife (flora and fauna), habitats, landscapes and/or landscape features of importance to wildlife, or which play a key role in the conservation and management of natural resources.</p> <p>CPO 12.2: Encourage and promote access to and understanding of the natural heritage of the County.</p> <p>CPO 12.3: Protect important geological or geomorphological sites in the County, including any sites designated or proposed to be designated as Natural Heritage Areas (NHAs).</p> <p>CPO 12.5 Protect and conserve the conservation value of Special Areas of Conservation, candidate Special Areas of Conservation, Special Protection Areas, Natural Heritage Areas and proposed Natural Heritage Areas and any other sites that may be proposed for designation during the lifetime of this Plan.</p> <p>CPO 12.7 Ensure that any plan or project that could have a significant adverse impact (either by themselves 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. Except as provided for in Article 6(4) of the Habitats Directive; in so far as there must be – (a) no alternative solution available (b) imperative reasons of an overriding public interest for the project to proceed; and (c) Adequate compensatory measures in place.</p> <p>CPO 12.9 Ensure an Appropriate Assessment is carried out in respect of any plan or project not directly connected with or necessary for the management of the site but likely to have a significant effect on the integrity of a European Site(s), either individually or in-combination with other plans or projects, in view of the site’s conservation objectives to comply with the Habitats Directive.</p> <p>CPO 12.10 Permit development on or adjacent to designated Special Areas of Conservation, Special Protection Areas, Natural Heritage Areas, Statutory Nature Reserves, or those proposed to be designated over the period of the Plan, only where an appropriate level of assessment can clearly demonstrate that it will have no significant adverse effect on the integrity of the site.</p> <p>CPO 12.13 Undertake appropriate surveys and collect data to provide an evidence-base to assist the Council in meeting its obligations under Article 6 of the Habitats Directives (92/43/EEC) subject to available resources.</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> |

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| | <p>CPO 12.15 Require an ecological appraisal, in addition to an Appropriate Assessment, for development not directly connected with or necessary to the management of European Sites, or a proposed European Site and which are likely to have significant effects on that site either individually or cumulatively.</p> <p>CPO 12.17 Require an Ecological Impact Assessment (EcIA) for any proposed development which may have a significant impact on rare, threatened and or protected species and non-designated habitats of biodiversity value.</p> <p>CPO 12.18 Where surveys carried out for the preparation of Environmental Impact Assessment (EIA/EcIA)/ Natura Impact Statement or other assessments generate biodiversity data previously unknown or unrecorded in the County this data be submitted to the National Biodiversity Data Centre (NDBC).</p> <p>CPO 12.19 Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of natural heritage, biodiversity, and environmental value outside designated sites and to require an appropriate level of ecological assessment by suitably qualified professional(s) to accompany development proposals likely to impact on such areas or species.</p> <p>CPO 12.27 Contribute towards the appropriate protection of Geological Natural Heritage Areas that become designated during the lifetime of the Plan from inappropriate development.</p> <p>CPO 12.51 Ensure that peatland areas which are designated (or proposed for designation) as NHAs, SACs or SPAs are conserved for their ecological, climate regulation, archaeological, cultural, and educational significance.</p> <p>CPO 12.52 Work in partnership with relevant stakeholders on all suitable peatland sites to demonstrate best practice in sustainable peatland conservation, management, and restoration techniques and to promote their heritage and educational value subject to Ecological Impact Assessment and Appropriate Assessment Screening, as appropriate.</p> <p>CPO 12.57 Support the implementation of any relevant recommendations contained in the National Biodiversity Plan, the All-Ireland Pollinator Plan and the National Peatlands Strategy the National Biodiversity Plan and the Longford Biodiversity Action Plan 2019-2024.</p> <p>CPO 12.58 Ensure, where appropriate, the protection and conservation of areas, sites, species, and ecological/networks of biodiversity value outside designated sites.</p> <p>CPO 12.62 Screen all projects and plans arising from this plan for the need to undertake Appropriate Assessment under Article 6 of the Habitats Directive. All such projects and plans will also be required to comply with statutory Environmental Impact Assessment requirements where relevant.</p> | |
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| | <p>CPO 13.1 Develop the green infrastructure network to ensure the conservation and enhancement of biodiversity, including: T the protection of European Sites; T the provision of accessible parks, open spaces, and recreational facilities (including allotments and community gardens); T the sustainable management of water; T the maintenance of landscape character including historic landscape character; T the protection and enhancement of the architectural and archaeological heritage. T Any new greenway, blueway and peatway projects shall comply with CPO 5.15 in relation to Infrastructure corridor and route selection processes.</p> <p>CPO 13.7 Ensure the protection, enhancement, and maintenance of Green Infrastructure in the Development Management Process. Require an Ecological Impact Assessment (EcIA) for all development proposals on lands zoned Recreation / Amenity / Green Space, to ensure that the potential impacts on protected species and habitats can be assessed.</p> <p>CPO 13.15 Support the delivery of sustainable strategic Greenways, Blueways and Peatways projects in the County in accordance with the Strategy for the Future Development of National and Regional Greenways.</p> | |
| <p>Westmeath County Development Plan 2021-2027</p> | <p>The overall objective of the Development Plan has been identified:</p> <p><i>Continue to protect and enhance the County’s natural heritage and biodiversity and ensure that networks of green infrastructure are identified, created, protected, and enhanced to provide a wide range of environmental, social and economic benefits to communities.</i></p> <p>CPO 12.1: Contribute as appropriate towards the protection of designated sites in compliance with relevant EU Directives and applicable national legislation.</p> <p>CPO 12.2: Support the implementation of any relevant recommendations contained in the National Biodiversity Plan, the All-Ireland Pollinator Plan, and the National Peatlands Strategy.</p> <p>CPO 12.4: Protect and conserve Special Areas of Conservation, candidate Special Areas of Conservation, Special Protection Areas, and candidate Special Protection Areas, designated under the EU Birds and Habitats Directives respectively.</p> <p>CPO 12.5: Ensure that no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on 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 shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects).*</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> |

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| | <p>CPO 12.6: Ensure that any plan or project that could have a significant adverse impact (either by themselves 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. *</p> <p><i>* Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place.</i></p> <p>CPO 12.13: Protect, manage, and enhance the natural heritage, biodiversity, landscape, and environment of County Westmeath, in recognition of its importance as both a non-renewable resource and a natural asset.</p> <p>CPO 12.18: Consult with the National Parks and Wildlife Service (NPWS) in regard to any developments (those requiring permission and those not requiring planning permission) which the Council proposes to carry out within pNHAs, NHAs, SACs, SPAs, and other important ecological sites.</p> <p>CPO 12.27: Prevent the spread of invasive species within the plan area, including requiring landowners and developers to adhere to best practice guidance in relation to the control of invasive species.</p> <p>CPO 12.29: Support, as appropriate, the National Parks and Wildlife Service’s efforts to seek to control and manage the spread of non-native invasive species on land and water. Where the presence of non-native invasive species is identified at the site of any proposed development or where the proposed activity has an elevated risk of resulting in the presence of these species, details of how these species will be managed and controlled will be required.</p> | |
| <p>National Biodiversity Action Plan 2017-2021</p> | <p>Objective 1 Mainstream Biodiversity into Decision Making Across all Sectors.</p> <p>Action 1.1.9: Integrate Natura 2000 and Biodiversity financial expenditure tracking into Government Programmes internal paying agency management procedures including linkage to the Prioritised Action Framework⁵¹ and this NBAP.</p> <p>Objective 4: Conserve and restore biodiversity and ecosystem services in the wider countryside.</p> <p>Target 4.2 - Principal pollutant pressures on terrestrial and freshwater biodiversity substantially reduced by 2020.</p> <p>Objective 6: Expand and improve management of protected areas and species.</p> <p>Target 6.1.1. Complete designation process for Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), in particular, for marine coastal and offshore SPAs</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</p> |

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| | <p>Target 6.1.2 Develop and utilise licensing and consent systems to facilitate sustainable activities within Natura 2000 sites.</p> <p>Target 6.1.3. Publish detailed site-specific conservation objectives for Natura 2000 sites.</p> <p>Target 6.1.7. Implement the conservation measures necessary to achieve the published conservation objectives for Natura 2000 sites. Develop and implement additional measures as necessary to achieve favourable conservation status both nationally and at site level.</p> <p>Target 6.1.8. Implement measures to ensure that, taking account of climate change, there are no significant adverse effects from marine fisheries and aquaculture in and adjacent to Natura 2000 sites.</p> <p>Target 6.1.9. Review and update the Prioritised Action Framework for Natura 2000</p> <p>Target 6.1.10. Continue to collect information on sites to be considered towards the protection and enhancement of the Natural Heritage Area network</p> | <p>proposed decommissioning and rehabilitation.</p> |
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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 24/02/2023. 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 construction of a bungalow dwelling house, garage, new domestic entrance onto the public roadway and closure of existing agricultural gate. Permission is also sought for the installation of a packaged wastewater treatment system & polishing filter and all associated site works (PI Ref. 197253).
- Permission for construction of a dormer-type dwelling, single storey garage, installation of a private well, relocation and upgrade of existing entrance to public road, installation of a packaged wastewater treatment system and raised polishing filter and all associated site works (PI Ref. 197164).
- Permission for construction of a dwelling house and detached garage with treatment system and percolation area with all ancillary site works (PI Ref. 207195).
- Permission for proposed construction of a storey and half extension to the rear as accompanying drawing. The demolition of flat roof utility area to west of site on front elevation, demolition of flat roof extension to rear, demolition of existing fuel store shed, and all ancillary site works (PI Ref. 206310).
- Permission for construction of a new storey & half dwelling, entrance onto the public road, a wastewater treatment system and polishing filter, landscaping & all associated site works (PI Ref. 22424).
- Permission for replacement of the septic tank and percolation area with a new wastewater treatment system and polishing filter within new site boundary (PI Ref. 22423).
- Permission to demolish existing dwelling and outbuildings. Construct a new dwelling and domestic garage. Permission is also sought to install a treatment system and raised soil polishing filter together with permission to decommission existing septic tank and to construct a new domestic site entrance with adjoining new front site boundary together with all associated site works (PI Ref. 187166).
- Permission for construction of a three-bay single slatted shed with creep area, underground effluent storage tank and all ancillary site works (PI Ref. 20146).
- Permission to construct a two-storey dwelling, detached domestic garage & store, install a proprietary wastewater treatment system and all associated site development works (PI Ref. 197110).
- Permission for extension of existing garage at the rear to include a car port and storage area with six Velux window with all ancillary site works (PI Ref. 207047).
- Permission for alterations and extension to our existing house, new treatment unit and percolation area, associated site works and services (PI Ref. 19248).
- Permission to construct a new dwelling house and shed with septic tank and percolation area with all ancillary site works (PI Ref. 22136).
- Permission to extend existing dwelling house on east side to include bedroom with en-suite and walk-in-wardrobe with skylight in hall and to demolish existing arch and wall at side. to extend dwelling at the rear to include kitchen, dining, utility, w.c. and a stair to the attic to be used as storage with 2 Velux windows and to construct a porch at front and to demolish existing garage and sheds at side and to demolish conservatory at rear of dwelling and to demolish existing shed on eastern side of site (PI. Ref. 19114)

- Permission for construction of 1 no. 4 Bed 1.5 storey domestic dwelling, septic tank & percolation area to EPA design standards, entrance gates and all associated ground works (Pl. Ref. 20201).
- Permission for demolition of existing single storey garage building and replace with one and half storey domestic extension to existing 4 bed bungalow dwelling, consisting of sittingroom, kitchen, dining, bathroom & two bedrooms with velux roof windows, and new fireplace with connection to existing septic tank (Pl Ref. 19234).
- Permission for construction of extensions to the rear and side of existing four bay agricultural shed which was previously granted full planning permission under planning reference number PL06/342 together with the proposed construction of an underground effluent storage tank to service the existing & proposed development. Full planning permission has also been sought for the proposed construction of a silage pit and associated underground effluent tank to service same and all ancillary works (Pl Ref. 20260)
- Permission for 36m multi-user free-standing communications structure carrying telecommunications equipment, together with associated telecommunication cabinets, a 28.7m long access track, hardstand area, wooden fencing, access gate and all associated site development works (Pl Ref. 19310).
- Permission for development which will consist of 1) inflatable floating play area on existing lake to include inflatable water slides, inflatable platforms, inflatable logs and climbing frames 2) prefabricated changing facility structure to include showers and toilets, 3) all ancillary site works (COVID 19b) (Pl Ref. 2072).
- Permission for extension to the existing development within the existing 160-hectare Centre Parcs Longford Forest Holiday Village. The development will consist of: I) 198 no. new lodges located in 3 no. zones (comprising of 56 no. 2 bedroom lodges, 105 no. 3 bedroom lodges, 32 no. 4 bedroom lodges, 1 no. 5 bedroom lodge, 4 no. 6 bedroom lodges), ii) External sauna/Pods associated with specific lodges (151m²), iii) coffee shop (282m²), iv) lakeside restaurant (902m²), v) energy centre (235m²), vi) staff welfare and storage building (611m²), vii) 2 no. remote housekeeping stores (35m² each), viii) extensions and alterations to existing commercial retail and leisure buildings, including: a) extension to housekeeping/technical services (HKTS) building (157m²) to provide increased storage, b) extension to existing Aqua Sauna spa facility (453m²) to include new treatment rooms and treetop sauna, c) extension to existing Sub-Tropical Swimming Paradise (STSP) including a new pool (875m²), d) extension to existing Sports Hall (735m²), ix) extensions to existing Village Centre restaurants: a) Huck's restaurant (128m²), b) Cara's restaurant (105m²), c) Sports Café restaurant (104m²) and d) Bella Italia restaurant (222m² - internal extension only), x) installation of Solar PV on the roof of the existing Sports Hall and Sports Café building and on the roof of the proposed Sports Hall extension, xi) installation of District Heating System within the site, xii) upgrades to existing Wastewater Treatment Plant and associated infrastructure, xiii) new car park to provide 313 no. car parking spaces for staff, xiv) provision of electrical vehicle charging points, xv) provision of new cycle parking within the site, xvi) associated civil infrastructure works including all internal roads, hardstanding and all foul and surface water drainage works, xvii) creation of landscape screening bunds, xviii) erection of security perimeter fencing, xix) all new landscaping and hard landscaping, xx) all ancillary and associated site works (Pl Ref. 22189).
- Permission for proposed construction of a five bay single slatted shed with underground effluent storage tank with adjoining feed passages, concrete yard/holding pen, cattle chute and dry bedded pens together with the proposed construction of a silage slab and all ancillary works (Pl Ref. 21302)
- Permission for proposed demolition of existing two storey extension to the rear of the existing two storey dwelling house. Proposed construction of an extension to the rear of the existing two storey dwelling house which will comprise of a two storey and single storey element. Proposed construction of a detached garage for domestic purposes which will service the existing dwelling house and all ancillary works (Pl Ref. 21259).
- Permission for two storey dwelling, detached garage, formation of new entrance, wastewater treatment system, polishing filter area and all ancillary site works (Pl. Ref. 20294).

- Permission for a 5-bay slatted shed with underground slurry storage tank, 4 bay round roof hay shed with lean-to for machinery storage together with all associated site works - Covid-19 (Pl Ref. 20110).
- Permission for change of use for former Corn Mill as guest accommodation in 2 phases. Phase 1 building A (Kiln House); 1) Restoration works of building including alterations to south, west and north elevation and new roof profile and intermediate floor levels; 2) provision of ground floor living accommodation with 4 no. bedrooms above over 2 floors, total 3 floors; 3) new detached service building to rear (30sqm); 4) associated drainage, wastewater treatment system, 9 parking spaces, 1 disabled parking space, upgrade of entrance and hard/soft landscaping works. Phase 2 Building B (Mill House) works as follows; 1) Linked bridge from Building A at first floor level; 2) restoration works of building including alterations to south, west and north elevation and new roof profile and intermediate floor levels; 3) reinstatement of mill wheel and gearing; 4) single storey extension area to rear (west) 69sqm; 5) provision of decked area to north/west; 6) provision of ground floor museum/cafe/reception area, first floor living accommodation with 6 no. bedrooms over 2 further floors, total part 3-part 4 floors (Pl Ref. 22104).
- Permission for the proposed construction of an agricultural entrance with access road and all ancillary works (Pl Ref. 19183).
- Permission to construct an extension to the rear and eastern elevation of an existing dwelling. The application will also include a new effluent treatment system with percolation area, the demolishing of an existing rear kitchen and store and all associated site works and drainage (Pl Ref. 21236).
- Permission for (i) The decommissioning of an existing septic tank and percolation area (ii) installation of a new relocated septic tank and percolation area to serve existing dwelling and (iii) revised site boundaries and all associated site works (Pl Ref. 20175).
- Permission for the development will consist of a two storey dwelling, the installation of a septic tank, percolation area, site entrance and all associated site works (Pl Ref. 20174).
- Permission for 3 no. one bedroom self-contained glamping/holiday accommodation huts ancillary to existing B & B farmhouse, new wastewater treatment system and percolation area, access to site and parking, fence/boundaries and all ancillary site works (Pl Ref. 2131).
- Permission to complete a housing development as granted under PL04/1298 which comprised of the construction of 26 No. detached 2 storey dwelling houses, (with omission of 1 number two storey dwelling house), formation of access road and access onto public road, connection to adjoining utility services, site drainage, proposed foul effluent pumping station and rising main, landscaping, boundary walls and fences, cutting and filling works and ancillary works. The proposed works of which permission is now being sought consist of permission to finish all external works, utilities and services as granted under PL04/1298 and permission to construct 6 no. two storey dwellings which are currently at structural slab level and permission to construct 5 no. two storey dwellings of which have not been started and ancillary works (Pl Ref. 19179)
- Permission for the proposed construction of a dormer bungalow type dwelling house, entrance, boundary fence/wall, connection to existing public foul sewerage mains and all ancillary site works (Pl. Ref. 22180).
- Permission for proposed new storey and a half type dwelling, detached domestic store, formation of new entrance, connection to main foul sewer and all ancillary site works, changes to site boundaries and relocation of dwelling on site, amendments to elevations, relocation of domestic store, access and driveway and all ancillary site works (Pl. Ref. 1882).
- Permission for development will consist of alterations and renovations to the existing dwelling house as follows: (1) Multi-functional room extension (39.1m²) to the northeast facing elevation: (2) Dining space & living room (47.3m²) to the southeast facing elevation: (3) New master bedroom (35.7m²) to the southwest facing elevation: (4) Decommission septic tank & percolation area and construct new connection to public wastewater sewer: (5) Demolish outbuilding (54.4m²): (6) associated site works (Pl. Ref. 20246).

