Planning and Environmental Consultants

Article 6(3) Appropriate Assessment Screening Report

Ballycon Bog, Co Offaly Decommissioning and Rehabilitation 2022

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1. INTRODUCTION

1.1 Background

McCarthy Keville O'Sullivan Ltd. (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 Ballycon Bog, Co Offaly.

The current project is not directly connected with, or necessary for the management of any European Site, consequently the project has been subject to the Appropriate Assessment Screening process.

The assessment in this report is based on a desk study and field surveys between 2011 and 2020 by Bord na Móna (BnM) ecologists and on a site visit on the 11th of February 2022 by Inga Reich of MKO. It specifically assesses whether the proposed rehabilitation works will have any impact upon European Sites.

This report has been prepared in accordance with the European Commission guidance document '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 the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010).

In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

1. *DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government,*
2. *European Communities (2018) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
4. *Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
5. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission,*
6. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission'*
7. *OPR (2021) Appropriate Assessment Screening for Development Management. Practice Note PN01, Office of the Planning Regulator.*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Consultants or project proponents may undertake a form of screening to establish if an Appropriate Assessment is required and provide advice or may submit the information necessary to allow the Screening to be undertaken. Where it cannot be excluded beyond reasonable scientific doubt, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European Site, an Appropriate Assessment (Natura Impact Statement) of the plan or project is required.

1.2.2 Appropriate Assessment (Natura Impact Statement)

The term Natura Impact Statement (NIS) is defined in legislation[1]. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European Site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European Site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

1.2.3 Statement of authority

The site visit was undertaken by Inga Reich (Honours degree in Biology, Ph.D. in Applied Ecology). The report was written by Inga Reich and reviewed by Pat Roberts (B.Sc. (Env.) MCIEEM) who has over 15 years' post graduate experience in ecological consultancy and impact assessment.

[1] *As defined in Section 177T of the Planning and Development Act, 2000 as amended, an NIS means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own and in combination with other plans and projects, for a European site in view of its conservation objectives. It is required to include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for the European site in view of its conservation objectives*

2. DESCRIPTION OF THE PROJECT AND BASELINE ENVIRONMENT

2.3 Site location

Ballycon Bog is located approximately 6km east of Daingean and 8km south-west of Edenderry in Co Offaly (ITM Grid Ref. X 654869 Y 726246). The R400 runs adjacent to the south-west of the bog while the R402 runs about 200m to the north of the site and the L1003 runs about 300m to the east. The site location is shown in Figure 2-1.

2.4 Site description

Ballycon Bog is located in the River Barrow Catchment and in the Figile (020) sub catchment. The River Daingean flows adjacent to the northern boundary of the site and then flows in a south-easterly direction outside the eastern boundary of the site. The River Derrycricket flows in an easterly direction, adjacent to the southern boundary of the site before discharging to the River Daingean. The Ballaghassaan stream flows north through the lands south of Ballycon before joining the Derrycricket near the south-eastern boundary of Ballycon Bog. These watercourses drain towards the River Figile to the south-east of the site. Ballycon Bog is linked by an industrial railway line and a machinery travel path to further bogs – Mountlucas Bog to the west, Derrycricket Bog to the south and Cloncreen Bog to the east. These will be used to transport peat to Edenderry Power for several years until peat stocks are cleared from nearby bogs.

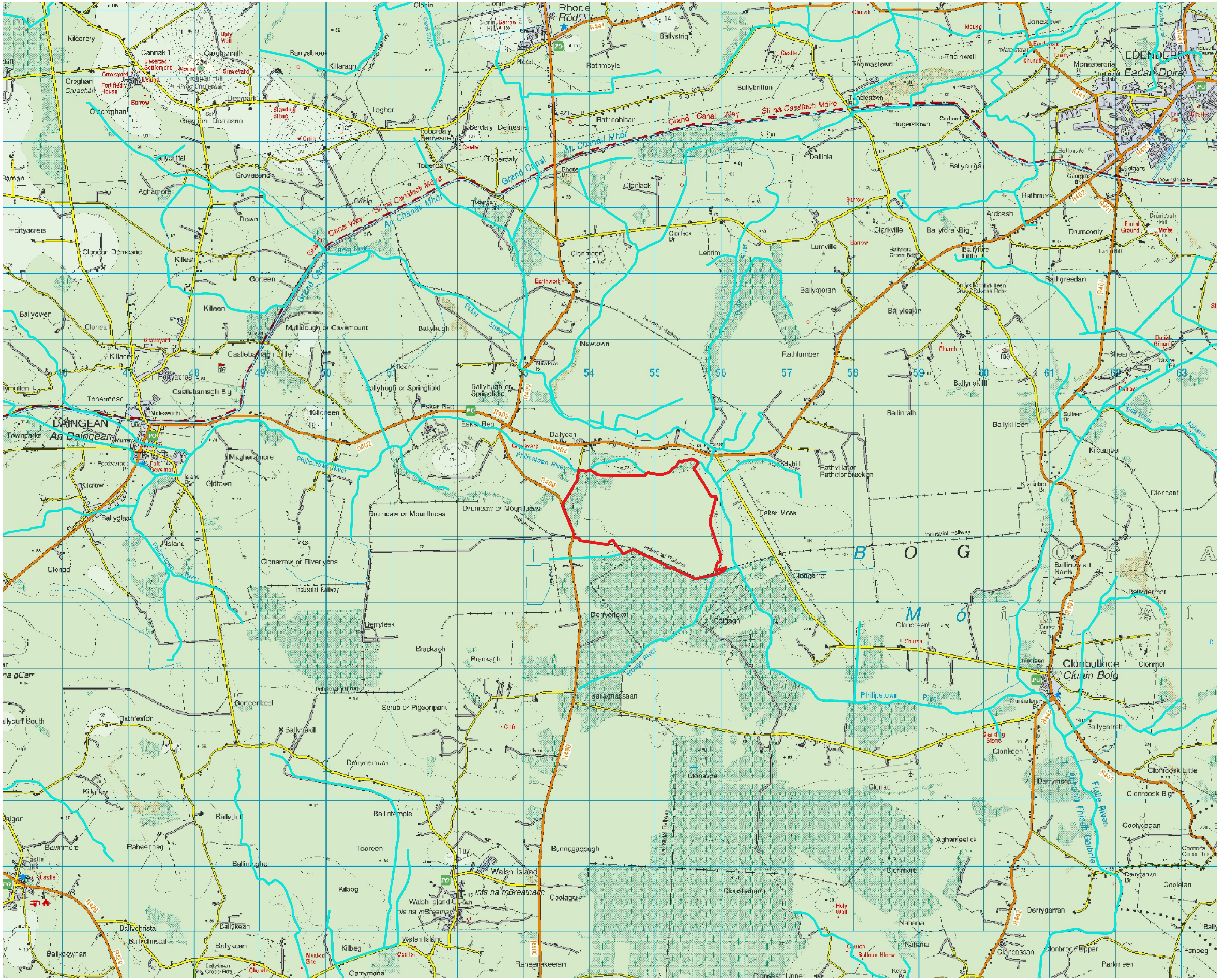
Ballycon Bog was a pumped bog, but the pump has since been decommissioned and the site is now drained by a gravity-based drainage system. Commercial peat production was undertaken at Ballycon Bog between the 1960s and 2001 and the peat was used in the Derrinlough Briquette factory and also as fuel peat for Edenderry Power Station, Offaly. The commercially valuable peat deposits on site have been exhausted. As a result, peat depths on site are shallow, generally 0.5-2.5m, with small discrete pockets of deeper peat (> 2.6m) in the eastern section of the site.

Some rehabilitation works have already been carried out at Ballycon, consisting of drain blocking and bund construction, initially carried out in 2006. In 2015, some headlands were fertilised in 2015 to encourage the development of pioneer dry cutaway habitats. Follow-up drain blocking was carried out in 2018.

The underlying geology at Ballycon Bog is largely Oolithic limestone with a smaller area of Waulsortian Limestones) [2] in the mid-section of the site. The underlying geology of Ballycon bog is calcareous. The underlying soils and sub-soils are classed as 'Cutover/Cutaway Peat'. Peat reserves were exhausted at this site exposing marl in many places. Exposed shell marl incidence is most prevalent on the eastern side of the site. The lowest lying areas of the site are underlain by marl and lacustrine clay (below c. 39.5mOD), while one main ridge of more elevated material (rising to >43.5mOD) trends into the bog in a south-east to north-westerly direction. This has been interpreted as glacial till (based on comparable features present in the surrounding area). The lacustrine deposits encountered would be expected to limit vertical losses to depth in areas where this occurs. Basal peat in Ballycon is largely underlain with lacustrine grey gritty plastic clay, green plastic clay, sand and shell marl.

Part of the western section of Ballycon Bog was developed for conifer forestry in the 1980s and is leased to Coillte and an additional plot of Coillte forestry plantation occurs outside the southern boundary of Ballycon Bog, set back a minimum distance of 20m from the site boundary. The former works area at Ballycon is now leased to a 3rd party (Real Leaf Farm) to develop as a hydroponic farm to grow salad crops. The surrounding landscape is a mosaic primarily consists of low-lying agricultural land (pasture) interspersed with other raised bogs, many of which have also been managed by BnM for peat production with some areas utilised for domestic turf-cutting.

[2] https://www.gsi.ie/en-ie/data-and-maps/Pages/Bedrock.aspx



Map Legend

- Site boundary
- Watercourse

N

Field	Value
Drawing Title	Site location Ballycon Bog
Project Title	Bord na Mona Bog Rehabilitation
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2.2 Characteristics of the Peatland Climate Action Scheme

2.2.1 Overview

Bord na Móna operates under IPC Licence issued and administered by the EPA to extract peat within the Allen/Clonsast bog group (Ref. P0503-01), of which Ballycon Bog is part of. As part of Conditions 10.1 and 10.2 of this license, respectively, decommissioning and rehabilitation (D & R) must be undertaken to ensure the permanent rehabilitation of the cutaway bog lands within the licensed area.

A document titled '*Ballycon Bog Cutaway Bog Decommissioning and Rehabilitation Plan 2022'* has been prepared specifically to describe the proposed D & R measures at Ballycon 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 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 Ballycon Bog. This proposed scheme will significantly go beyond what is required to meet rehabilitation obligations under existing EPA IPC licence conditions.

Decommissioning seeks to address condition 10.1 of license Ref. P0503-01, 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. P0503-01 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. P0503-01:

"*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.

2.2.2 Decommissioning and rehabilitation stage

The proposed **decommissioning** at Ballycon Bog includes:

- clean-up of bog,
- cleaning of existing silt ponds,
- decommissioning or removal of buildings and compounds.

Where relevant, fuel tanks and associated facilities will be decommissioned and bog pumps and septic tanks will be decommissioned and removed

Enhanced measures include:

- removal of railway lines,
- measures to restrict access to areas of the bog e.g., around silt ponds).

If applicable, bridges, underpasses and railway lines will be decommissioned, and high voltage power lines will be removed.