- Permission for construction of a two storey type detached dwelling, proprietary treatment system, percolation area, connection to water main and all ancillary site works as indicated on submitted drawings (PI Ref. 20171).
- Permission for the proposed construction of a bungalow type dwelling, detached garage, concrete blockwork wall to front with nap plaster finish, concrete post and rail fence to sides and rear, proprietary treatment system and percolation area as per submitted drawings and all ancillary site works (PL Ref. 21325).
- Permission for the demolition of an existing porch and side extensions to an existing private dwelling; construction of a new extension with internal and external alterations to the existing dwelling; and all associated site development works (PI Ref. 19118).
- Permission for A) construction of an agricultural cubicle shed to include underground slatted tanks B) construction of a milking parlour, dairy and ancillary rooms, livestock waiting yard and handling facilities, with underground slatted flow channels. C) erection of a meal bin and water storage tank and all associated site works COVID 19 (PI. Ref 2065).
- Permission to demolish existing derelict dwelling and construct a two-storey dwelling, detached garage, entrance, boundary fence, septic tank with percolation area and all ancillary site works (PI Ref. 186114).
- Permission to demolish the existing dwelling house on site and construct a new two storey replacement dwelling house, domestic garage, new vehicular entrance, septic tank and percolation area and all ancillary site works (PI Ref. 186220).
- Permission to erect new slatted shed, new concrete yard area, new calving boxes/storage shed, new entrance and ancillary site works (PI Ref. 206107).
- An application is currently being prepared for the proposed windfarm at Derryadd, Co. Longford There will be no spatial or temporal overlap of the PCAS rehabilitation with this proposed windfarm project.
- Decommissioning and Rehabilitation works carried out in 2021 and 2022 at: Glenlough Bog, Derraghan Bog, Edera Bog and Derrycolumb Bog, as part of Bord Na Mona Peatland Climate Action Scheme (PCAS).
- Turbary activity carried out along the margins of Clynan Bog.

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 at Clynan 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 at Clynan 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 that was 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.

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 project.
- 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 Clynan 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 21/02/2023 by MKO ecologists Rachel Minogue 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, 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

**CLYNAN BOG, DECOMMISSIONING
AND REHABILITATION PLAN 2023**



Bord na Móna

Clynan Bog

**Cutaway Bog Draft 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 Clynan 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 Clynan 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 through the Climate Action Fund and 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.

While this document outlines the enhanced rehabilitation measures planned for the Clynan 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 Clynan 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 Clynan Bog 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.

Document Control Sheet

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|----------------------------|---|
| Document Name: | Clynan Bog Decommissioning and Rehabilitation Plan 2022 |
| Document File Path: | Q:\Ecology Team\EPA draft rehab plans 2017 word docs\Mountdillon ref.504 (Mostrim)\Clynan |
| Document Status: | Draft |

| This document comprises: | DCS | TOC | Text (Body) | References | Maps | No. of Appendices |
|--------------------------|-----|-----|-------------|------------|------|-------------------|
| | 1 | 2 | xx | 5 | 0 | 12 |

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|-------------|-----------------|-------------------|--------------------|---------------------|
| Rev. | 1.0 | Author(s): | Checked By: | Approved By: |
| | Name(s): | JOS | MMC | MMC |
| | Date: | 25/02/2022 | | |
| Rev. | 1.1 | Author(s): | Checked By: | Approved By: |
| | Name(s): | | | |
| | Date: | | | |
| Rev. | 1.2 | Author(s): | Checked By: | Approved By: |
| | Name(s): | | | |
| | Date: | | | |

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NON-TECHNICAL SUMMARY

- Bord na Móna is planning to rehabilitate Clynan Bog, located 6km east of Ballymahon in Co. Longford.
- Industrial peat harvesting is now finished at Clynan Bog.
- This is happening as Bord na Móna are obliged to carry out peatland rehabilitation via an IPC License issued by the Environmental Protection Agency. 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 the establishment of habitats and vegetation back onto bare peat, and minimising impacts to downstream waterbodies. Clynan bog was drained in the past to allow peat production. Better results for water quality improvements, climate action, the reduction of carbon emissions and biodiversity are achieved when the remaining peat is re-wetted. This means drain-blocking and other measures to raise water levels to the surface of the bog and to encourage the natural colonisation of vegetation.
- The key objective is to **restore** Clynan raised bog and to encourage active raised bog development (peat-forming habitat).
- In general, soggy ground conditions are preferred. This means the remaining peat is wet and that plants that prefer wetter conditions, like Bog Cotton and *Sphagnum* moss will thrive.
- Re-wetting peat is also better for climate action. This reduces carbon emissions as re-wetting the remaining peat reduces carbon losses such as the production of Carbon Dioxide, the main Greenhouse Gas. The site is expected to still be a reduced carbon source for some time, but eventually the carbon sink function can re-establish as peat-forming conditions are restored. This will take some time.
- The development of a range of habitats in Clynan 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 and peatland habitats in the wider landscape have been reclaimed for agriculture and other uses and peatland restoration is an opportunity to improve formerly degraded sites.
- Clynan Bog was ditched, drained and developed for industrial peat production in the 1980s. Parts of the western section have been re-ditched in the past few years and there has been recent intensification around the margins where sod-peat has been harvested in the past. The majority of the eastern section has been in production for commercial sod-peat.
- Ditching and production at this site has had a significant impact on the quality of the habitat and the remaining raised bog is now quite degraded and drying-out.
- Measures proposed for Clynan Bog include internal drain blocking and other measures required to raise water levels to the surface of the peat.
- Bord na Móna 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 external boundary drains will be blocked. Water will still leave the site via the existing outlets.
- This is a peatland rehabilitation plan. This plan does not consider future after-use or development.
- Peatland rehabilitation of the Bord na Móna 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.

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1. INTRODUCTION

Bord na Móna operates under an 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 licence, a rehabilitation plan must be prepared for permanent rehabilitation of the boglands within the licensed area. Clynan bog is part of the Mountdillon Bog Group (see Appendix II for details of the bog areas within the Mountdillon Bog Group). Clynan Bog is located on the border of counties Westmeath and Longford.

This document seeks to address the requirements of Condition 10.2 of IPC Licence 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 plan 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 actions;
- Budget and Costings; and
- Associated aftercare, maintenance and monitoring.

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 Climate Action Fund and 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 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.

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 announced the complete cessation of industrial peat production across its estate in January 2021.

It is expected that the 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 PCAS 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:

- more intensive management of water levels through outfall management, drain-blocking and management of water levels within the bog;
- re-profiling/re-wetting of extant deep peat 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 means 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) and water quality is also expected to improve as the site returns to a naturally functioning peatland ecosystem. 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.

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

1.1 Constraints and Limitations

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

This rehabilitation plan takes account of the **current land-uses** of Clynan Bog. Industrial peat extraction at Clynan Bog permanently ceased in 2020.

Bord na Móna will continue to review the future after-use of its land-bank. Any consideration of any other future after-uses for Clynan Bog, will be conducted in adherence to the relevant planning legislation and consultation with relevant authorities and will be considered within the framework of this rehabilitation plan.

The areas in recent peat production are a mosaic of degraded raised bog vegetation, bare peat and pioneering heather vegetation communities. Parts of Clynan Bog that were drained but never commercially harvested contain degraded raised bog vegetation communities.

It is anticipated that the combination of active enhanced rehabilitation measures and further natural colonisation will quickly support the further development of pioneer vegetation. Nevertheless, it will take some time (30-50 years) for naturally functioning peatland ecosystems to fully re-establish across the entirety of Clynan Bog.

Parts of Clynan Bog (outside the areas owned and under the control of Bord na Móna) are currently 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. 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. There are a small number of “rights of way” routes located along the boundaries of the bog. There are no known archaeology records on Clynan Bog. All rehabilitation measures proposed at Clynan Bog will consider the sensitivity of any archaeology.

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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 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;
- Hydrological modelling; and
- The development of a **Methodology Paper (draft) 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 Clynan 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.
- 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.
- 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, Report produced for An Fóram Uisce, Online, Available at: https://thewaterforum.ie/app/uploads/2021/04/Peatlands_Full_Report_Final_March2021b.pdf, Accessed 17.08.2021.
- 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 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 2018 – 2021;
- Bord na Móna Annual Report 2020;
- Bord na Móna Annual Report 2021;
- Spatial data in respect of Article 17 reporting, available online at <https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17>;
- Bord na Mona Biodiversity Action Plan 2016-2021, Raised Bog Survey Report of Clynan East, Co. Westmeath.

2.2 Consultation

Several stakeholders have been identified during the course of Bord na Móna's rehabilitation and Biodiversity Action Plan activities and will be contacted during the rehabilitation planning process for their views. See Section 4 of this document.

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. As part of this exercise, Clynan Bog was surveyed in 2010. A survey of the Raised Bog at Clynan East was carried out in 2018. Additional ecological monitoring and visits have taken place at Clynan Bog between 2013-2022 to inform rehabilitation planning, where required.

A final site visit to inform the current Rehab Plan took place by BNM Ecologists in XXXXX of 2022 and habitat maps have been updated accordingly, 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 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 detailed ecological survey report for Clynan Bog is contained in Appendix III.

3. SITE DESCRIPTION

Clynan Bog is located 6 km east of Ballymahon in Co. Longford (grid reference: N22538 56576). Clynan Bog can broadly be assigned two separate sections (eastern and western); which are divided by a minor road/lane.

The Longford and Westmeath county boundary passes through the middle of the site, in a north-easterly south-westerly direction. This bog is part of the Mountdillon (Mosttrim) group of bogs and is located approximately 8km south west of the next nearest Bord na Móna bog, Glenlough Bog.

The Kildornan stream (EPA code: 26K52) drains the bog in the main part of the site, and lies outside the bog boundary, flowing in a south-westerly direction and merging with the Rath River ca. 625m downstream. The Abbeyshrule Stream (EPA code: 26A35) flows outside the eastern boundary in a north-easterly direction, flowing into the Irishtown River approximately 1.5km downstream. Both the Rath and the Irishtown river are tributaries of the Inny (Shannon) River (EPA code: 26I01).

The surrounding landscape is a mosaic primarily consisting of low-lying agricultural land (pasture), conifer plantations, interspersed with other raised bogs, many of which have also been managed by Bord na Móna for peat production with some areas utilised for domestic turf-cutting.

See figures titled **BNM-DR-24-16-01: Bog Site Location** and **BNM-DR-24-16-24: Bog Group Map** in the accompanying map book for reference.

3.1 Status and Situation

3.1.1 Site history

Clynan Bog was drained for peat production in the early 1980's, and production completely ceased in 2020. Parts of the western section have been re-ditched in the past few years and there has been recently intensification around the margins where sod-peat has been harvested in the past.

The majority of the eastern section has been in production for commercial sod-peat. The bog still retains original (but degraded) raised bog vegetation. Ditching and production at this site has had a significant impact on the quality of the habitat and the remaining raised bog is now quite degraded and drying out.

3.1.2 Current land-use

A large portion of the site is dominated by degraded, drained, raised bog habitat.

The former industrial production area of the site is dominated by a mosaic of heather dominated pioneer vegetation communities and bare peat land.

There are several marginal areas dominated by woody vegetation communities including heather, scrub, immature woodland and mature birch dominated woodland.

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 Clynan Bog, jobs included in the above study would have included those to facilitate extraction of peat at Clynan, and associated processing and transfer to the relevant power station, in addition to staff employment at workshops and the main Bord na Móna facility located at Coolnagun.

As the primary employer in many Midland counties, Bord na Móna played a central role in building communities through a number of 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.

3.2 Geology and Peat Depths

3.2.1 Sub-soil geology

The underlying geology at Clynan Bog is variable. GSI data indicates that Clynan Bog is underlain by Ballysteen Formation (dark muddy limestone, shale), and a small section in the south-eastern section is underlain by Moathill Formation (limestone, calcareous sandstone, shale). Geological Survey of Ireland (GSI) mapping does not identify any karst features within the surrounding area. No data exists concerning depth to bedrock, and there are no bedrock outcrops in close proximity to the bog.

Published bedrock and Quaternary geological maps only present the shallowest deposits encountered, and fail to present in information on the buried peat substrate. Coring carried out by RPS in 2021 across Clynan provided further insight into the deposits underlying the site. In this case there is no GPR data available for the bog, therefore, interpretation is limited to using the data available from coring. In many cases recovery of substrate at the base of peat was not feasible as the material appeared to be relatively coarse and therefore could not be retrieved using the gouge sampler. This material has been interpreted as sandstone till, given the presence of similar deposits in the surrounding area.

The coring results reveal that most of the bog is underlain by lacustrine clay (below c. 62mOD), while the remainder of the site appears to be underlain by glacial till based on the presence of clayey material and the presence of comparable features present in the surrounding area. The data collected from coring has permitted an indicative sub-peat substrate map, presented in (see mapbook drawing no DR24-XX-XX PeatDepths).

3.2.2 Peat type and depths

Commercial peat extraction has been undertaken at Clynan Bog only in parts and even in those areas, commercial peat extraction has been a short-term process. Most of the site retains relatively deep peat reserves of *Sphagnum* peat with some smaller pockets of shallow residual peat depths where the peat has been cutaway (see mapbook drawing no. BNM-DR24-XX-XX Peat Depths). Peat depths of xx m occur across most of the bog.

3.3 Key Biodiversity Features of Interest

There are two main sections to Clynan Bog; the western section and the eastern section. These are divided by a minor road/lane. The main habitats are shown in mapbook drawing no BNM-DR23-16-17 and described below.

The most common habitats¹ present within the currently proposed rehabilitation area include:

- Raised Bog (PB1) – drained, degraded intact high bog remains in the central areas of the western and eastern sections of the site.
- Bare peat (PB4) – occurs along the margins of the high bog associated with side peat production and turbary.
- Pioneer open cutaway habitats – forming on cutover bog area on the margins of the high bog. A mosaic of Bog-Cotton, Soft Rush and Purple Moor-grass regeneration with bare peat, broadly corresponding to *Eriophorum angustifolium* cutover bog (LS2) (Smith and Crowley, 2020).
- Cutover Bog (PB4) - occurs along the margins of the high bog associated with side peat production and turbary.
- Dry heather dominated vegetation - areas of revegetating cutover bog occur along the high bog margins and is dominated by dry Heather (PB1- facebank type (Fernandez et al., 2012) or *Calluna vulgaris* cutover bog (LS1) (Smith & Crowley, 2020).
- Poor Fen and Flush (PF2) - a large flush system occurs in the western section of Clynan. This area is vegetated by Purple Moor-grass along with the other raised bog species. In some sections the Purple Moorgrass cover is sparse and open. Bog Myrtle is also present and this dominates a zone around the edges of the flush. Birch and Willow are rare and scattered through the flush.
- Scrub (WS1) (around margins, mainly dominated by Birch, Gorse and Willow).
- Birch Woodland (WN7) – occurs around the margins of the site.
- Built land, including access routes (BL3)
- Improved Agricultural Grassland (GA1) – marginal land in the eastern section of the Clynan
- Riparian zones including Drainage ditches (FW4) and Depositing/lowland rivers (FW2) (with scrub along the verges).
- Conifer plantation (WD4) – Occurs around the margins of the site.

3.3.1 Current habitats

Western section

Clynan Bog can be sub-divided into two main sections: the larger western section and the eastern section. These sections are divided by a local road orientated north south between these two sections of the bog.

Western section

This is the largest unit of high bog. It is an irregular shape with two 'dog-legs' and the eastern side, one going north and a larger one going south. The majority of the high bog was classified as a development bog as it was

¹ Codes refer to Fossitt (2000), *A Guide to Habitats in Ireland*, The Heritage Council 2000, we note that habitat categories presented are not exhaustive and are meant to indicate the primary habitats of importance which are present. Equivalent Fossitt codes to the habitat descriptions are provided here but we note the referenced figure displays the general BNM habitat layer.

ditched but never put into intensive production. There has been ongoing sod-peat production around the southern margin, parts of the eastern margin and parts of the northern margin.

The high bog is covered with regularly spaced ditches, about 1 m deep. There are several wetter sections where there are gaps in one or more ditches, probably due to the wetness of the original bog. Some of these areas are still wet and contain features of active raised bog such as *Sphagnum*-filled pools.

Several sections around the margins have been re-ditched in the recent past and the drains are much deeper and wider. This disturbed zone is about 40 m wide along the southern boundary. Peat from the ditches has been piled in the area between the drains and some vegetation has been stripped from the surface so that the majority of the surface of the bog in this disturbed zone is now covered in bare peat. This zone is quite firm and dry Heather is found along the edges of the drains. As this zone was a mixture of bare peat and heather it was mapped as a 'Dry Heath/bare peat mosaic (cutaway community)' to distinguish it from the rest of the intact high bog. This community corresponds to *Calluna Vulgaris* Bare Peat cutover bog (BP1) (Smith & Crowley, 2020).

The bog is predominantly dominated by marginal and sub-marginal ecotope communities further towards the centre of the bog and adjacent to the intensively disturbed zone. The drains were generally active and most drains had running water. The vegetation of the bog was dominated by Heather and Bog Asphodel. The *Cladonia* spp. lichen cover was 30%. The moss cover was dominated by *Hypnum* spp. in these dry areas and there was very little *Sphagnum* cover. The bog was still quite firm.

Further towards the central part of the bog there is increasing *Sphagnum* cover and the bog became much spongier. The *Sphagnum* spp. cover was mostly hummocks of *S. capillifolium*, *S. papillosum* and some *S. subnitens* hummocks. The micro-topography was variable with hummocks and hollows present but the hollows were generally vegetated with Bog Asphodel, Carnation Sedge and Bog Cottons. Some damper hollows also contained White Beak-sedge and there were also hollows that were empty or had algal cover. Further on, there were some former pool systems present that have now largely infilled with vegetation. There was some *S. magellanicum* and *S. cuspidatum* associated with these former pools. Further west there were several wetter areas (probably in the flatter central area) with some intact but sunken pools infilled with *S. cuspidatum* and some hummocks also contained hummocks of *S. fuscum* and *S. imbricatum*. Some drains in the central western areas were also infilling with *S. cuspidatum*, but there were few natural drain blockages.