Of the 280.97 Ha, 233.61 Ha or 83.1% of the present landcover will be subject to **rehabilitation** measures. 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 (Figure 2-2). Prescriptive measures are unique to the existing baseline habitats and comprise 3 no. broad categories, 1) those associated with dry cutaway (Table 2-1), 2) measures associated with deep peat cutover bog (Table 2-2) and 3) those associated with wetland cutaway (Table 2-3). 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 Ballycon 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).

Access during the D & R phase will be through the existing entrance at the south-western corner of the bog, where existing infrastructure is already in place via access tracks and railway lines to facilitate the previous peat extraction.

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 Ballycon Bog, along with:

- Significant international engagement during this period with other countries in relation to best-practise regarding peatland rehabilitation and after-use through the International Peatland Society and the Society for Ecological Restoration (Joosten & Clarke 2002; Clarke & Rieley 2010; Gann et al. 2019);
- Consultation and engagement with internal and external stakeholders;
- GIS Mapping;
- BnM drainage surveys;
- Bog topography;
- Hydrological modelling.

2.2.2.1 Methodology

Decommissioning

Decommissioning at Ballycon will involve the deployment of a work crew to collect and oversee the removal of any remaining plant or potentially contaminating waste left in situ in line with Condition 7 of License Ref. P0503-01. This condition specifically requires that BnM's procedures for the 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 the IPC license 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 EPA. Waste sent off-site for recovery or disposal shall only be conveyed to a waste contractor, as agreed by the

EPA, 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.

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

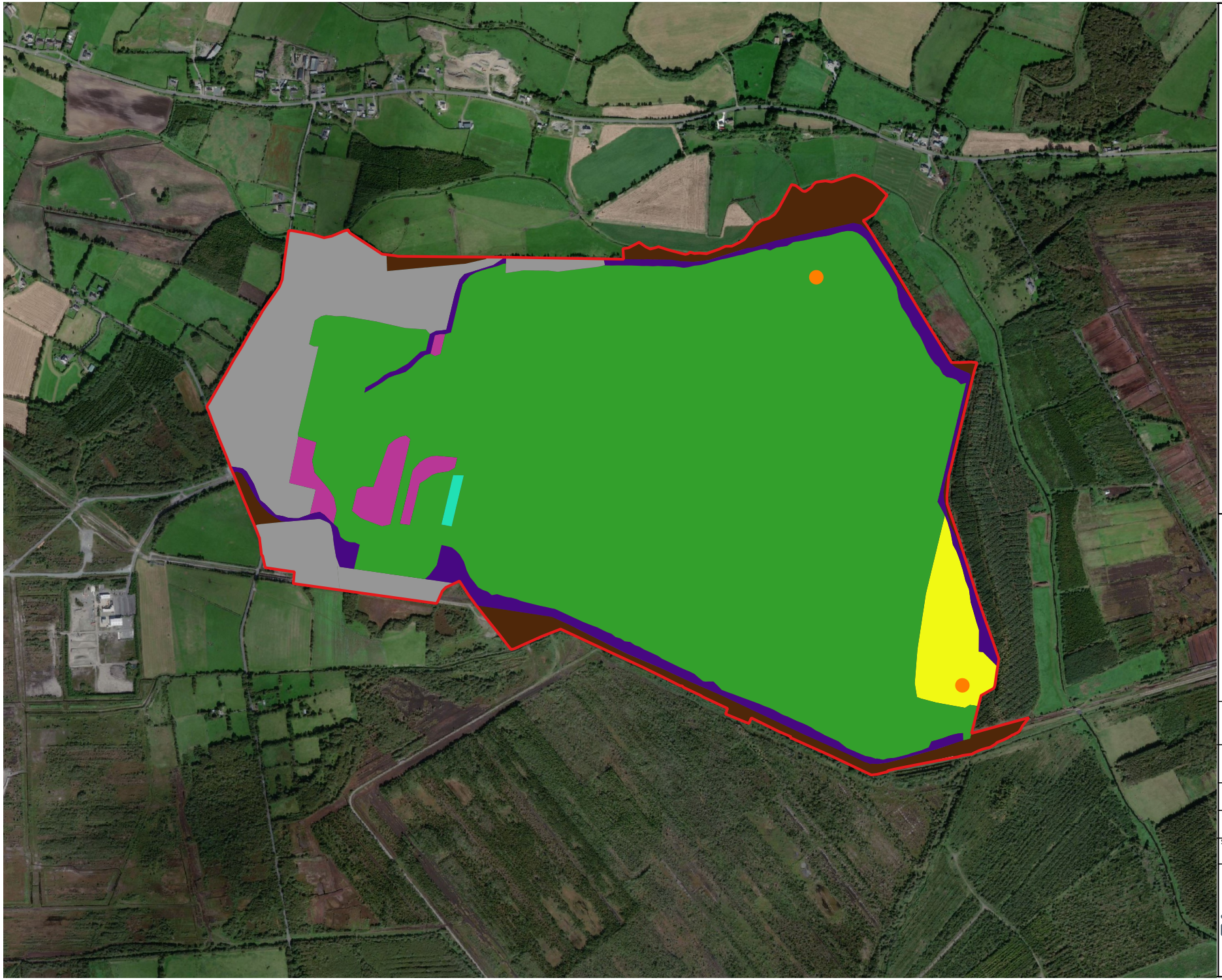
- The names of the agent and transporter of the waste;
- The name of the persons responsible for the ultimate disposal/recovery of the waste;
- The ultimate destination of the waste;
- Written confirmation of the acceptance and disposal/recovery of any hazardous waste consignments sent off-site;
- The 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;
- Details of any rejected consignments.

A copy of this Waste Management record shall be submitted to the agency as part of the AER for Ballycon Bog. As required by the license, these waste items will be removed for recycling or disposal, using external contractors with the required waste collection permits, with waste records maintained as required. Where possible, BnM 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 license. Decommissioning may also include measures to restrict access to the bog or silt ponds.

Lifting of rail lines: this will be facilitated by a manual work crew either a) loading rail line components onto a trailer and removing a) direct to contractor, b) to a consolidation area via tractor, prior to disposal, or c) utilizing the rail line itself to remove the components in reverse order onto a locomotive trailer, with again, the parts being delivered up the rail line to be stored and/or disposed of, in line with IPC license conditions.

Bog area clean up: These bog areas include the parking spaces for production plant and equipment, locations for storing rail line, drainage pipes and stockpile covering. All remaining or unconsolidated old and unused polythene will be collected for recycling or disposal, depending on condition. Any remaining older and immobile plant will be brought in from the bog and removed off site. Any remaining hazardous waste oils, fluids and batteries will be removed off site by qualified appropriate hazardous waste contractors. All remaining unused drainage pipes will be gathered up for reuse, recycling or disposal. All remaining, unconsolidated unused rail line sections will be collected from the bog and stored at the main access location for dismantling.



Drawing Title
Ballycon Bog Rehabitilation Measures

Project Title
Bord na Mona Bog Rehabilitation

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Project No.	Drawing No.
211019	2-2
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Rehabilitation

Dry cutaway rehabilitation packages

The key intervention to be applied to dry cutaway is re-wetting of peat to encourage natural colonisation of typical vegetation and the development of *Sphagnum*-rich peat-forming vegetation communities. This requires managing water-levels close to the surface of the peat for most of the year (100mm ± 50mm). Several different approaches can be taken to this type of restoration/rehabilitation, and three rehabilitation packages with different intensities to managing suitable hydrological conditions are proposed (Table 2-1).

Table 2-1: Extent of dry cutaway rehabilitation proposed at Ballycon.

Dry Cutaway		Extent (Ha)
DCT1	Blocking outfalls and managing water levels with overflow pipes	5.18
DCT2	Regular drain blocking (3/100 m) + blocking outfalls and managing water levels with overflow pipes + targeted fertiliser treatment	11.72
DCT3	More intensive drain blocking (max 7/100 m) + blocking outfalls and managing water levels with overflow pipes + targeted fertiliser treatment	N/A

The constituent prescriptions which combine to form the dry cutaway rehabilitation packages DCT1 and DCT2 at Ballycon Bog are further described, namely:

1. Blocking outfalls
2. Managing water levels with overflow pipes
3. Regular drain blocking (3/100m)
4. Targeted fertiliser treatment

1. Blocking outfalls (Appendix 2, PCAS-0100-014)

The key objective from targeted blocking of outfalls within a bog is to re-wet peat but to manage waterlevels at an appropriate level for the development of wetland and peatland vegetation. This measure optimises re-wetting of cutaway. This measure also has additional benefits of reducing fluvial carbon loss (via water) and also improving water quality leaving the site by reducing emissions of silt and ammonia. Targeted blocking of outfalls is suitable for bogs or portions of bogs that have already had a period of natural colonisation, minimising disturbance to pioneer habitats that are already developing. It is also appropriate for locations where there is establishing habitats and where former drainage infrastructure is already starting to break down. Hydrological modelling and an understanding of site drainage is required to identify appropriate locations for targeted drain-blocking to maximise re-wetting. Drains are blocked at these locations using an excavator by lifting pipes and filling holes with peat or local sub-soils.

Again, the key objective is to manage water-levels at 0-0.1m above the peat surface for as much of the year as possible. Some deeper water is inevitable due to heterogenous topography of the cutaway. This measure can be particularly effective as outfall pipes generally run perpendicular to field drains to catch and transport water off the bog. The outfalls have been piped through high fields. Blocking pipes at the high fields means that the high fields can be converted to natural berms or embankments, creating a compartmented wetland.

An Excavator is used to form a key on either side of the drain which forms the outfall from the bog or field. A strip of peat is taken from the centre of the adjacent field, pushed into the drain and compacted by the bull-dozer tracking over the drain block from the opposite side of the drain to the excavator. The approximate width of the block is 3-5 times the width of the drain. Blocks have to be wide enough to prevent water moving around the blockage and to prevent further leakage when the block subsides. Where possible and available, vegetation is used to cover the peat forming the outfall blockage. This measure is strongly linked with the next in respect of water level management.

2. Managing water levels with overflow pipes (Plate 2-1; Appendix 2, PCAS-0100-014)

This prescription is associated strongly with the blocking of outfalls. Following the blocking of outfalls, some high fields may require overflow pipes to be installed to manage water levels at the required height above peat surface and/or in instances where a series of high fields have been flooded using the cascade effect, the lowermost field may require the outfall to be piped and managed to facilitate access for example.

The first step is to block the existing drain where the pipe exits to stop flows. A new transverse field drain and pipe is then placed above the route of the previously blocked and now redundant pipe, to a specified invert level. The drain holding the new, raised pipe, is filled in using an excavator or bulldozer as appropriate.

Plate 2-1: Examples of installed overflow pipes

3. Regular drain blocking (3/100m) (Appendix 2, PCAS-0100-008)

This measure can be applied to cutover bog, cutaway bog and drained raised bog with different environmental characteristics. It can be applied to residual peat of various depths including deep cutover peat. The main objective is to place peat blockages in drains to raise water levels, re-wetting peat and slowing water movements through the site. Slowing water movement will have additional benefits of reducing fluvial carbon loss (via water) and also improving water quality leaving the site by reducing emissions of silt and ammonia.