There is a large Flush (PF2) system in the north half of the bog. This area is vegetated by Purple Moor-grass along with the other raised bog species. In some sections the Purple Moorgrass cover is sparse and open. Bog Myrtle is also present and this dominates a zone around the edges of the flush. Birch and Willow are rare and scattered through the flush. The drains within the flush have completely infilled in places to form natural drain blockages.

There were several small wetter sections of bog around the flush and to the east of the flush. Most of these were unditched and they probably contained active raised bog prior to development by Bord na Móna. They all contained typical Active Raised Bog pools with extensive *S. cuspidatum* cover and lawns of *S. magellanicum*, *S. papillosum* and *S. capillifolium* around the edges. Some of these pools were tear pools and were long and thin. There were also examples of degrading pools with very little *Sphagnum* cover and containing algae or being infilled with other vegetation. The inter-pool areas were generally quite dry with a much lower *Sphagnum* spp. cover and there were no signs of quaking bog.

There is a large mound located towards the north-east corner of the site. The mound is vegetated with Bracken and some Scrub (WS1) towards its peak. This mound is located adjacent to a former lake. The lake has now dried out and is now indicated by a ring of flushed vegetation marked by Purple Moorgrass and a shallow hollow with tall Heather.

There is a second smaller flush towards the eastern side of the bog. This flush is partially wooded with scrub along a natural drainage channel including Eared Willow, Grey Willow, Birch, Bog, Myrtle, Bramble, Purple Moorgrass, Broad Buckler Fern and Devil's-Bit. The wooded section was surrounded by a zone dominated by Bog Myrtle and tall, flushed Heather. To the south of this flush there is a low ridge running through the bog with some common Reed in places. Bulrush also appears in some of the drains adjacent to the flush.

The cutover area around the southern margin has been quite intensively used and there is a significant zone of bare peat adjacent to the face-banks. The remaining cutover bog is a mosaic of Bog-Cotton, Soft Rush and Purple Moor-grass regeneration with bare peat. This community broadly corresponds to *Eriophorum angustifolium* cutover bog (LS2) (Smith and Crowley, 2020).

Much of these regenerating areas have been used to lay out drying sod-peat. Peat-cutting activity is less intensive to the east of this section and there is some old regenerating cutover bog around the margins. Much of this old cutover bog is dominated by tall Heather (similar to the facebank ecotope of high bog). This community broadly corresponds to *Calluna vulgaris* cutover bog (LS1) (Smith and Crowley, 2020). This regenerating heather dominated community is in mosaic with patches of Gorse and Birch Scrub (WS1) and patches of Dense Bracken (HD1). There are also some patches of Birch Woodland (WN7) along the eastern margin and along the northern margin.

The west side of the northern dog-leg is being used for intensive production of sod peat, adjacent to an access lane. The cutover in this area is also a complex mosaic of revegetating Purple Moorgrass, Bog Cotton and Soft Rush, and corresponds to *Molinia caerulea* cutover bog (LS3) (Smith and Crowley, 2020).

The western side also has active peat-cutting, but this seems to be less intensive and probably domestic peat cutting. There is another access lane leading to the southern dog-leg and there has also been a recent intensification of activity in this area.

Eastern Section

This section (87 ha in total) is much smaller in composition to the western section. Peat production has been much more intensive in this bog.

The majority of the bog has been ditched in the past and had most of its vegetation stripped away at one stage and there are regular trenches typical of sod-peat production running through the bog along the drains. However, the intensity of peat production has not been uniform and the trenches are largest towards the west side.

This area still contains some bare peat and is mapped as a dry heather dominated community/bare peat mosaic. This community corresponds with *Calluna Vulgaris* Bare Peat cutover bog (BP1) (Smith & Crowley, 2020).

The remainder of the ditched high bog has regenerated somewhat. The trenches mainly contain bare peat and are about 10 m wide. There is some intact raised bog vegetation dominated by Heather and Bog Asphodel along the central zone between the drains and overall there is about 75% vegetation cover in this section. Further east, the sod-peat production area seems to be regenerating and has not been as intensively used. The main vegetation cover along the old trenches is Heather and there is much less bare peat (90% vegetation cover). Much less peat was extracted and the trenches are relatively narrow. There has been more recent activity along the southern boundary. A narrow zone used by machinery has bare peat.

There is also a central area of high bog that was never ditched, as it was probably too wet. This area is still quite wet and contains some features typical of active raised bog. There were several large pools infilled with *S. cuspidatum* and also containing some *S. magellanicum* lawns around the margins. Some of these pools are tear pools. The inter-pool areas were also quite spongy and even quaking in places with some large hummocks of *S.*

capillifolium and *S. papillosum*. One feature of note is the relative abundance of *S. fuscum* hummocks in this area. This wet area is associated with the head of a narrow flush that flows south. This flush is partially wooded with Birch and Willow scrub in places. It is also quite wet and quaking in places and could be classified as 'active flush ecotope' in some sections.

Further east there is some intact remnant raised bog (PB1) that was never ditched. This area is still intact although it is relatively small. It has been disturbed in the past by domestic cutting and drainage.

This bog is surrounded by Cutover Bog (PB4) around most of its margins. Most of this cutover bog is quite old and abandoned. The BnM property includes some Conifer Plantation (WD4) along the east side that is part of an adjacent private plantation. There is old regenerating Cutover Bog (PB4) along the southern boundary with a mosaic of Birch scrub, dry heather dominated vegetation and some wetter areas dominated by Purple Moorgrass. This corresponds to *Calluna vulgaris* cutover bog (LS1) (Smith and Crowley, 2020).

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3.3.2 Species of conservation interest

A number of species of conservation concern have been recorded at Clynan Bog. The following is a summary of the records of these species available within both BnM records and those of the National Biodiversity Data Centre (Hectad N25).

Multiple mammal species have been recorded on or within 10 km of the bog; Irish Hare (*Lepus timidus subsp. Hibernicus*), West European Hedgehog (*Erinaceus europaeus*), Eurasian Badger (*Meles meles*) Eurasian Red Squirrel (*Sciurus vulgaris*), European Otter (*Lutra lutra*) and Pine Marten (*Martes martes*). Records for the following Bat species exist in Hectad N25: Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Leisler's bat (*Nyctalus leisleri*) and Natterer's Bat (*Myotis nattereri*).

Numerous bird species are known to use the cutover bogs in Ireland's midlands as breeding grounds, wintering grounds or both. Records for bird species of immediate conservation concern at Clynan Bog or within 10 km of the site including the following red listed species: Meadow Pipit (*Anthus pratensis*), Common Swift (*Apus apus*), Dunlin (*Calidris alpina*), Stock Dove (*Columba oenas*), Corncrake (*Crex crex*), Yellowhammer (*Emberiza citrinella*), Kestrel (*Falco tinnunculus*), Snipe (*Gallinago gallinago*), Red Grouse (*Lagopus lagopus*), Grey Wagtail (*Motacilla cinerea*), Curlew (*Numenius arquata*), Whinchat (*Saxicola rubetra*), Woodcock (*Scolopax rusticola*), Barn Owl (*Tyto alba*) and Lapwing (*Vanellus vanellus*).

In addition, the following Annex I species have been recorded within 10 km of Clynan Bog, Common Kingfisher (*Alcedo atthis*), Hen Harrier (*Circus cyaneus*), Merlin (*Falco columbarius*), Peregrine Falcon (*Falco peregrinus*) and Whooper Swan (*Cygnus cygnus*).

Bird species of conservation interest recorded during previous BNM ecology surveys of Clynan Bog include Golden Plover (*Pluvialis apricaria*), Snipe (*Gallinago gallinago*) and Meadow Pipit (*Anthus pratensis*).

3.3.3 Invasive species

Invasive alien species known to occur at the subject bog (or desktop review suggests presence is likely), and for which reasonably foreseeable source impact pathways for dispersal may result from rehabilitation **are described here.**

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 a number of European Sites (SAC's or SPA's) in proximity (i.e. within a 10 km radius at minimum) to Clynan Bog. A number of NHA's (Natural Heritage Areas) and pNHA's (Proposed Natural Heritage Areas) also occur within 10 km of Clynan Bog (see map book drawing no. BNM-DR-23-16-23: Proximity Designated Sites).

Ballymore Fen SAC (site code: 002313) is located 4.9 km south of Clynan Bog and is designated for Transition Mires and Quaking bogs [7140].

Lough Ree SAC (Site code: 000440) is located approximately 10km west of Clynan Bog. The qualifying interests for Lough Ree SAC are Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150], Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important

orchid sites) [6210], Active raised bogs [7110], Degraded raised bogs still capable of natural regeneration [7120], Alkaline fens [7230], Limestone pavements [8240], Bog woodland [91D0], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] and *Lutra lutra* (Otter) [1355].

Lough Ree SPA (site code: 004064) is located approximately 10km west of Clynan Bog and overlaps the boundary of Lough Ree SAC. This SPA is designated for Little Grebe, Whooper Swan, Wigeon, Teal, Mallard, Shoveler, Tufted Duck, Common Scoter, Goldeneye, Coot, Golden Plover, Lapwing, Common Tern and Wetland and Waterbirds.

Glen Lough SPA (Site Code: 004045) is situated approximately 10 km north-east of Clynan bog. The qualifying interests of Glen Lough SPA are: Whooper Swan.

Lough Iron SPA (Site Code: 004046) is located approximately 10 km north east of Clynan Bog. The qualifying interests of Lough Iron SPA include: Whooper Swan (*Cygnus cygnus*), Wigeon (*Anas penelope*), Teal (*Anas crecca*), Shoveler (*Anas clypeata*), Coot (*Fulica atra*), Golden Plover (*Pluvialis apricaria*), Greenland White-fronted Goose (*Anser albifrons flavirostris*) and Wetland and Waterbirds.

The following pNHA's are also situated within 5 km of Clynan Bog; Royal Canal pNHA (site code: 002103), located 1.5 km north of Clynan Bog and Lough Sewdy pNHA (site code: 000689), located 4.3km south of Clynan Bog. There are no NHA's located within 5km of Clynan Bog.

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 Iron wetland (Ramsar Site No. 850) is located approximately 10 km north-east of Clynan Bog. This wetland is one of the most important waterbird sites in the midlands. In addition to supporting large numbers of snipe and duck, there are internationally important numbers of Greenland White-fronted geese and Whooper swans wintering at the site that feed on the surrounding farmland. The marsh areas support numerous rare plant species.

Lough Glen Wetland (Ramsar Site No. 416) is situated approximately 10 km north of Clynan Bog. It is an internationally important Wintering ground for Whooper Swan.

<https://www.arcgis.com/apps/MapTour/index.html?appid=cd6e1a247bdc4179b9dfc0461e950f1e#>

3.5 Hydrology and Hydrogeology

Clynan forms part of the Upper Shannon Catchment (Catchment ID: 26F) as defined by the EPA under the Water Framework Directive (WFD) and is situated within the Inny [Shannon]_SC_060 and Inny [Shannon]_SC_070. The bog is located approximately 5km east of Ballymahon, in County Longford. The bog contains several drainage pathways and discharge locations, the bog discharges to the Inny_090 towards the north and the Rath_020 toward the south.

The Kildornan stream (EPA code: 26K52) drains the bog in the western part of the site, and lies outside the bog boundary, flowing in a south-westerly direction and merging with the Rath River ca. 625m downstream. The Abbeyshrule Stream (EPA code: 26A35) flows outside the eastern site boundary in a north-easterly direction, flowing into the Irishtown River approximately 1.5km downstream. Both the Rath and the Irishtown river are tributaries of the Inny (Shannon) River (EPA code: 26I01). Clynan Bog currently has a gravity-based drainage regime.

Regional hydrological data suggest that Clynan receives average precipitation of 913mm/yr (1981-2010), with an estimated annual effective precipitation rate of 485.8mm/yr based on GSI data. The GIS estimate that the recharge rate at Clynan is 19.4mm/year which is considered to be a reasonable estimate, given the presence of deep peat and generally low permeability substrate. More elevated losses to depth are expected within the immediate vicinity of the esker that extends into the south of the main lobe. An estimated of 50mm/yr is considered more appropriate for these areas. Therefore, the available precipitation that may become runoff (assuming no change in storage) is estimated to range from 435.8mm/yr – 466.4mm, which equates to an annual runoff rate of c. 4,358m³/ha – 4664m³/ha.

GSI data indicates that the north-western section of Clynan Bog is underlain by Ballysteen Formation (dark muddy limestone, shale), and a small section in the south-eastern section is underlain by Moathill Formation (limestone, calcareous sandstone, shale). Both units are classified as locally important aquifers as they are moderately productive in local zones only. Geological Survey of Ireland (GSI) mapping does not identify any karst features within the surrounding area. No data exists concerning depth to bedrock, however, there are areas of bedrock in close proximity to the bog.

Quaternary Sediment maps show Clynan underlain by peat, yet surrounded by inorganic deposits, including till derived from sandstone both east and west of the bog and an esker mapped as occurring close to the southern boundary of the main lobe of the bog.

While Groundwater Vulnerability is typically used to indicate the susceptibility to groundwater pollution, 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, with some areas of high vulnerability mapped in some areas.

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.

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. While the bog was drained initially in the 1980's, Bord na Mona never brought this bog fully into peat extraction. The majority of Clynan has not been put into production and is still high bog. The majority of the bog was never stripped of vegetation for production. Only a relatively thin layer of peat has been removed from those areas in production so far.

A small portion of the bog was used for sod moss extraction. Industrial peat production has now permanently ceased at Clynan Bog.

[insert water quality data when available]

In the preparation of this monitoring programme, Bord na Mona 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 aid 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 quality of water discharges from restored peatlands normally improves because of bog rehabilitation and restoration measures and the restoration of natural peatland processes (Bonn et al., 20017). Peatland rehabilitation 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) 2018-2021 (DHPCLG, 2017) 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 raised bog restoration programme is expected to have a positive impact on water quality and help the NRBMP deliver its objectives in relation to the WFD.

Water will still discharge from designated emission points when rehabilitation at Clynan 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.

3.7 Fugitive Emissions to air

None.

The bog is no longer in industrial peat production. Rehabilitation of the 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 into a carbon source (Waddington & McNeil, 2002; Alm *et al.*, 2007; Wilson *et al.*, 2007, Wilson *et al.*, 2015). A natural peatland can take in 0.1 to 1.1 t of carbon as CO₂-C /ha/yr while drainage and extraction can create 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 long-term 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. Degraded peatlands also release carbon/GHG emissions via the fluvial/aquatic pathway (Dissolved Organic Carbon – DOC, Suspended Solids/Particulate Matter, degassing of GHGs from water).

The EPA-funded CarbonRestore Project (Renou-Wilson et al. 2012) found that rewetting of drained peatlands can lead to restoration of functional peatland, such as the return of typical plant and animal species, which in turn may lead to the restoration of peat-formation and the C-sink function. The EPA NEROS project carried out GHG flux research at Moyarwood Bog and found that Moyarwood Bog was overall a Carbon sink (sink for CO₂ and a source for Methane) 6 years after bog restoration was carried out (Renou-Wilson et al. 2018). Further, Wilson et al. (2022) confirmed the benefit of rapid rewetting at this site to achieve strong carbon reductions and potentially altering the warming dynamics from warming to cooling depending upon the climate scenario.

It is expected that Clynan Bog will become a reduced carbon source/part carbon sink 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 site is expected to develop as restored raised bog with some *Sphagnum*-rich habitat. Along the margins where the bog has been subject to turbary there is potential for regenerating wet sphagnum rich vegetation to develop where deep peat remains. Other marginal habitats include poor fen, heath and Birch woodland.

3.9 Current ecological rating

(Following NRA (2009) Evaluation Criteria)

The majority of Clynan bog can be rated as having a National ecological value (B) as it is dominated by a relatively large area of degraded raised bog (ditched) with potential for restoration.

Clynan Bog is also listed in NPWS (2014) and was reviewed as part of the potential raised bog NHA network. **The site is expected to be considered for NHA designation in the future.**

Marginal habitats including woodland, scrub, pioneer cutaway habitats may act as a refuge, ecological corridors for wildlife are deemed to be **locally important (higher value)**.

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4. CONSULTATION

4.1 Consultation to date

Consultation will seek 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. Stakeholders can be emailed a copy of this draft plan when it has been finalised internally by Bord na Móna, and invited to make submissions on the objectives and content of this plan in relation to Clynan Bog.

There has been ongoing consultation about rehabilitation and other general issues over the years about Clynan Bog with various stakeholders in relation to:

- General consultation with range of stakeholders at annual Bord na Mona Biodiversity Action Plan review days 2010-2018.
- Midlands & East Regional WFD Operational Committee (River Basin Management Plans).
- Sub-committee on Shannon Flooding Work Programme and Measures (OPW, Waterways Ireland, ESB, LA's, Fisheries Ireland, NPWs etc.).
- Archaeological Liaison Committee (National Museum of Ireland & Dept of Culture Heritage and the Gaeltacht).
- Consultation with NPWS during the review of the NHA network (NPWS, 2014).

To inform the current Plan, both national and local stakeholders, including neighbours whose land adjoins Clynan 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) have been contacted. Any identified local interest groups have been sought and informed of the opportunity to engage with this rehabilitation plan, and when identified have been invited to submit their comments or observations in relation to the proposed rehabilitation at Clynan Bog (see Appendix XI).

4.2 Issues raised by Consultees

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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 water-bodies 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**.
- Carrying out an intensive rehabilitation measures in including drain-blocking to encourage bog restoration and the development of active raised bog habitat.
- Optimising hydrological conditions for the development of *Sphagnum*-rich raised bog vegetation communities in areas used for sod moss extraction, where possible.
- Integrating rehabilitation measures with current land-use (e.g. turf-cutting).
- Optimising hydrological conditions for the protection of any exposed archaeological structures, their retention in situ and preservation into the future, where possible.
- 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 across the entirety of Clynan 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. 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.
- Clynan Bog 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). However, only a proportion of the bog has potential to develop *Sphagnum*-rich habitats and active raised bog (about 27 ha based on hydrological modelling) in this timeframe. Nevertheless, re-wetting across the entire bog, as part of the Scheme, will improve habitat conditions of the whole bog.
- Rehabilitating former industrial peat production bog 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 Mona).