The number of peat blockages per 100m is determined by the topography of the site, but an allowance has been estimated at on average 3 blocks per 100m of field drain. The methodology follows NPWS guidelines published by the National Parks and Wildlife Service (Mackin et al., 2017) and in line with methodologies originally developed by McDonagh (1997).

Typical existing bare peat fields are cambered (higher) in the centre and lower towards the drains, helping drainage of the fields but limiting the re-wetting of the central area. The concept of drain blocking is to raise the water levels in the drains to re-wet the cutaway and slow the water movement through the bog. 'Speed Bumps' allow for peat subsidence and to prevent water from flowing over the drain block and eroding it before it becomes stabilised.

Phase 1 begins with the creation of a 'key' on either side of the drain. The dozer cuts down and pushes out peat 0.5-1m from the edge of the drain, with an equivalent section on the other side of the drain.

The next step comprises forming the 'Speed Bump' itself. A strip of peat is taken from the central camber of the field, pushed into the drain and keyed area and compacted by a bull-dozer tracking over the drain block, to form an approximately 5m Wide 'Speed Bump'.

Fields are then completed with Speed Bumps (at an approximate ratio of 3 Per 100m). Speed bumps are profiled to ensure that the overall field profile is lower in the centre and higher over the drain blocks.

4. Targeted fertiliser treatment

Rock phosphate will be applied to areas of bare peat on headlands, high fields and other areas to accelerate establishment of vegetation either by hand or using a tractor. The application rate will be kept to a minimum.

Deep peat cutover bog rehabilitation packages

The key intervention to be applied to deep peat cutover bog is re-wetting of peat to encourage natural colonisation of typical vegetation and the development of *Sphagnum*-rich peat-forming vegetation communities. This requires managing water-levels close to the surface of the peat for most of the year (0.1m ± 0.05m). Several different approaches can be taken to this type of restoration/rehabilitation, and five rehabilitation packages with different intensities to managing suitable hydrological conditions are proposed (Table 2-2).

Table 2-2: Extent of deep peat cutover bog rehabilitation proposed at Ballycon.

Deep peat cutover bog		Extent (Ha)
DPT1	Regular drain blocking (3/100 m) + blocking outfalls and managing water levels with overflow pipes	N/A
DPT2	More intensive drain blocking (max 7/100 m) + blocking outfalls and managing water levels with overflow pipes + *Sphagnum* inoculation	7.96
DPT3	More intensive drain blocking (max 7/100 m) + field reprofiling & blocking outfalls and managing water levels with overflow pipes + *Sphagnum* inoculation	N/A
DPT4	Berms and field reprofiling (45m x 60m cell) + blocking outfalls and managing water levels with overflow pipes + drainage channels for excess water + *Sphagnum* inoculation	N/A
DPT5	Cut and fill cell bunding (30m x 30m cell) + blocking outfalls and managing overflows + drainage channels for excess water + *Sphagnum* inoculation	N/A

The constituent prescriptions which combine to form the deep peat cutover bog rehabilitation package DPT2 at Ballycon Bog are further described below, namely:

1. More intensive drain blocking (max 7/100m)
2. Blocking outfalls (see *dry cutaway rehabilitation* for details)
3. Managing water levels with overflow pipes (see *dry cutaway rehabilitation* for details)
4. *Sphagnum* inoculation

1. <u>More intensive drain blocking (max 7/100m)</u> (Appendix 2, PCAS-0100-002)

This measure can be applied to cutover bog, cutaway bog and drained raised bog with different environmental characteristics. It can be applied to residual peat of various depths including deep cutover peat. The main objective is to block drains with peat barriers to raise water levels, re-wetting peat and slowing water movements through the site. Slowing water movement will have additional benefits of reducing fluvial carbon loss (via water) and also improving water quality leaving the site by reducing emissions of silt and ammonia.

The number of peat blockages per 100m is determined by the topography of the site, but an allowance has been estimated at a maximum of 7 blocks per 100m of field drain. The methodology follows NPWS guidelines published by the National Parks and Wildlife Service (Mackin et al., 2017) and in line with methodologies originally developed by McDonagh (1997). The increased number of peat blockages (compared with the standard measures) will benefit re-wetting and trapping silt on cutaway with slightly greater slopes and will further slow the movement of water from these sites.

1. Before building of dams, the sides and bottom of the ditch is cleaned using the excavator to remove dry degraded peat, to ensure a good peat-to-peat contact. If any vegetation is present, it is carefully removed and left aside for replacement at the end of the process.

2. A 'key' is then cut in either side of the drain approximately 500mm deep, and it is ensured that the width is wider than the actual drain. Approximately 500mm depth of peat is removed from the bottom of the drain also and placed behind the machine for replacement later.

3. An area is opened behind the machine to be used as a borrow pit. Using the surface layer of peat (i.e. the top 100-200mm) is avoided, as it is likely to be very permeable. Only the deeper, more compacted peat is used to build the dam. (again, if any vegetation is present, it is carefully removed and left aside for replacement at the end of the process).

4. Peat is then dug out from the borrow pit and placed into the drain compacting it in 300mm layers. The peat is compacted firmly using the excavator bucket before laying more peat from the borrow pit.
5. The dam is built up to a height at least 300mm-500mm above the ground level of the bog to allow for subsequent shrinkage of the peat as it dries. Any vegetation taken in step 1 or step 3 is then placed on the top of the dam, to help bind and stabilise the drain block.)

6. The borrow pit is backfilled with the peat extracted from the bottom of the drain in step 2. The sides of the peat borrow hole are firmly pressed with the excavator bucket to grade the sides of the borrow pit. This enhanced measure's main objective is to block drains with peat dams to raise water levels, re-wetting peat and slowing water movements through the bog.

4. *Sphagnum* inoculation

The main objective of this enhanced rehabilitation intervention is to accelerate the rate of natural colonisation of *Sphagnum* moss at suitable sites by introducing donor material. The presence of *Sphagnum*-rich vegetation on peatlands brings significant benefits as this is considered a potential carbon sink.

There is potential to use *Sphagnum* inoculation to establish and diversify selected small areas on target sites with *Sphagnum* species, which in turn, and in combination with natural colonisation, can then naturally colonise the remaining deep peat cutover bog area. *Sphagnum* inoculation should only be used in appropriate environmental conditions (water-logged, deep peat with stable water levels and with more acidic water chemistry).

It is proposed to use locally sourced *Sphagnum* and procured donor material, sourced from older established Bord na Móna cutover bog sites where possible, to inoculate Bord na Móna deep peat cutover bogs. Small amounts (handfuls) will be distributed into the newly created cells on deep peat cutover bog. This material can be planted into the soft peat or scattered into shallow water. The use of significant volumes of *Sphagnum* donor material is constrained by the small amount of suitable donor material and donor sites. It is also proposed to use *Sphagnum* donor material developed in greenhouses (e.g., Beadaplugs), where suitable donor material can be made available, and where this is required.

There are significant benefits for climate action from establishing *Sphagnum*-rich peatland vegetation communities. These have been found to quickly develop as carbon sinks (> 10 year). This enhanced measure will be used in combination with some of the other enhanced re-wetting measures (cut and fill cell bunding) to accelerate and optimise the development of *Sphagnum*-rich vegetation on suitable deep peat cutaway sites.

Wetland cutaway rehabilitation packages

The key intervention to be applied to wetland cutaway is re-wetting of peat and maximisation of water retention to aid the development of wetland habitats comprising e.g., reed beds. This requires managing water-levels to reach depths of < 0.5m during the summer so wetland vegetation can develop. Several different approaches can be taken to this type of restoration/rehabilitation, and five rehabilitation packages with different intensities to managing suitable hydrological conditions are proposed (Table 2-3).

Table 2-3: Extent of wetland cutaway rehabilitation proposed at Ballycon.

Wetland Cutaway		Extent (Ha)
WLT1	Turn off or reduce pumping to re-wet cutaway + blocking outfalls and managing water levels with overflow pipes	N/A
WLT2	Turn off or reduce pumping to re-wet cutaway + blocking outfalls and managing water levels with overflow pipes + targeted blocking of outfalls within a site	N/A

WLT3	Turn off or reduce pumping to re-wet cutaway + blocking outfalls and managing water levels with overflow pipes + targeted blocking of outfalls within a site + constructing larger berms to re-wet cutaway + transplanting reeds and other rhizomes	0.49
WLT4	More intensive drain blocking (max 7/100 m), + blocking outfalls and managing water levels with overflow pipes + transplanting reeds and other rhizomes	N/A
WLT5	More intensive drain blocking (max 7/100 m), + field reprofiling + blocking outfalls and managing water levels with overflow pipes + transplanting reeds and other rhizomes	N/A

The constituent prescriptions which combine to form the Wetland Rehabilitation package WLT3 at Ballycon Bog are further described, namely:

1. Turn off or reduce pumping (no explanation required)
2. Blocking outfalls (see *dry cutaway rehabilitation* for details)
3. Managing water levels with overflow pipes (see *dry cutaway rehabilitation* for details)
4. Blocking outfalls (targeted) (see *dry cutaway rehabilitation* for details on blocking outfalls)
5. Constructing larger berms to re-wet cutaway
6. Transplanting reeds and other rhizomes

5. Constructing larger berms to re-wet cutaway (Appendix 2, PCAS-0100-010)

This measure can be applied to cutover bog, cutaway bog and drained raised bog with different environmental characteristics. It can be applied to residual peat of various depths including deep cutover peat. The main objective is to block drains with peat barriers to raise water levels, re-wetting peat and slowing water movements through the site. Slowing water movement will have additional benefits of reducing fluvial carbon loss (via water) and also improving water quality leaving the site by reducing emissions of silt and ammonia.

Typical existing production fields are cambered (higher) in the centre and lower towards the drains, helping drainage of the fields but limiting the re-wetting of the central area. The concept of cross berms is to slow the water movement through the bog and promote the creation of enclosed areas of wetland habitat with shallow water levels – in particular in areas where shallow peat depths remain.

The typical approach can be described as a number of phases.

Phase 1: Forming Key and Initial Drain Block

An excavator is used to form a key in the Drain where the berm crosses. A strip of peat is taken from the central camber of the field, pushed into the drain and compacted by the bull-dozer tracking over the drain block from the opposite side of the drain to the excavator. A key is also formed similarly on the opposite side of the production field at the end of the proposed berm.

Phase 2: Forming Peat Berm

Next the bull-dozer is used to complete the central cross section of Berm by taking peat from the centre of the field and pushing it in line with the field to form an approximately 5m Wide x 500mm High Cross Berm.

6. Transplanting reeds and other rhizomes

Rhizomes will be collected from a donor area and transported to the site where they will be distributed throughout the respected area and replanted using an excavator. Through the other measures in this package, water levels will be kept high enough to encourage the development of reedbeds. This option may likely not be required as there has already been significant natural colonisation.

The number of peat blockages per 100m is determined by the topography of the site, but an allowance has been estimated at a maximum of 7 blocks per 100m of field drain. The methodology follows NPWS guidelines published by the National Parks and Wildlife Service (Mackin *et al.,* 2017) and in line with methodologies originally developed by McDonagh (1997). The increased number of peat blockages

(compared with the standard measures) will benefit re-wetting and trapping silt on cutaway with slightly greater slopes and will further slow the movement of water from these sites.