- Re-wetting in general will benefit the future preservation of most known and unknown archaeological features.
- Bord na Móna are also planning rehabilitation measures in some nearby bogs (e.g. Glenlough) in 2021/2022. There are expected to be cumulative water quality and other ecosystem service benefits to receiving water bodies in the upper Shannon catchment from rehabilitation of more than one bog in the same catchment.

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6. SCOPE OF REHABILITATION

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

- The area of Clynan Bog (see mapbook drawing no. BNM-DR-23-16-22: Aerial Imagery 2020)
- 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. Clynan Bog is part of the Moundillon Bog Group (Mostrim sub-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 Clynan Bog, in particular, optimising **climate action benefits of the area recently out of industrial peat extraction**. 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 Clynan Bog identify raised bog restoration as the most suitable rehabilitation approach for the area recently out of peat production at this site.
- The key objective of rehabilitation, as defined by this licence, is **environmental stabilisation** of the bog. Bord na Móna have defined the key goal and outcome of rehabilitation at Clynan Bog as **environmental stabilisation** of the site via **optimising climate action benefits, where possible**, and integrating rehabilitation with the existing land-uses. The re-wetting of residual peat in the area recently out of peat extraction will be optimised, **setting the site on a trajectory towards the development of active raised bog and regenerating wet deep peat vegetation in the cutover areas where deep peat remains**.
- Enhanced Rehabilitation of Clynan 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.
- Current land-uses. Boundary drains will be maintained to act as a hydrological break between Clynan Bog and adjoining lands.

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, like Clynan, 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).
- Furthermore, there are local factors (such as topography and drainage) that will influence the future trajectory of this bog. At Clynan Bog, some areas were drained but never harvested. Other areas were used to extract horticultural peat. The variation in drainage regime across these land use types will create unique hydrological conditions that create differing rehabilitation requirements.
- **Current land-use.** Much of Clynan Bog was drained but never subject to peat harvesting. Parts of the western section have been re-ditched in the past few years and there has been recently intensification around the margins where sod-peat has been harvested in the past. The majority of the eastern section

has been in production for commercial sod-peat. Active turbarry is ongoing on the margins of the bog. Peat production ceased in 2020.

- **Surrounding landscape and neighbours.** Another key constraint is the interaction between the Bord na Móna sites and the surrounding landscape. Care has to be taken 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, as well as potential changes to the hydrology of surrounding designated sites. It is anticipated that the work proposed here (blocking drains and re-wetting cutaway peatlands) will not have any flooding impacts on adjacent land.
- **Archaeology.** The discovery of monuments or archaeological objects during peatland rehabilitation may potentially constrain the rehabilitation measures proposed for a particular area. If this occurs, rehabilitation measures will be reviewed and adapted. An archaeological impact assessment of the proposed rehabilitation at Clynan Bog will be carried out (Appendix XII). Rehabilitation in areas of archaeological interest will be avoided or amended (e.g. buffers in line with Best Practice) to avoid or minimise impact to any archaeological features (See Appendix XII).
- **Public Rights of Way.** Where a public right of way or similar burden exists on Bord na Móna property, consideration will be given to ensuring that this remain 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. There are a small number of rights of way routes located along the boundaries of the bog.

6.2 Key Assumptions

- It is assumed that Bord na Móna will have all resources required to deliver this project. 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 only the 'standard' decommissioning and rehabilitation required under Condition 10, and for which financial provisions have been made, to comply with that element of the Licence.
- 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 raised bog restoration trajectory of the site. The plan covers the short-term rehabilitation **actions** and a **monitoring and after-care programme** to monitor the rehabilitation during the Scheme and to respond to any needs. It is expected that this rehabilitation plan will set the site on an enhanced and accelerated trajectory towards stabilisation and raised bog restoration. The plan does not set any goals or outcomes, for example, the extent (specific area) of active raised bog habitat (ARB) that may develop at this site in the long-term. This is beyond the scope of this rehabilitation plan.
- This plan is not intended to be an after-use or future land-use plan for Clynan Bog.

- The longer-term management of this site, potentially as a nature conservation site, or for amenity, or for other uses in the future.

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7. CRITERIA FOR SUCCESSFUL REHABILITATION

This section outlines what criteria will be used to indicate successful rehabilitation and what key criteria/targets will be used to mark 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 potential key emissions (e.g. suspended solids).

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/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 raised 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 are indicating a downward trend in Ammonia concentrations (Figure 7.1).

Similarly monitoring of surface water ammonia emissions from a Corlea bog in Moundillon over the past 3 years post cessation of peat extraction with ongoing rehabilitation, indicate downward trends.

As the monthly monitoring program at Clynan continues in 2023 during the rehabilitation works, and data from the 2020 monitoring program is compiled, further trending will be produced to verify any ongoing trends.

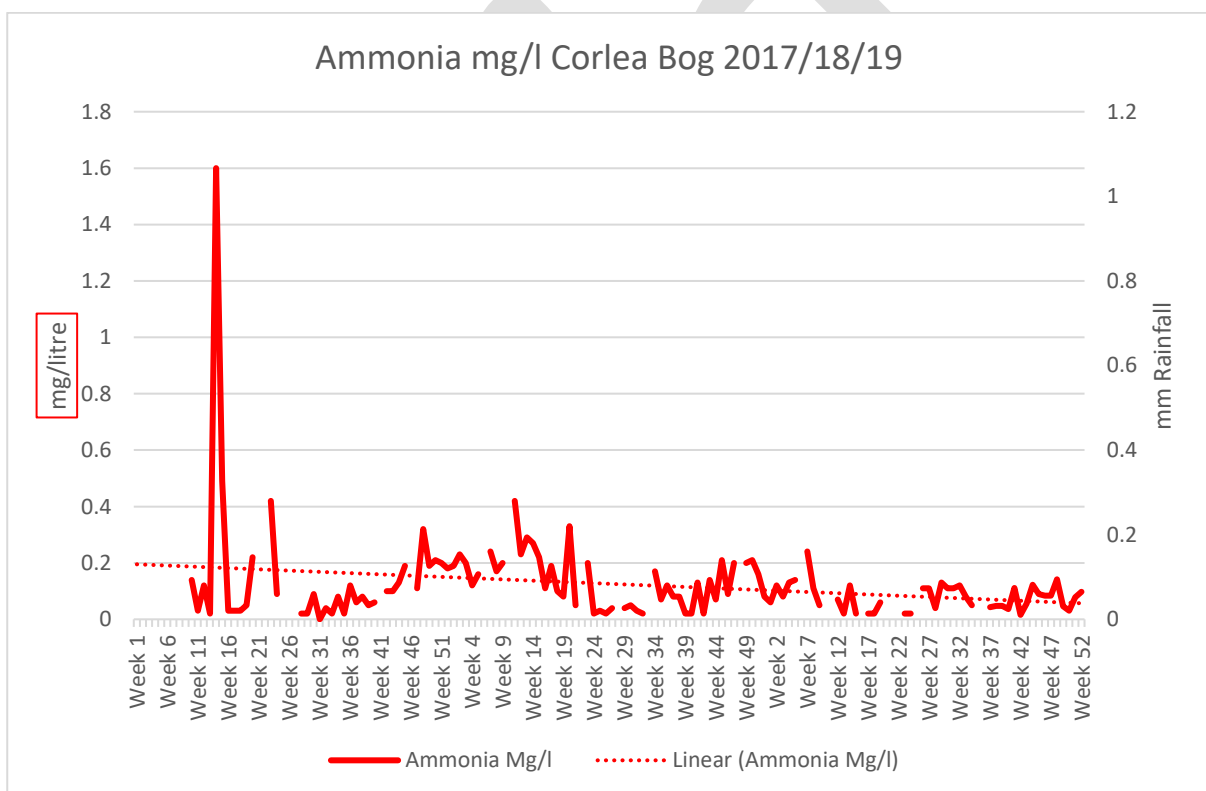
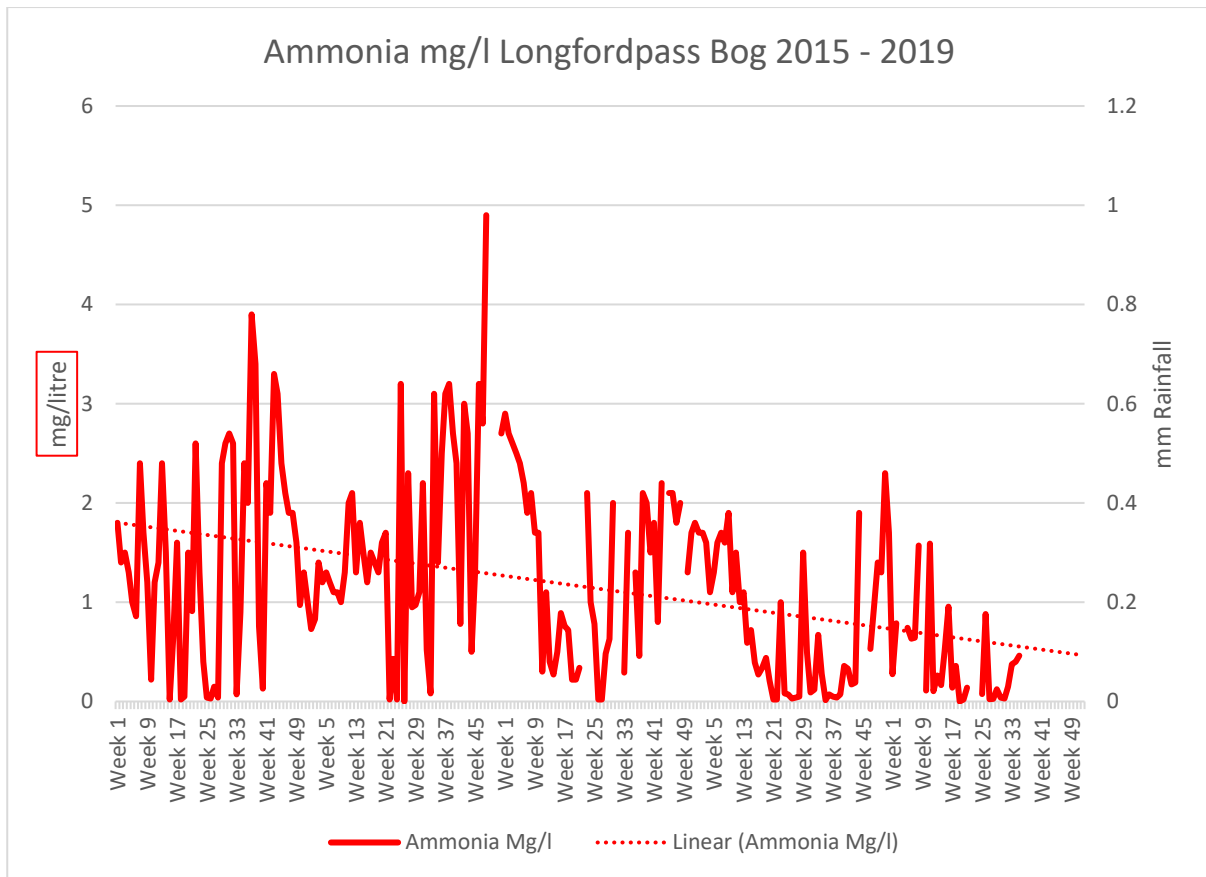


Figure 7.1. Ammonia trends at Longfordpass and Corela 2015-2019.

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 deep peat re-wetting). This will be measured by an aerial survey after rehabilitation has been completed.
- Accelerating the trajectory of the former area of industrial peat extraction towards becoming a reduced carbon source/carbon sink. This will be measured through habitat mapping and a condition assessment. This 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 (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 raised bog restoration and the development of active raised bog and *Sphagnum*-rich peat-forming habitats, where possible. These habitats will generally establish initially as pioneer vegetation. It will take some time for stable naturally functioning habitats to fully develop at Clynan 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. These metrics will be defined in the context of the overall Scheme resources and after consultation with stakeholders.

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, | 2023-2025 |

| Criteria type | Criteria | Target | Measured by | Expected Timeframe |
|-----------------------------|--|---|--|--------------------|
| | | | vegetation establishment and habitat condition. | |
| IPC validation | Key water quality parameters Ammonia, Phosphorous, Suspended solids, pH and conductivity | Reduction or stabilisation of key water quality parameters | Water quality monitoring. Started in advance of the proposed rehabilitation. | 2022-2024 |
| IPC validation | Reducing pressure from peat production on the local water body catchment (WFD) | No decline in the WFD status of the local river catchment related to 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 complete. Sites can be re-monitored in the future and compared against this baseline. | 2023-2025 |
| Climate action verification | Reduction in carbon emissions. | Reduction in carbon emissions | Carbon emissions – estimated using a high 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 |

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.

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 cutaway peatland takes time. Pioneer vegetation can develop relatively quickly (3-10 years) and wetland habitats can develop relatively quickly. Birch woodland take 20-30 years to develop. However, it may take 50 years for active raised bog vegetation to re-develop on ground that was previously cutaway. Different environmental conditions will have a significant impact on the rate of natural colonisation, and as a result of the combination of different environmental conditions and the application of different rehabilitation measures, there will be a variety of habitat outcomes.
- 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 a 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.

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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 depression analysis/hydrological modelling (see Drawing ref. no. BNM-DR-24-16-03: LiDAR Map) 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 (BNM-DR-24-16-03 LiDAR Map) 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).

The rehabilitation actions will be a combination of PCAS measures to re-wet peat. The distribution of these measures is provisionally outlined in the enhanced rehab measures drawing (See mapbook drawing ref. no. BNM-DR-24-16-xx: Enhanced Rehab Measures) (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 recent peat extraction at Clynan bog will include:

- Re-wetting some deep peat areas of the bog through field drain blocking using an excavator to create peat barriers (up to seven every 100 m along each field drain);
- Re-alignment of any piped drainage;
- Re-wetting the deep peat in the cutover areas and some shallow peat areas of the bog using berms and peat dams. This enhanced measure seeks to create large (c. 45m x 60m) flat areas or cells of shallow (< 10 cm) water conditions on bare peat, across multiple fields that are enclosed by shallow berms to retain shallow surface water;
- Management of water levels in these areas with overflow pipes;
- Regular drain blocking (3/100) on cutover bog, along with the management of outfalls and management of water levels;
- Inoculation of *Sphagnum* on compatible residual bare deep peat areas, where needed.
- Silt ponds and silt control measures will be retained and maintained during the rehabilitation phase. During the monitoring and verification phase silt ponds and silt control measures will be continually inspected and maintained, where appropriate. When it is deemed that silt ponds are not required, as the bog has been successfully stabilised and water quality parameters meet targets the condition of the silt ponds will be reviewed. Silt ponds will either be de-watered (water levels lowered to a level where the silt pond will naturally develop as a small wetland feature), left in situ, or infilled (where discharges do not require silt control).

An indication of the areas for these various measures is shown in Table 8.1 and in mapbook ref. no. BNM-DR-24-16-xx: Enhanced Rehab Measures.

Table 8.1 Enhanced rehabilitation measures and target area at Clynan Bog. 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.

| Type | Code | Description | Area (Ha) |
|-----------------------|------|---|-----------|
| Deep peat cutover bog | DPT2 | More intensive drain blocking (7/100 m) + modifying outfalls and managing overflows | xx |
| | DPT4 | Berms and field re-profiling (45m x 60m cell) + modifying outfalls and managing overflows + drainage channels for excess water + <i>Sphagnum</i> inoculation | xx |
| | DPT6 | Peat dams (2/3 dams per 100 m). DPT6 is adopted rather than DPT2 within areas where the drains are wider and deeper, and a more substantial drain block is required to retain the higher volumes of retained water. | xx |
| Dry cutaway | DCT2 | Regular drain blocking (3/100 m) + blocking outfalls and managing water levels with overflow pipes + targeted fertiliser treatment | |
| Marginal land | MLT1 | No work required | xx |
| | MLT2 | More intensive drain blocking (max 7/100 m) | xx |
| Additional Work | AW2 | Targeted Drain Blocking | xx |
| Other | | Silt-ponds | |
| Other | | Constrained Areas | |
| Other | | Archaeology Constrained Areas | |
| Total | | | |

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

- Seek formal approval of the enhanced plan, noting the alternative standard plan should funding from the Scheme not materialise, from the EPA;
- Agree an *ex ante* budget of eligible costs (based on the approved enhanced plan) with the Scheme regulator;
- Develop a detailed site plan with detailed site drawings outlining how the various rehabilitation methodologies will be applied to Clynan Bog. This will take account of peat depths, topography, drainage and hydrological modelling. (See map book ref. no. **BNM-DR-24-17-xx: Enhanced Rehab Measures** for an indicative view of the application of different rehabilitation methodologies);
- Carry out a hydrology and drainage management assessment of the proposed enhanced rehabilitation measures;
- Carry out a review of known archaeology and an archaeological impact appraisal of the proposed rehabilitation. The results of this assessment will be incorporated into the rehabilitation plan to minimise known archaeological disturbance, where needed;
- A review of issues that may constrain rehabilitation such as amenity, forestry, other land-uses, known rights of way, archaeology, turbary, and existing land agreements will be carried out and incorporated into the rehabilitation plan, where needed;

- An ecological appraisal of the potential impacts of the planned rehabilitation such as the presence of sensitive ground-nesting bird breeding species (e.g. breeding waders) or larval webs of Marsh Fritillary butterfly, etc will be carried out;
- Review silt control measures and establish suitable silt control, where needed;
- Ensure all activities comply with the environmental protection requirements of the IPC Licence;
- Carry out Appropriate Assessment of the Rehabilitation Plan. Incorporate any required mitigation measures from the AA in the plan for the delivery of rehabilitation and decommissioning across the site;
- Track delivery of 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, peat field re-profiling, cell-bunding and fertiliser applications targeting headlands, high fields and other areas. All rehabilitation will be carried out with regard to 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 and silt control measures will be monitored during this period and there will be continued maintenance and cleaning to prevent suspended solids run-off from the site during the rehabilitation phase; and
- 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; and
- Reporting to the EPA will continue until the IPC Licence 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) understand that it is the Minister's intention to impose an obligation on Bord na Móna to develop a package of measures, 'the Scheme', for the enhanced decommissioning, rehabilitation and restoration of cutaway peatlands (PCAS). It is understood that additional costs of the Scheme will be supported by the Government through the Climate Action Fund and Ireland's National Recovery and Resilience Plan. However, only the additional costs associated with the additional and enhanced rehabilitation, i.e., measures which go beyond the existing 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 2020). 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 types of cutaway across the site (See Appendix I).

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.
- **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.
- This new sampling programme commenced in November 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.
- 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.
- 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 appropriate assessment process and planning procedures.

Additional monitoring measures are also proposed to monitor ecosystem service benefits that have been derived by rehabilitation. These proposed monitoring measures will be funded by the 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 will be carried out using a 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.
- 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.

- It is proposed to monitor the improvement of some biodiversity ecosystem services. To be defined in relation to monitoring of the overall Scheme and after consultation with stakeholders.

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

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 IPC 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 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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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 peat production 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 Clynan Bog (BNM-DR-XXXXXX: Aerial Imagery 2020)
- 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. Clynan Bog is part of the Moundillon Bog group (Mostrim sub-group).
- The current condition of Clynan Bog. The existing raised bog at Clynan is degraded, having dried out due to drainage. Pioneer cutaway vegetation is developing around the margins of the high bog, and bare unvegetated peat remains in areas of active turbary.
- 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 Clynan Bog will be left unblocked as blocking boundary drains could affect adjacent land.

Rehabilitation goals and outcomes

The key rehabilitation goal and outcome for Clynan Bog is environmental stabilisation of the site via wetland creation and deep peat re-wetting. 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-23-17-20: Standard Rehab Measures)**

- Blocking field drains in the former industrial production 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. 1st phase of rehabilitation. Field drain blocking.
- 2024-2026. Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.

Table AP-1. Rehabilitation measures and target area.

| Type | Code | Description | Area (Ha) |
|---------------|------------|---|-----------|
| Deep peat | DPT1 | Regular drain blocking (3/100 m) + modifying outfalls and managing water levels with overflow pipes | x |
| Dry cutaway | DCT1 | Modifying outfalls and managing water levels with overflow pipes | x |
| Marginal Land | MLT1 | No work required | x |
| Other | Silt Pond | Silt ponds | x |
| Other | Completed | Rehabilitation Complete | x |
| Other | Constraint | Rights of Ways and constrained areas/buffers/Archaeology | x |
| Total | | | |

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

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 2020. Both power stations ceased using peat by the end of 2020. All remaining horticultural peat stocks were removed during 2020. Intensive decommissioning and rehabilitation for the Mount Dillon Bog Group has commenced in 2020/2021. Remaining milled peat stocks are being transported to various customers (Edenderry Power, Derrinlough Brickette Factory).

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. At these sites 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 Licence Ref. P0504-01-01 is outlined in Table Ap-2. These areas are also outlined on Figure Ap-2 (Map of the Mount Dillon Bog Group).

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 Dillion 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

A breakdown of the component bog areas for the Mountdillon Bog Group IPC Licence Ref. P0504-01 is outlined in Table Ap-2.

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 | Draft 2021 |
| 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 | Draft 2021 |
| 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 2017 |
| 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 |
| Derraghan | 289 | Cutover Bog Industrial peat production commenced at Derraghan Bog in the 1940's and ceased in 2020. | Derraghan Bog formerly supplied a range of commercial functions including; fuel peat for Lough Ree Power | 2020 | Draft 2021 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|-------------|-----------|---|--|---------------------------|-------------------|
| | | Most of the former production area has shallow peat reserves. Some pockets of deep peat remain. Derraghan is considered a shallow peat cutover bog. | 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. | | |
| 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 2017 |
| 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 | Draft 2017 |
| 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 | Draft 2019 |
| 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 |
| 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 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|---------------|-----------|---|--|---------------------------|-------------------|
| 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 | Draft 2021 |
| 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 | Draft 2017 |
| 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 |
| 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 | Draft 2017 |
| 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 | Draft 2017 |
| 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 | Draft 2021 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|--------------|-----------|---|--|---------------------------|-------------------|
| 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 2017 |
| 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 considered a deep peat cutover bog. | 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 with pioneer cutaway and scrub vegetation communities. | 2020 | Draft 2021 |
| 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 |

Table Ap-2b: Mount Dillon Bog Group names, area and indicative status (Mostrim sub-group).

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|------------|-----------|---|--|---------------------------|-------------------|
| Clonwhelan | 212 | Development Bog. Clonwhelan Bog was drained in the 1980's but never brought into commercial peat production. Clonwhelan is a deep peat development bog. | Rehabilitation complete Raised bog restoration completed 2019 | N/A | Finalised 2018 |
| Clynan | 402 | Development Bog. Clynan Bog was drained in the 1980's. Sod peat production occurred around the margins and over a portion of the site. | Clynan Bog formerly supplied horticultural peat (sod moss) & fuel turf. Some rehabilitation work has been carried out on Clynan bog East already to buffer an undrained bog remnant. Raised bog restoration potential. | 2020 | Draft 2023 |
| Coolcraff | 412 | Cutover Bog Industrial peat production commenced at Coolcraff Bog in the 1980's. The site was developed for milled peat production 2015-2018. Deep peat reserves remain over the | Coolcraff Bog formerly supplied a range of commercial functions including; horticultural peat. Much of the former production area at Coolcraff is bare peat. | 2020 | Draft 2017 |

| Bog Name | Area (ha) | Stage of development | Land-Use and History | Peat Production Cessation | Rehab Plan Status |
|------------|-----------|--|--|---------------------------|-------------------|
| | | majority of the former production area. | One section of high bog to the north of site was excluded from production and so never developed on the basis of high conservation value raised bog habitat. | | |
| Coolnagun | 668 | Cutaway Bog Industrial peat production commenced at Coolnagun Bog in 1941. Coolnagun is considered a deep peat cutover bog with areas of shallow cutaway. | Coolnagun Bog formerly supplied a range of commercial functions including; horticultural peat and fuel peat for Lough Ree Power. Much of the former production area at Coolnagun is bare peat. Some small patches of pioneer cutaway vegetation communities are developing. Some bog restoration work was undertaken already along the eastern margin. | 2020 | Draft 2017 |
| Glenlough | 328 | Development bog Glenlough Bog was first developed in the 1980's. It was re-ditched in 2003-2005. Only a small part of the bog was fully brought into peat production for sod peat. Deep peat reserves remain over the majority of the former production area. Some of the bog has never been subject to commercial peat extraction. | Glenlough Bog formerly supplied a range of commercial functions including; horticultural peat. Degraded high bog vegetation remains over the majority of the bog. The former production area is a mosaic of vegetation. This site has raised bog restoration potential. | 2020 | Draft 2021 |
| Milkernagh | 627 | Cutover Bog Industrial peat production commenced at Milkernagh Bog in 1950. Long-term peat extraction has created shallow cutaway in places. Deep peat reserves remain in parts on the former production area. Milkernagh is considered cutover bog with variable peat depths. Milkernagh has a pumped drainage regime. | Milkernagh Bog formerly supplied a range of commercial functions including; horticultural peat and fuel peat for Lough Ree Power. Much of the former production area at Milkernagh is bare peat. Pioneer cutaway vegetation communities are developing in places. | 2020 | Draft 2017 |
| Mostrim | 442 | Development Bog/Cutover Bog The majority of Mostrim was drained but never developed. Industrial peat production commenced in parts of Mostrim Bog in the 1980's. Peat extraction has significantly affected parts of this bog but deep peat reserves remain on the former production area. | Mostrim Bog formerly supplied a range of commercial functions including; horticultural peat and fuel peat for Lough Ree Power. Raised bog restoration at Mostrim is ongoing with > 50% completed in Jan 2021. | 2020 | Finalised 2020 |

See Drawing number **BNM-DR-XX-XX-24 titled Mount Dillon Bog Group (Mostrim)**, included in the accompanying Mapbook which illustrates the location of Clynan Bog and the Mount Dillon (Mostrim) 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>Clynan</u> | Area (ha): | 405ha |
| Works Name: | Mostrim | County: | Longford/Westmeath |
| Recorder(s): | MMC & DF | Survey Date(s): | 14/10/2010 |
| Habitats present (in order of dominance) | | | |
| The most common habitats present at this site include: | | | |
| <ul style="list-style-type: none"> • Raised bog (PB1) (Codes refer to Heritage Council habitat classification, (Fossitt 2000), See Appendix II.) • Cutover Bog (PB4) (revegetating areas, with Heather-dominated, Purple Moorgrass-dominated and Bog Cotton-dominated vegetation types) • Bare peat (BP) (around margins of high bog) • Pioneer dry heath (dHeath) (on old cutover bog. Also around margins of high bog in production area where there has been some regeneration of Heather cover) (Codes refer BnM classification of pioneer habitats of production bog. See Appendix II). • Dense Bracken (HP1) (on old cutover bog and on some margins around high bog) • Scrub (WS1) (on cutover bog) • Birch woodland (WN7) (on cutover bog) • Poor fen and flush (PF2) (part of high bog) • Wet grassland (GS4) (around margins) • Improved grassland (GA1) (around margins) • Conifer plantation (WD4) (around margin) • Buildings and artificial surfaces (BL3) (roads, tracks and hard surfaces) | | | |
| Description of site | | | |
| <p>Clynan Bog is located 6 km east of Ballymahon in Co. Longford. The Longford and Westmeath county boundary passes through the site. There are two main sections to the site that are divided by a minor road/lane. This bog is part of the Mostrim group of bogs. Like some of the other bogs in the Mostrim group, the majority of the site was ditched originally in the 1980s. Parts of the western section have been re-ditched in the past few years and there has been recently intensification around the margins where sod-peat for the Environmental Section is being harvested. Sod-peat has been harvested in the past. The majority of the eastern section has been in production for commercial sod-peat, although currently there is very little activity in this area and there has been some regeneration. Ditching and production at this site has had a significant impact on the quality of the habitat and the remaining raised bog is now quite degraded and drying-out.</p> | | | |
| Western section | | | |

This is the largest unit of high bog. It is an irregular shape with two 'dog-legs' and the eastern side, one going north and a larger one going south. The majority of the high bog was classified as a development bog as it was ditched but never put into intensive production. There has been ongoing sod-peat production around the southern margin, parts of the eastern margin and parts of the northern margin. The high bog has an irregular topography and there are several small mounds of various heights present. The lower mounds are vegetated with tall Heather and are quite dry. Some of the taller mounds towards the northern boundary have developed Bracken cover and some patches of scrub (WS1). The largest section of high bog has slopes to the northern and southern boundaries from the central area. The north-eastern dog-leg has several mounds and troughs through the bog where the bog probably overlies glacial ridges.

The high bog is covered with regularly spaced ditches, about 1 m deep. There are several wetter sections where there are gaps in one or more ditches, probably due to the wetness of the original bog. Some of these areas are still wet and contain features of active raised bog such as *Sphagnum*-filled pools. Several sections around the margins have been re-ditched in the recent past and the drains are much deeper and wider. This disturbed zone is about 40 m wide along the southern boundary. Peat from the ditches has been piled in the area between the drains and some vegetation has been stripped from the surface so that the majority of the surface of the bog in this disturbed zone is now covered in bare peat. This zone is quite firm and dry Heather is found along the edges of the drains. As this zone was a mixture of bare peat and heather it was mapped as a 'Dry Heath/bare peat mosaic (cutaway community)' to distinguish it from the rest of the intact high bog.

The bog is predominantly dominated by marginal and sub-marginal ecotope communities further towards the centre of the bog and adjacent to the intensively disturbed zone. The drains were generally active and most drains had running water. The vegetation of the bog was dominated by Heather and Bog Asphodel. The *Cladonia* spp. lichen cover was 30%. The moss cover was dominated by *Hypnum* spp. in these dry areas and there was very little *Sphagnum* cover. The bog was still quite firm.

Further towards the central part of the bog there is increasing *Sphagnum* cover and the bog became much spongier. The *Sphagnum* spp. cover was mostly hummocks of *S. capillifolium*, *S. papillosum* and some *S. subnitens* hummocks. The micro-topography was variable with hummocks and hollows present but the hollows were generally vegetated with Bog Asphodel, Carnation Sedge and Bog Cottons. Some damper hollows also contained White Beak-sedge and there were also hollows that were empty or had algal cover. Further on, there were some former pool systems present that have now largely infilled with vegetation. There was some *S. magellanicum* and *S. cuspidatum* associated with these former pools. Further west there were several wetter areas (probably in the flatter central area) with some intact but sunken pools infilled with *S. cuspidatum* and some hummocks also contained hummocks of *S. fuscum* and *S. imbricatum*. Some drains in the central western areas were also infilling with *S. cuspidatum*, but there were few natural drain blockages.

There is a large flush system (PF2) in the north half of the bog. This area is vegetated by Purple Moor-grass along with the other raised bog species. In some sections the Purple Moorgrass cover is sparse and open. Bog Myrtle is also present and this dominates a zone around the edges of the flush. Birch and Willow are rare and scattered through the flush. The drains within the flush have completely infilled in places to form natural drain blockages.

There were several small wetter sections of bog around the flush and to the east of the flush. Most of these were unditched and they probably contained active raised bog prior to development by Bord na Mona. They all contained typical active raised bog pools with extensive *S. cuspidatum* cover and lawns of *S. magellanicum*, *S. papillosum* and *S. capillifolium* around the edges. Some of these pools were tear pools and were long and thin. There were also examples of degrading pools with very little *Sphagnum* cover and containing algae or being infilled with other vegetation. The inter-pool areas were generally quite dry with a much lower *Sphagnum* spp. cover and there were no signs of quaking bog.

There is a large mound located towards the NE corner of the site. The mound is vegetated with Bracken and some scrub towards its peak. This mound is located adjacent to a former lake. The lake has now dried out and is now indicated by a ring of flushed vegetation marked by Purple Moorgrass and a shallow hollow with tall Heather.

There is a second smaller flush towards the eastern side of the bog. This flush is partially wooded with scrub along a natural drainage channel including Eared Willow, Grey Willow, Birch, Bog, Myrtle, Bramble, Purple Moorgrass, Broad Buckler Fern and Devil's-Bit. The wooded section was surrounded by a zone dominated by Bog Myrtle and tall flushed Heather. To the

south of this flush there is a low ridge running through the bog with some common Reed in places. Bulrush also appears in some of the drains adjacent to the flush.

The cutover area around the southern margin has been quite intensively used and there is a significant zone of bare peat adjacent to the face-banks. The remaining cutover bog is a mosaic of Bog-Cotton, Soft Rush and Purple Moor-grass regeneration with bare peat. Much of these regenerating areas have been used to lay out drying sod-peat. Peat-cutting activity is less intensive to the east of this section and there is some old regenerating cutover bog around the margins. Much of this old cutover bog is now classified as dry heath (HH1) as it is dominated by tall Heather (similar to the facebank ecotope of high bog). This regenerating dry heath is in mosaic with patches of Gorse and Birch scrub (WS1) and patches of Dense Bracken (HD1). There are also some patches of Birch woodland (WN7) along the eastern margin and along the northern margin.

The west side of the northern dog-leg is being used for intensive production of sod peat, adjacent to an access lane. The cutover in this area is also a complex mosaic of revegetating Purple Moorgrass, Bog Cotton and Soft Rush. The western side also has active peat-cutting, but this seems to be less intensive and probably domestic peat cutting. There is another access lane leading to the southern dog-leg and there has also been a recent intensification of activity in this area.

Eastern Section

This section (87 ha in total) is much smaller in composition to the western section. It is separated from the eastern section by a low ridge of mineral soil, the majority of which has been planted recently with conifer forestry. Peat production has been much more intensive in this bog. The majority of the bog has been ditched in the past and had most of its vegetation stripped away at one stage and there a regular trenches typical of sod-peat production running though the bog along the drains. However, the intensity of peat production has not been uniform and the trenches are largest towards the west side. This area still contains some bare peat and is mapped separately (as dry heath/bare peat mosaic) from the remainder of the ditched high bog, which has regenerated somewhat. The trenches mainly contain bare peat and are about 10 m wide. There is some intact raised bog vegetation dominated by Heather and Bog Asphodel along the central zone between the drains and overall there is about 75% vegetation cover in this section. Further east, the sod-peat production area seems to be regenerating and has not been as intensively used. The main vegetation cover along the old trenches is Heather and there is much less bare peat (90% vegetation cover). Much less peat was extracted and the trenches are relatively narrow. There has been more recent activity along the southern boundary. A narrow zone used by machinery has bare peat.

There is also a central area of high bog that was never ditched, as it was probably too wet. This area is still quite wet and contains some features typical of active raised bog. There were several large pools infilled with *S. cuspidatum* and also containing some *S. magellanicum* lawns around the margins. Some of these pools are tear pools. The inter-pool areas were also quite spongy and even quaking in places with some large hummocks of *S. capillifolium* and *S. papillosum*. One feature of note is the relative abundance of *S. fuscum* hummocks in this area. This wet area is associated with the head of a narrow flush that flows south. This flush is partially wooded with Birch and Willow scrub in places. It is also quite wet and quaking in places and could be classified as 'active flush ecotope' in some sections.

Further east there is some intact high bog that was never ditched. This area is still intact although it is relatively small. It has been disturbed in the past by domestic cutting and drainage.

This bog is surrounded by cutover bog around most of its margins. Most of this cutover bog is quite old and abandoned. The BnM property includes some conifer plantation along the east side that is part of an adjacent private plantation. There is old regenerating cutover bog along the southern boundary with a mosaic of Birch scrub, dry heath dominated by heather and some wetter areas dominated by Purple Moorgrass.

Forestry and potential forestry on site

| |
|--|
| <p>The majority of the site has little potential for forestry as it is high bog.</p> <p>Coillte have planted some of the high bog and former cutover bog to the south of the site with Lodgepole Pine and Sitka Spruce (Cornamucklagh). This plantation is poor condition and many of the trees are in check or have impeded growth. The BnM property (as indicated by the GIS boundary) overlaps with this property. A significant area adjacent to the SE of the site has also been recently planted with conifer forestry in a private development.</p> |
| <p>Designated areas on site (cSAC, NHA, pNHA, SPA other)</p> <p>None</p> <p>The Royal Canal pNHA (NPWS site code 002103) is located 1.6 km to the north of the site.</p> |
| <p>Adjacent habitats and land-use</p> <ul style="list-style-type: none"> • Most of the site is surrounded by typical marginal peatland habitats including cutover bog (PB4), scrub (WS1) and Birch woodland (WN7). • Commercial conifer forestry has been planted in several areas around the site. Much of this forestry is privately owned. • Improved grassland (GA1) and wet grassland (GS4) is also present, some of which has been reclaimed from former peatland. |
| <p>Watercourses (major water features on/off site)</p> <ul style="list-style-type: none"> • Several drains from the cutover areas drain towards small streams. • Clynan is in the River Shannon catchment. The southern side of the bog drains towards the Rath river. The northern side drains towards the Blackwater River. Both these small rivers flow into the Inny River, to the north of the bog. |
| <p>Peat type and sub-soils</p> <p>The majority of Clynan has not been put into production and is still high bog. Only a relatively thin layer of peat has been removed from those areas in production so far, so the remaining peat is acidic and this is affecting the type of regeneration.</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"> • 14 Golden Plover flying over site, probably roosting on cutover bog. • 3 Snipe on high bog • Party of Long-tailed Tits using scrub in one of the flushes • Other more common birds were noted on the site. These included Reed Bunting, Meadow Pipit, Robin, Wren, Pheasant and Blue Tit. <p>Mammals</p> |

- Mammal tracks criss-cross the high bog.
- Signs of Hare and Fox were noted on the high bog and adjacent cutover bog.