Peat blocks are constructed efficiently by excavator and bulldozer generally operating at a perpendicular direction to the field drains. The process involves clearing the drain by removing dry degraded peat/ vegetation and creating a 'key' (wider than the drain and approximately 0.5m deep) in the drain sides in order to ensure a tight seal is maintained. The drain is subsequently blocked with peat taken from a nearby 'borrow pit' (avoiding the top 0.1-0.2m) and involves placing layer after layer (about 0.3m each) of peat which are compacted in the drain using the bucket of the excavator. The blockage will be built up at least 0.3-0.5m above the ground level of the bog to allow for subsequent shrinkage that occurs during peat drying. If vegetation was removed from the drain before clearing it, this should be placed on top of the blockage. The 'borrow pit' will be filled in with the peat that was extracted from the bottom of the drain and the sides of the pit should be pressed down and graded.

Additional work rehabilitation packages

Additional drain blocking will be carried out in the majority of the site (Table 2-4).

Table 2-4 Extent of additional work proposed at Clooneeny

Additional Work		Extent (Ha)
AW2	Targeted drain blocking (1 per 100m) with excavator	208.26

This method is comparable to the More intensive drain blocking methodology which has been described in the *dry cutaway rehabilitation* packages section above.

Silt ponds

For the avoidance of doubt, silt ponds were installed, operated and maintained as required by conditions 6.6, 6.7 and 6.8 of the applicable Integrated Pollution Control Licence that regulates this bog, for the historical treatment of surface water from peat extraction activities. These silt ponds will be continued to be operated, maintained and monitored as required by the licence until they can be decommissioned.

2.2.2.2 Timescale

- Decommissioning activities will be completed within a period of 12 months but may be phased across 2 calendar years and are scheduled to be completed before the end of 2022.
- Rehabilitation activities will be completed within a period of approximately 7 months. In general, 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.

2.2.2.3 Use of natural resources

- There is no land requirement in respect of decommissioning.
- In total, rehabilitation activities will take place on 233.61 Ha of land. As rehabilitation through stabilisation and land cover change is the primary objective, no 'negative quality' land take is associated with rehabilitation. No land take is required for e.g., the storage of vehicles – vehicles are typically left in situ at points of work or on 'headlands'.
- No additional water is required for either decommissioning or rehabilitation.
- Regarding decommissioning, some peat or topsoil material which is contaminated may be removed in line with Schedule 2 of the IPC license. This is considered negligible in magnitude.
- During rehabilitation, minor quantities of existing peat will be excavated from drainage trenches and/or an immediately adjacent borrow pit at peat dam locations and immediately used to form peat dams. Borrow pits are re-instated, as the final step in dam creation, by the excavator driver

profiling the surrounding peat/scraw into place over the excavated borrow pit. In each instance the magnitude of extracted peat is negligible. Similarly, the installation of overflow pipes may require excavation of minor quantities of peat, and/or subsoil dependent on location (Insertion of peat blockages/overflow pipes may interact with underlying subsoils where peat depths are shallow). All material used will be from the immediate vicinity and no transport of material will be required.

- Dozers may be used to infill drains with peat displaced by screw levelling. Peat will also be utilised to infill any blocked outfalls or raised drainage pipes.
- Reeds and other rhizomes will be transplanted into wetland cutaway.
- Hydrocarbons will be used on-site during rehabilitation activities and will be limited to the diesel or petrol fuel and mechanical oils used by any onsite site machinery and equipment.
- Fertilisers may be used to treat high fields and headlands to encourage natural colonisation.

Emissions and wastes

- Dust, noise and localised vibration along access routes arising from the arrival and departure of decommissioning vehicles or rehabilitation machinery will be localised to the access tracks or rail line, occur in low volumes and last for a negligible duration – it is common practice on BnM working bogs to leave vehicles in situ once on site, therefore daily trips into and out of the bog are not expected. Dust and noise limits are currently set on IPC licenses.
- Regarding rehabilitation, the extent of dust, noise and localised vibration from individual machines creating peat dams to block drains or blocking outfalls is momentary in duration and therefore considered negligible in magnitude. Creating 'speed bump' blockages or infilling drains produces a higher potential for the release of dust, however the duration of this is expected to be brief (i.e., with effects lasting less than a day).
- Fuel and some pipes may require to be delivered. No blasting or piling is required.
- General waste will arise from the presence of staff. Very small quantities of chemical waste will be generated, this waste is limited to solid waste oil, such as oily rags.

2.2.3 Operational stage

Operational activities

- Operational activities will mainly comprise non-intrusive environmental & ecological monitoring (including surface water monitoring, vegetation monitoring but also the use of drones to provide catalogues of aerial photography) and may also include minimal works such as repairs to existing peat blockages, adjustment of overflow pipes (where required) and fertilisation to increase successional rates.
- Maintenance of existing silt ponds to reduce emissions to local water bodies, as conditioned by the existing IPC license, will still be required.
- Access during the D & R phase will be through the existing entrance at the south-western corner of the bog, where existing infrastructure is already in place via access tracks and railway lines to facilitate the previous peat extraction.

Timing and duration of operational activities

- It is expected that scheduled inspection and maintenance activities will be carried out by a 2-4 person team, typically for 1 day per month, for the foreseeable future.
- Once constructed and commissioned, the proposed decommissioning and rehabilitation will remain permanently in place.

Use of natural resources

- There is limited requirement for the use of natural resources – negligible quantities of peat or subsoil may be used to repair existing or create additional drain blocks.