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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 banded 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 banded 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

All measures taken to ensure the prevention of spread on invasive species will follow Best Practice.

The potential for importation or introduction of other, 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, accessed on the Environment Agency's website on the 11th of July 2016).

In addition to the above, Best Practice measures around the prevention and spread of Crayfish plague² /other aquatic invasive species such as Parrots Feather will be adhered with throughout all rehabilitation measures and activities.

² <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 Mountdillon (Mostrim) bog group (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. The bog is part of the Mountdillon 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 (a subset of the BnM estate that has been used for energy production). 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.

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. There are several Bord na Móna specific actions in this plan including 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 licence 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 | Clynan Bog 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 | Where required |
| 3 | Decommissioning Peat Stockpiles | Not applicable |
| 4 | Decommissioning or Removal of Buildings and Compounds | Not relevant |
| 5 | Decommissioning Fuel Tanks and associated facilities | Not applicable |
| 6 | Decommissioning and Removal of Bog Pump Sites | Not relevant |
| 7 | Decommissioning or Removal of Septic Tanks | Not relevant |

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.

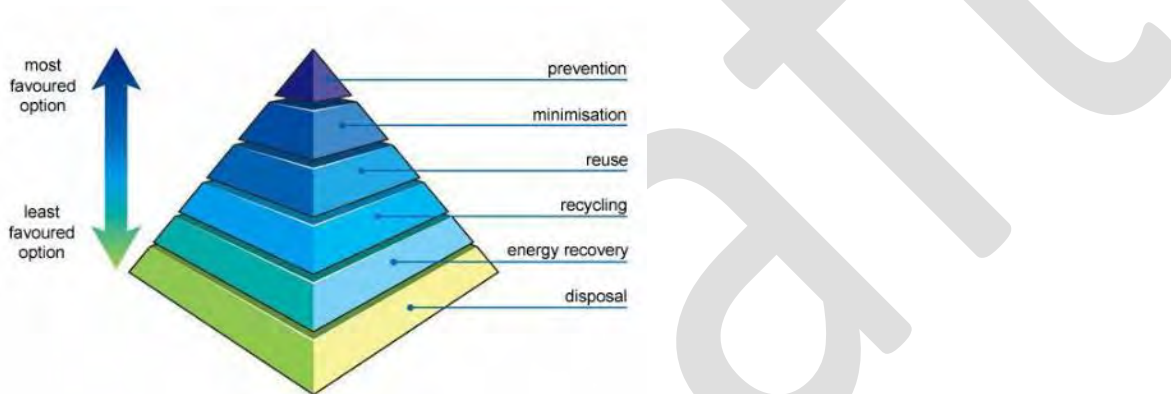
7.3.5 The tonnages and EWC Code for the waste materials listed in *Schedule 2(i) Hazardous Wastes for Disposal/Recovery* and *Schedule 2(ii) Other Wastes for Disposal/Recovery* sent off-site for disposal/recovery.

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 licence. 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 | Clynan Bog Decommissioning Plan |
|------|---|---------------------------------|
| 1 | Removal of Railway Lines | Not applicable |
| 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 | Not applicable |

Draft

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 cutaway 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 *Sphagnum*-rich plant communities in these conditions if the peat can be re-wetted. This brings the opportunity of re-developing *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 P0504-01, Moundillon Group of Bogs in Counties Roscommon, Longford 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 in Moundillon Group of Bogs is 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 Boora 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-affected 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 Clynan Bog 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* |

APPENDIX XI. CONSULTATION SUMMARIES

Table APXI -1 Consultees contacted

Draft

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

22

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: 13/10/2020 |

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 | 13/19/2020 | First release | EMcD |
| 2 | | | |



APPENDIX 2

**CLYNAN BOG
DECOMMISSIONING AND
REHABILITATION PLAN- GIS
MAPBOOK**

Bord na Móna

Clynan Bog Rehab Plan GIS Map Book 2023



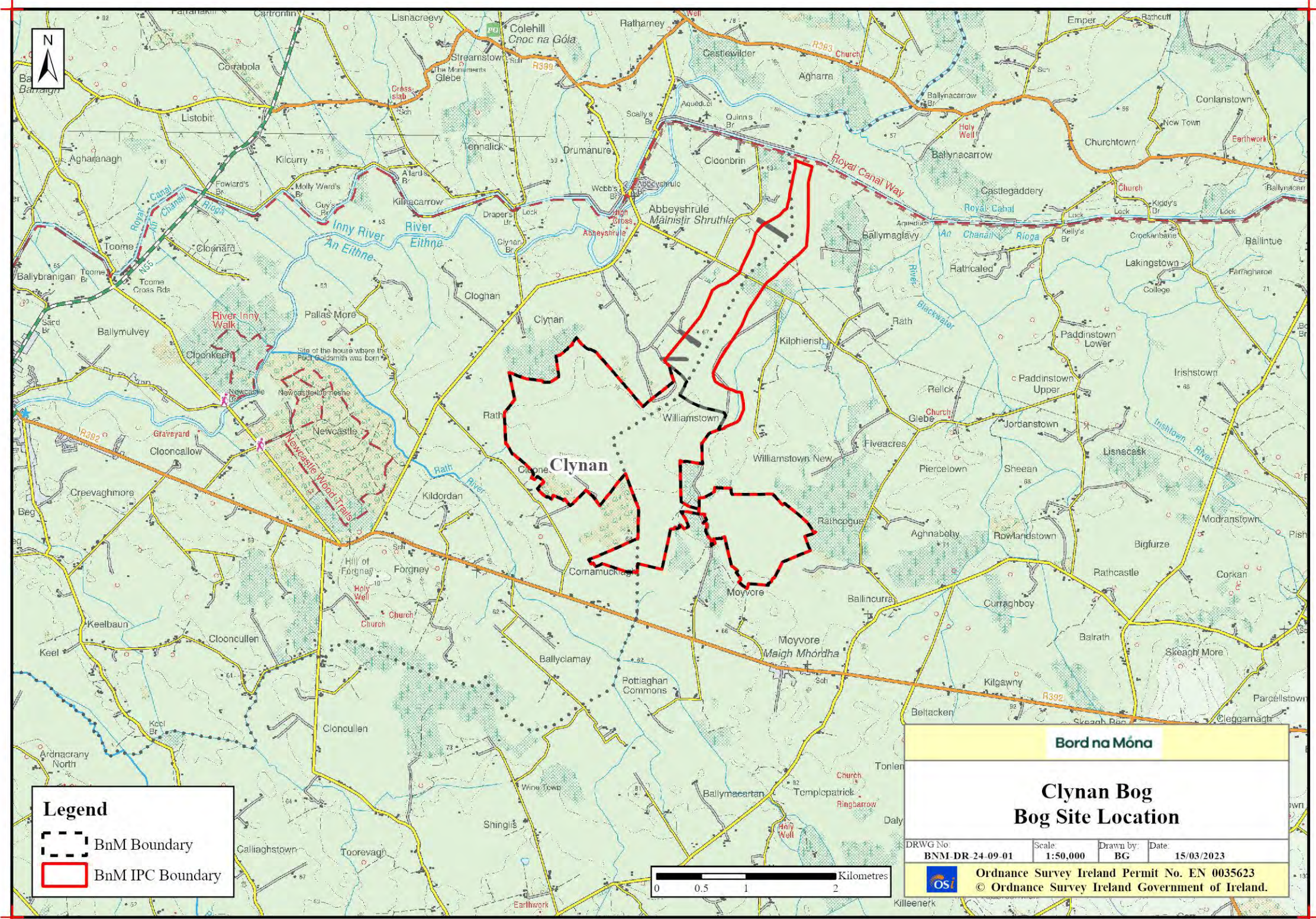
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| Document File Path: | | | | | | |
| Document Status: | Draft v0.1 | | | | | |
| This document comprises: | DCS | TOC | Text (Body) | References | Maps | No. of Appendices |
| | 1 | 1 | 0 | 0 | 15 | 0 |
| Rev. | 0.1 | Author(s): | | Checked By: | | Approved By: |
| Name(s): | | BG | | ML | | MMcC |
| Date: | | 15/03/2023 | | 15/03/2023 | | 15/03/2023 |
| Rev. | 1.0 | Author(s): | | Checked By: | | Approved By: |
| Name(s): | | | | | | |
| Date: | | | | | | |

Bord na Móna would like to thank and acknowledge RPS Consultants for their input into this document and the provision of data for inclusion in these maps.

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Bog Site Information Maps



Legend

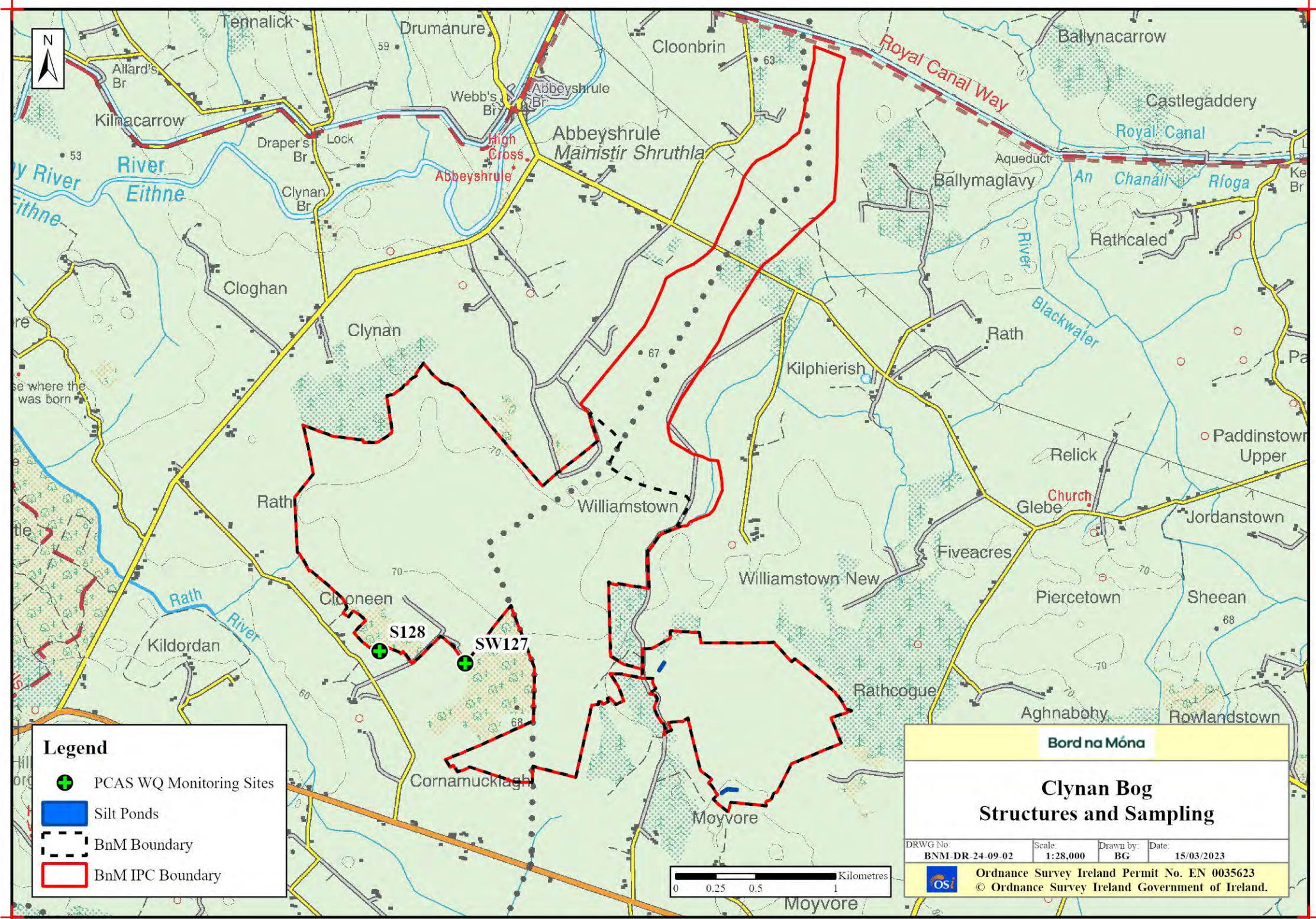
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- BnM IPC Boundary

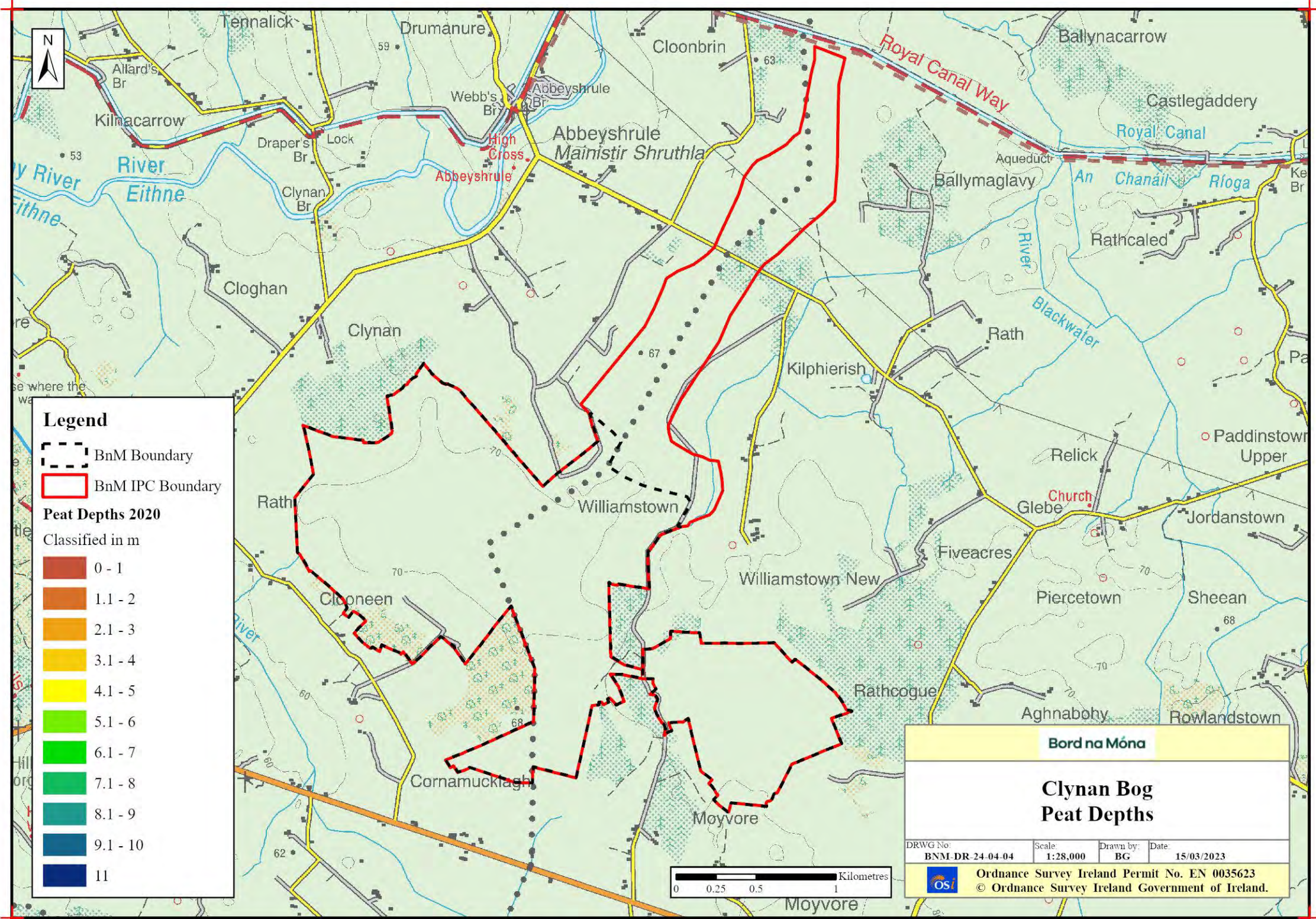
Bord na Móna

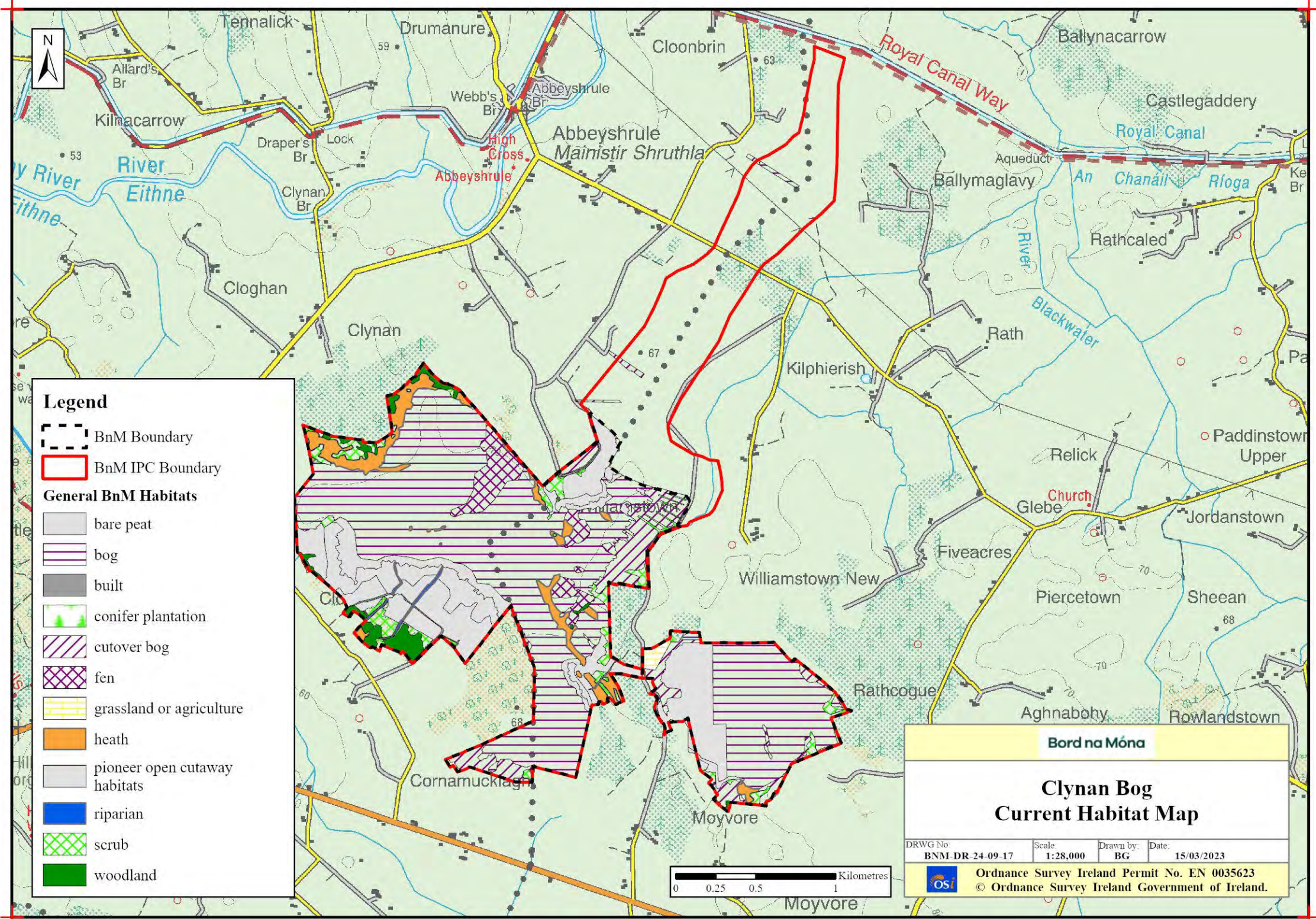
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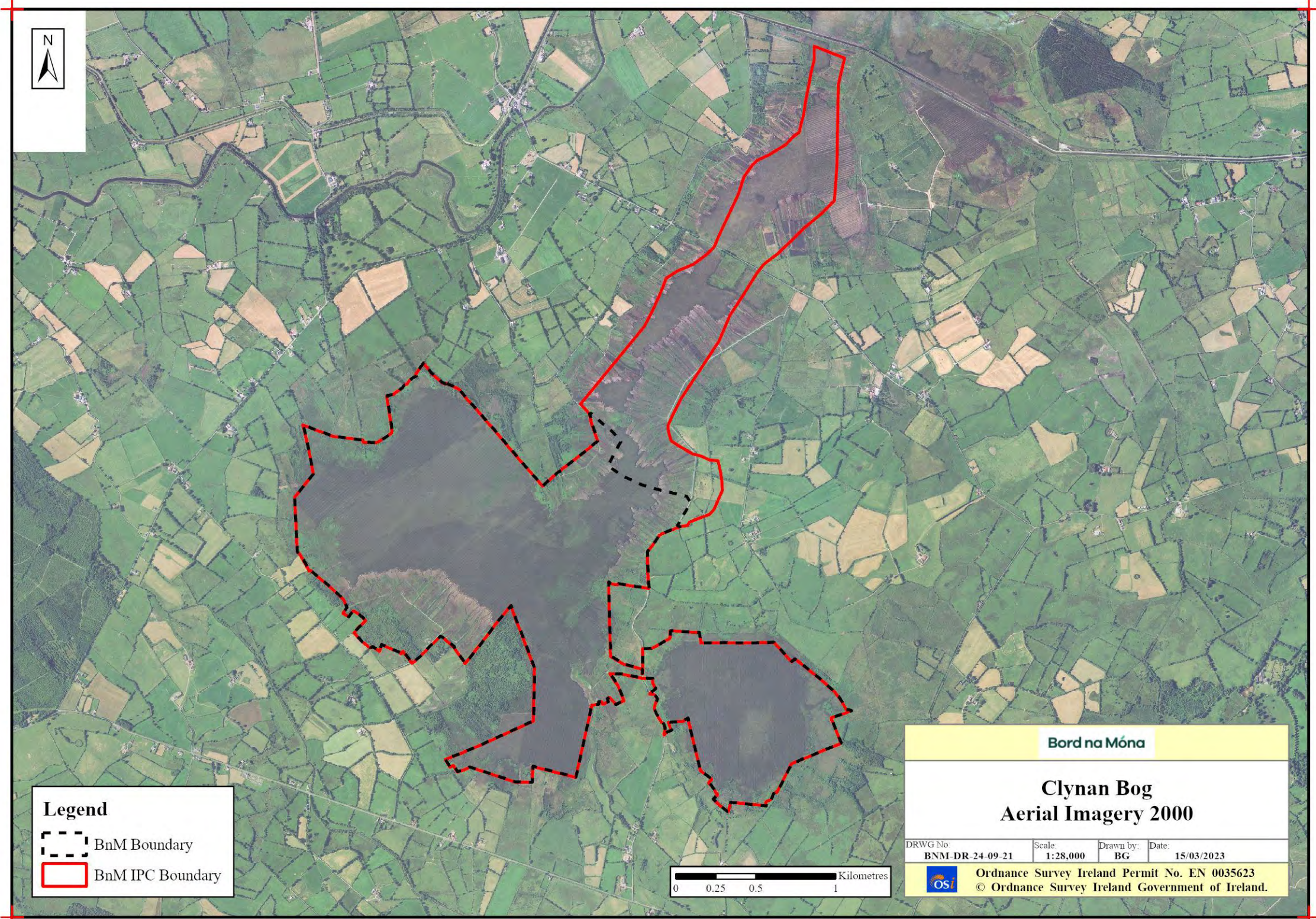
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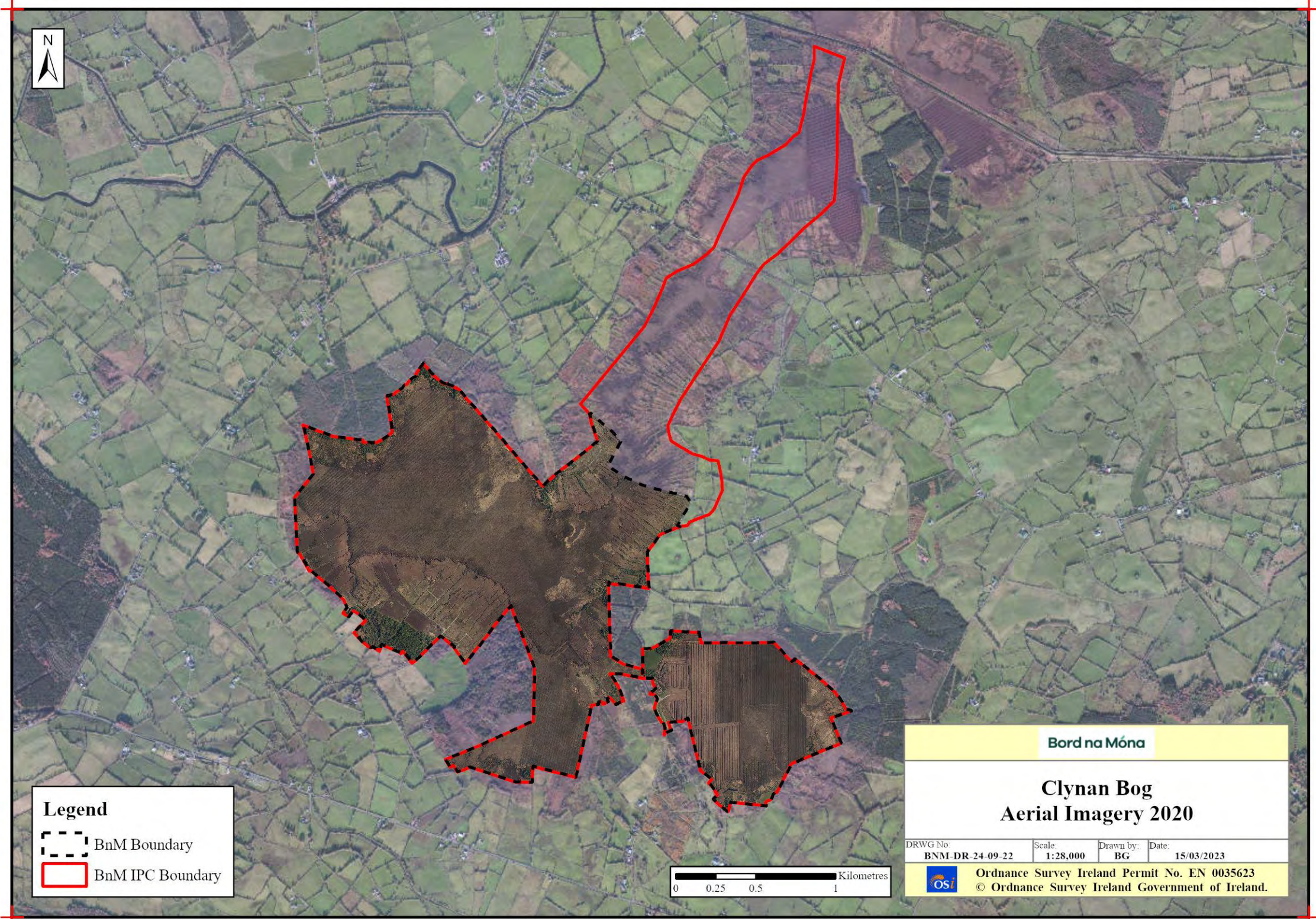
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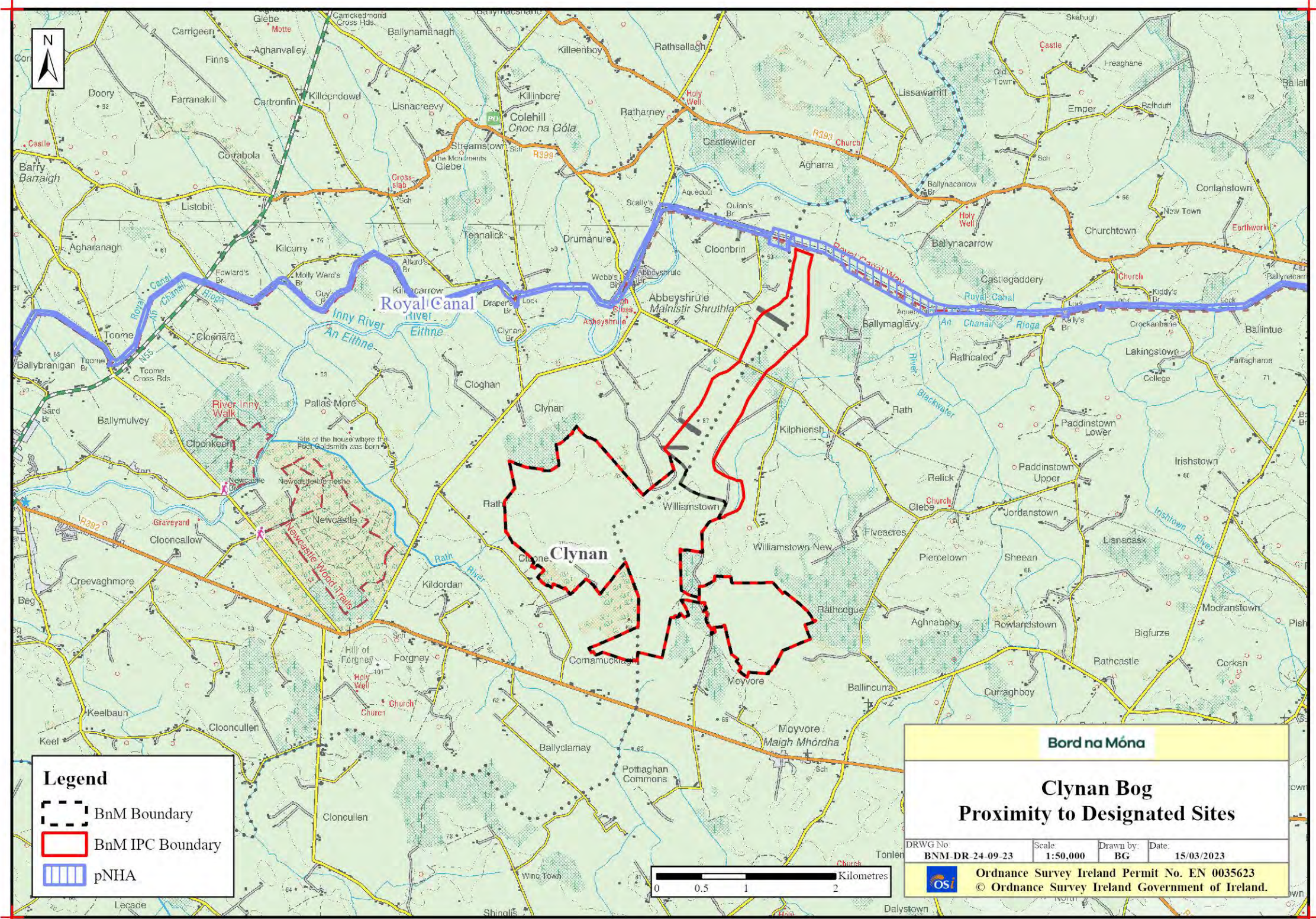


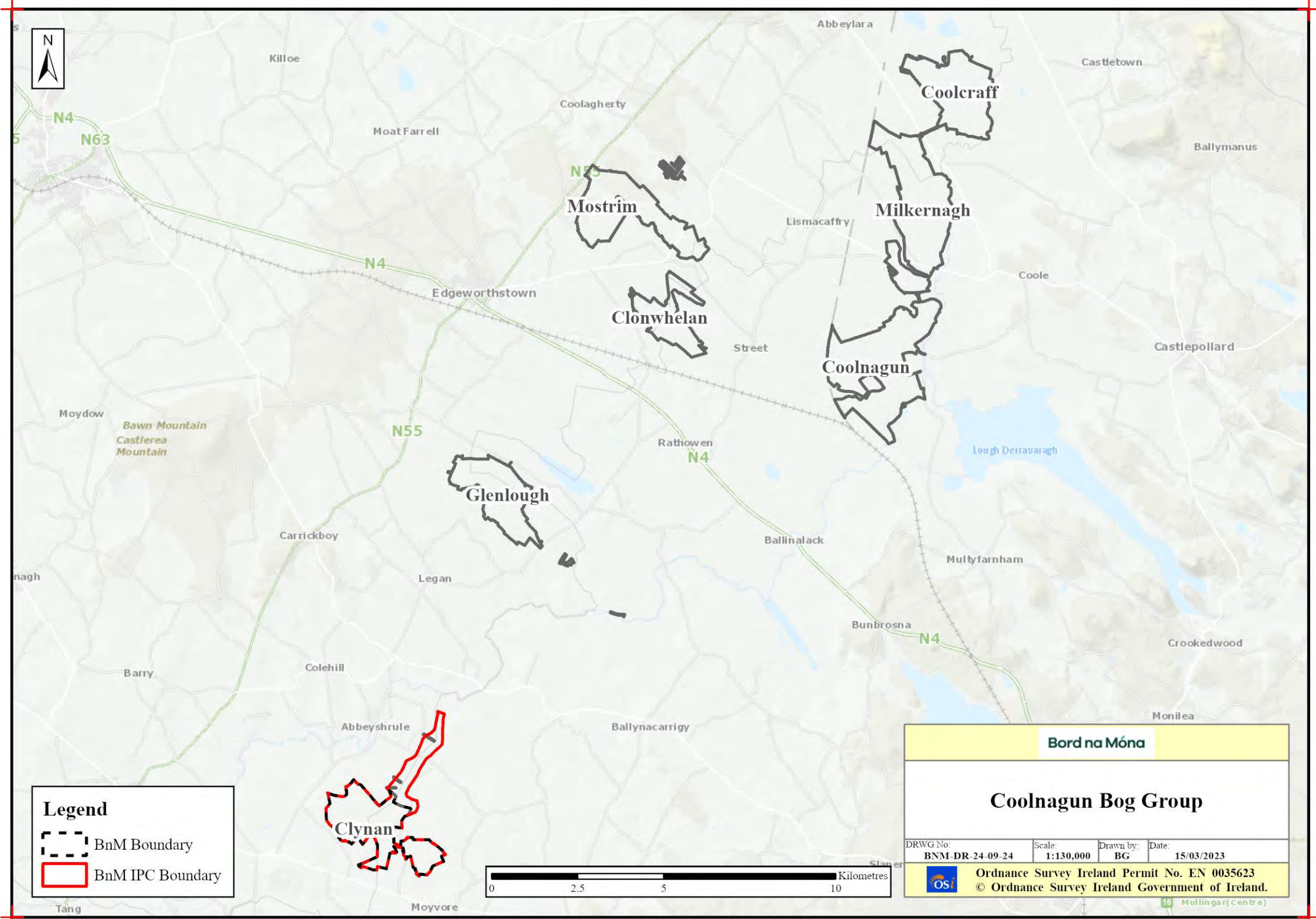




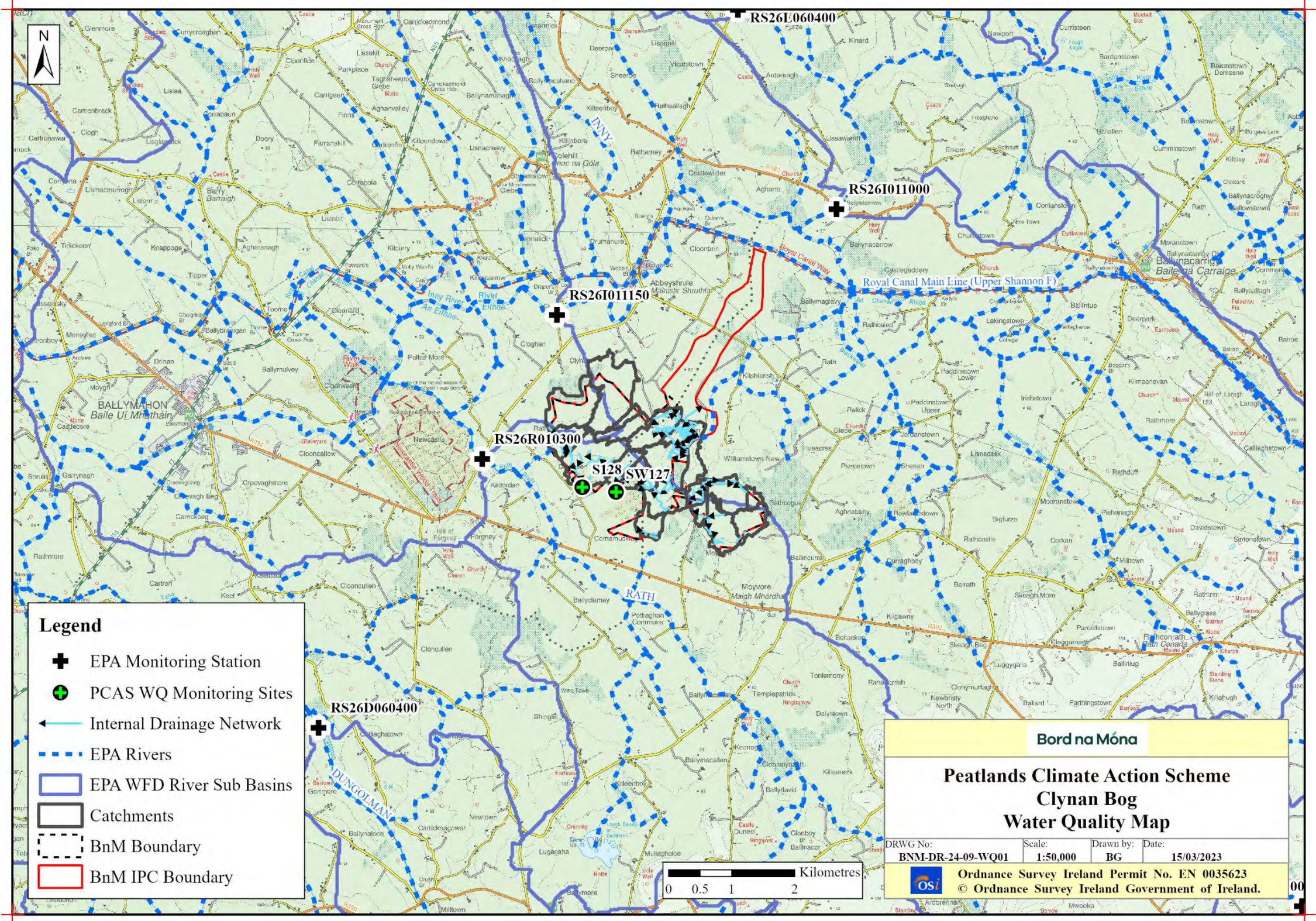


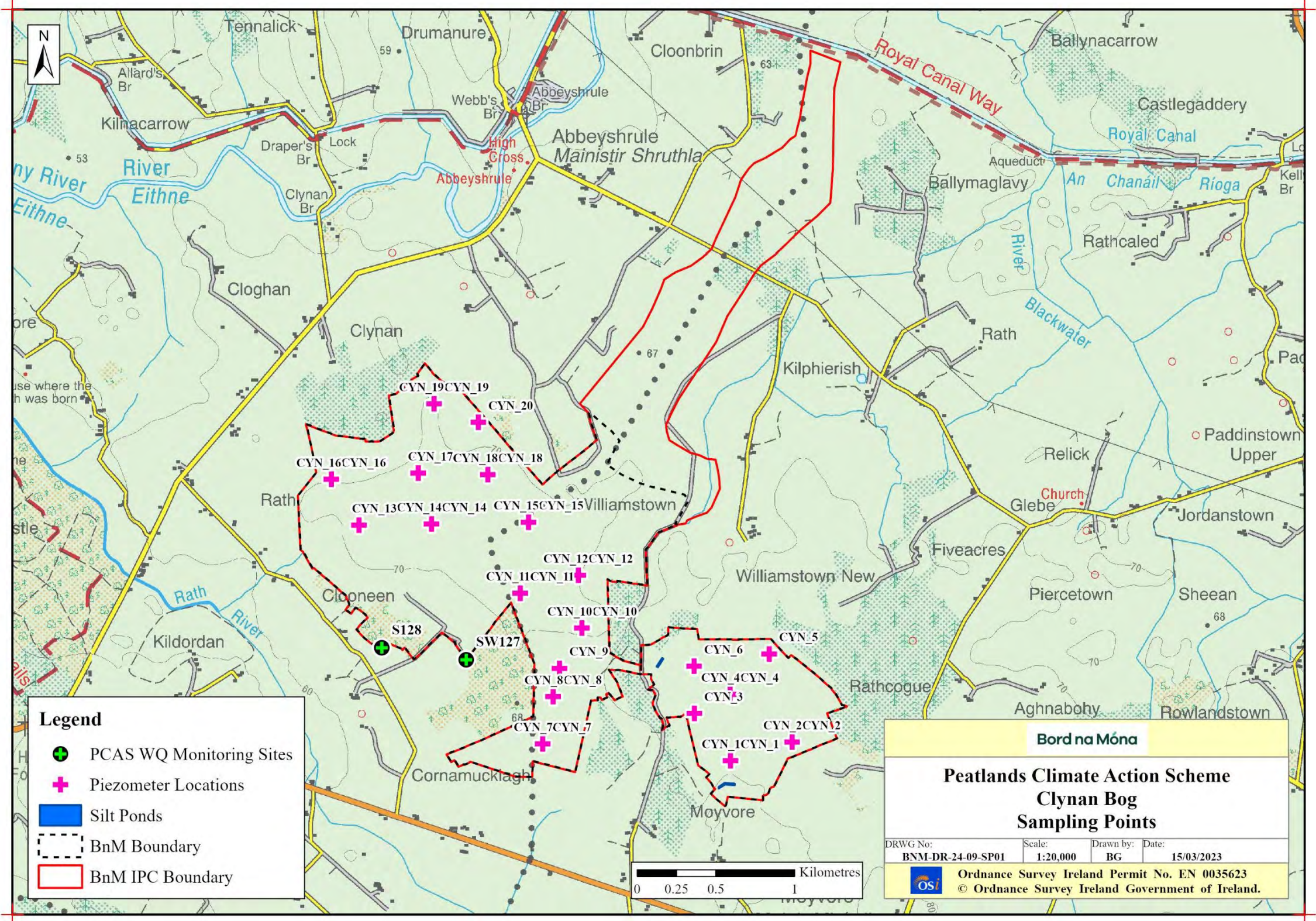






Hydrology / Topography Maps





Legend

- + PCAS WQ Monitoring Sites
- + Piezometer Locations
- Silt Ponds
- BnM Boundary
- BnM IPC Boundary

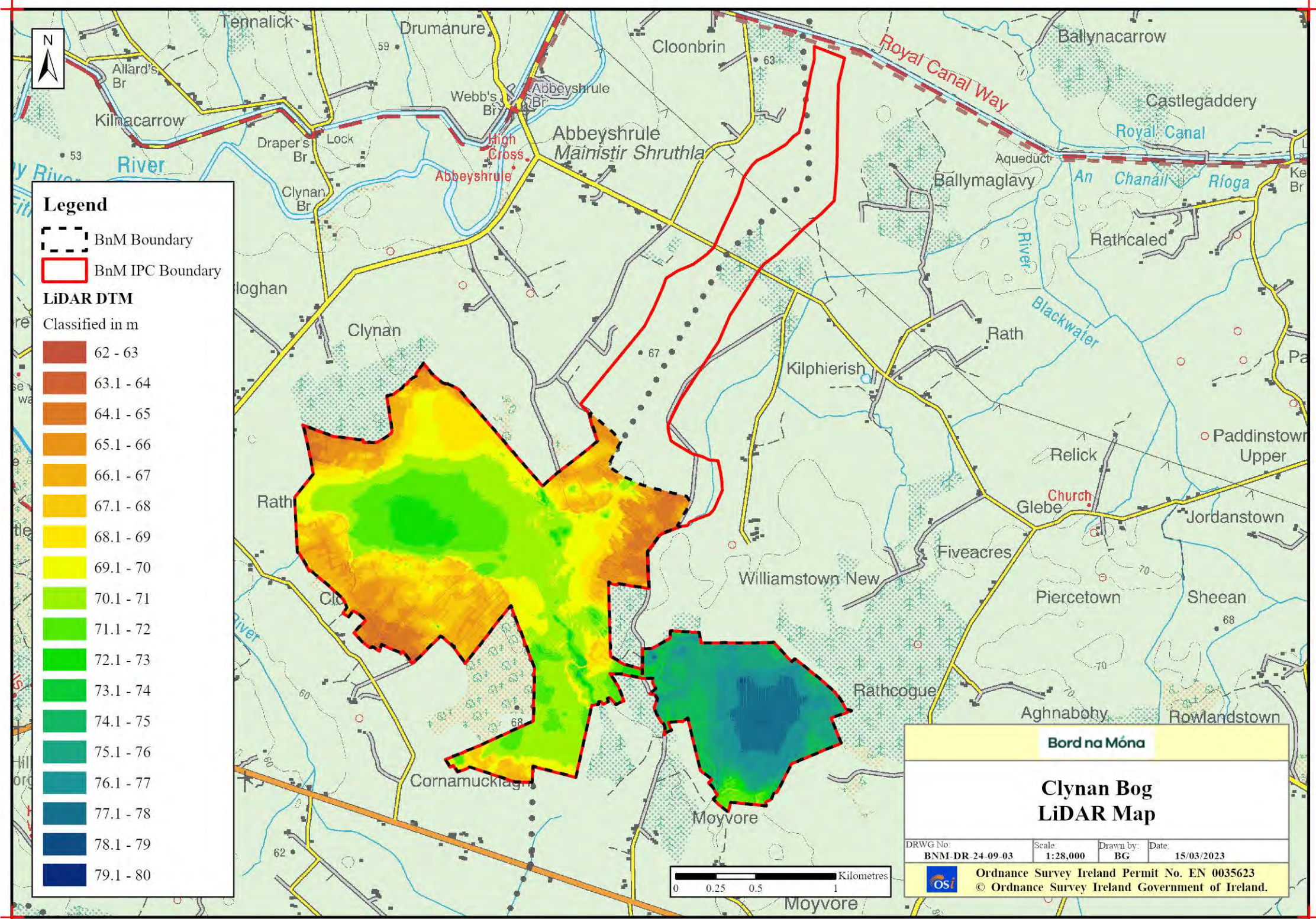
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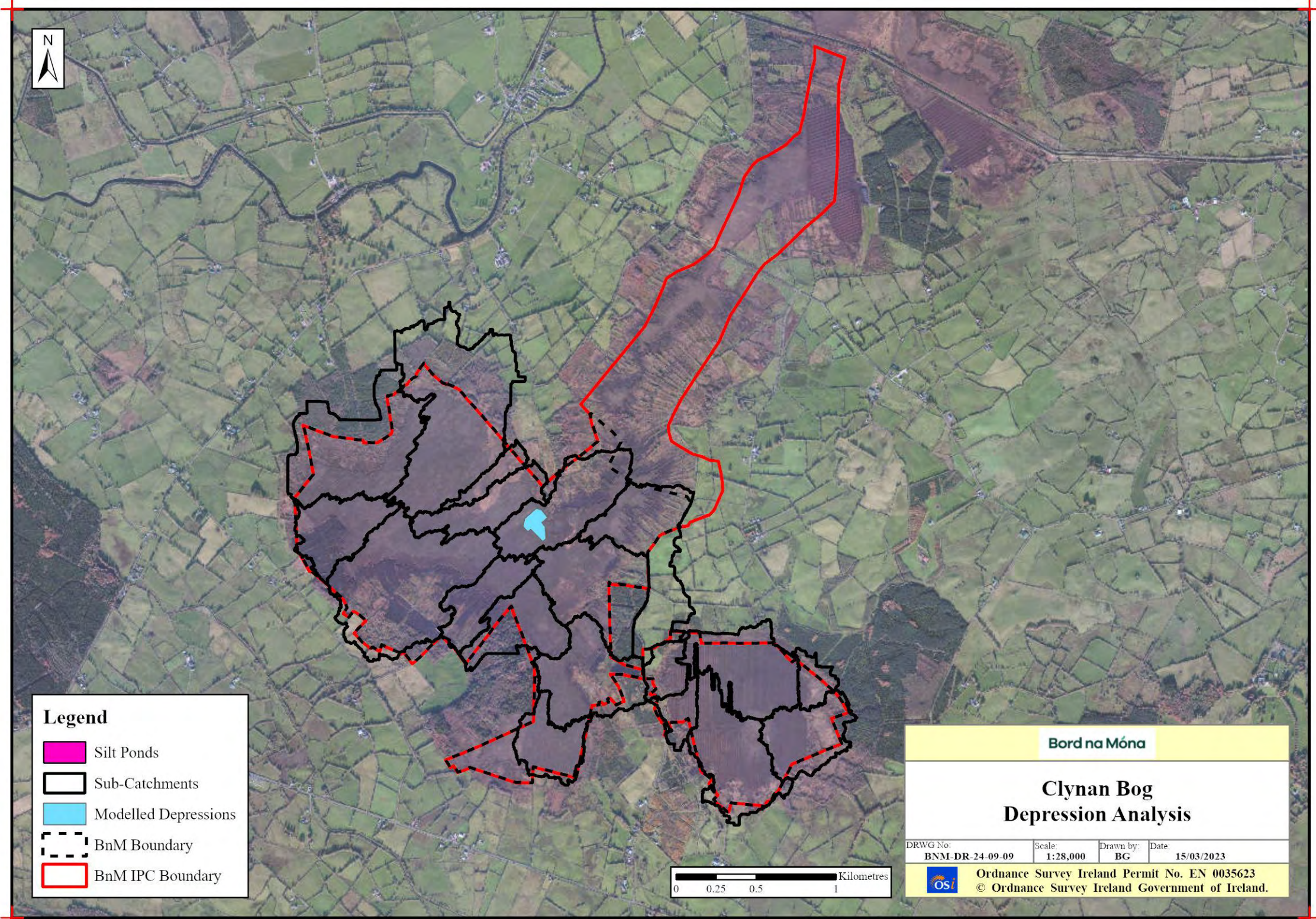
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Clynan Bog
Sampling Points**

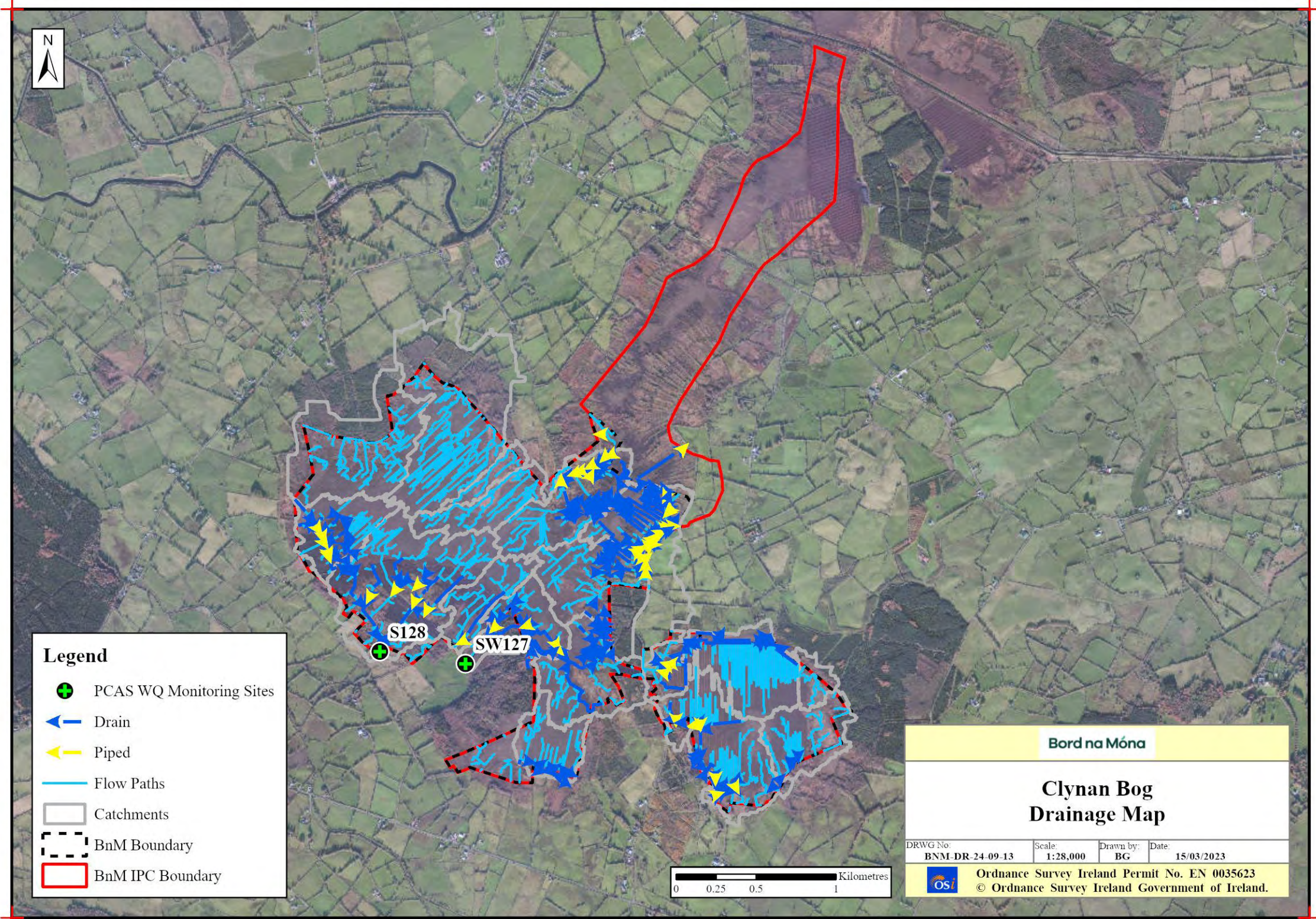
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| DRWG No: BNM-DR-24-09-SP01 | Scale: 1:20,000 | Drawn by: BG | Date: 15/03/2023 |
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Rehabilitation Maps