Emissions and wastes

- There will be negligible exhaust fumes, dust and noise emitted by maintenance vehicles and or other equipment such as drones during occasional maintenance works, such as to outflows.
- Collectively, re-wetting and re-vegetating will minimise any risk of emission to air from dust. During the operational stage of peatland rehabilitation, typical emission of dust from exposed peat to air is expected to cease.
- Following rehabilitation and into the early operational stage Ballycon Bog may continue to be a carbon source, however as habitats stabilise following intervention, the bog is expected to, over time, become a carbon sink in part.

2.3 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, Ballycon Bog was surveyed in May of 2010 and re-surveyed in 2015. Additional ecological walkover surveys and visits have taken place at Ballycon Bog between 2012-2021 with a final visit undertaken in June 2021. Habitat maps have been updated, where required. This rehabilitation plan is informed by the original baseline survey as well as subsequent confirmatory site walk-over surveys and visits, and updates to baseline data.

Habitat mapping followed best-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 (2010), 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 detailed ecological survey report for Ballycon Bog is contained in Appendix III of Appendix 1.

A walkover survey was conducted on the 11th of February 2022 by Inga Reich to confirm the ecological baseline as identified by Bord na Móna in the preceding surveys and as shown in the habitat map (Figure 2-3). During the survey, 6 mute swans were identified on one of the wetland areas. Footprints of badger were recorded on one of the headlands and possible otter slides were observed going down into the silt pond.

2.3.1 Habitats

The majority of the site is developing a mosaic of wetlands with pioneer poor fen vegetation and emerging scrub (Plate 2-2). As part of earlier rehabilitation works, a long berm was built through the middle of the site from east to west with the main aim to hold more water in the northern half and other sections of the bog and create new wetlands. This work has successfully increased the extent of wetland and pioneer fen habitat in the site.

The western side of the site has been out of production for a longer period of time and therefore has more well-developed habitats. The ground is also somewhat higher and drier, meaning that scrub/ woodland habitats predominate. Part of the western/north-western section of the site was developed for commercial conifer forestry plantation in the 1980s. The section adjacent to the conifer plantation is heavily wooded with some closed Birch scrub developing into immature bog woodland. The majority is open or emergent Birch scrub (in mosaic with pioneering common cotton grass community) with some higher fields also developing some dry heath.

Towards the northern side in this western section and as the ground falls there is some development of wetland vegetation in mosaic with open Birch scrub, with patches of more diverse and open Bottle Sedge and Bog Cotton-dominated vegetation. This area contains tussocks with large hummocks of several different typical bryophytes such as *Calliergonella 17allinago*, *Rhytidiadelphus squarrosus* and *Pleurozium schreberi*. Some of the more acidic sections classified as pioneering common cotton grass community are developing large hummocks of *Sphagnum palustre*, *S. subnitens* and *S. fallax*. Some of the wettest areas have several small pockets of open water with Reedmace. These small ponds were attracting significant numbers of insects. There is also some diverse calcareous grassland on drier ground in this area dominated by Glaucous Sedge that merges and forms mosaics with similar grassland dominated by Purple Moorgrass.

Much of the poor fen developing in the more open central and western zones of the site is dominated by Bog Cotton. More open water has developed on both sides of the central embankment. The fringes of this open water are generally vegetated with Bog Cotton-dominated vegetation (with or without scrub) and smaller amounts of Soft Rush-dominated and Bottle Sedge-dominated vegetation. The open water is divided by several high fields that dissect these areas (some of which have been breached to allow water to pass between them). Some of the poor fen vegetation associated with the wetlands is somewhat more diverse and dominated by Horsetail (*Equisetum palustre*) and Cuckoo Flower (*Cardamine pratensis*) in places, possibly indicating the influence of the exposed marl and sub-soil.

The majority of the mid-eastern section of the site was dominated by a mosaic of bare peat, Bog Cotton and emergent Birch trees (Plate 2-3). This area also contained many small areas of open water along with occasional low-lying fields that were a mixture of bog cotton and open water.
The south eastern corner of the site is a mosaic of wetlands including open water and poor fen vegetation with species such as Bog Cotton, Marsh Arrow Grass and Soft Rush. A large area of Reedbed, dominated by Common Reed, is developing to the south of the largest sections of open water while smaller areas of Reedmace and Common Reed can be found throughout the eastern section of the site. The north-eastern section of the site becomes wetter again with larger areas of open water present. The northern section was similar to the southern sections with poor fen vegetation dominating.

A small area of bog woodland is located at the northern margin of the site (Plate 2-4). The canopy is dominated by Birch and the understorey and shrub layers are quite dense with Holly, Birch, Willow Bramble and Heather. Bilberry and Honeysuckle appear in the ground layer.

2.3.2 Fauna

Bird species observed at Ballycon during the BnM surveys include the rare vagrant bird species Eurasian Marsh Harrier (*Circus aeruginosus*) and Common Crane (*Grus grus*); Annex I species Peregrine Falcon (*Falco peregrinus*), Hen Harrier (*Circus cyaneus*) and breeding waders including Northern Lapwing (*Vanellus vanellus*) and Ringed Plover (*Charadrius hiaticula*). The Amber listed Whooper Swan (*Cygnus cygnus*) occurs during the winter months, and Hen Harrier (also Amber) both forage and potentially roost at the site during the winter months. A Kingfisher (*Alcedo atthis*) has been observed along the river to the south of the site and suitable nesting areas exist along the rivers banks for this species.

On the most recent visit to Ballycon Bog carried out in June of 2021, 24 species of bird were recorded by BnM ecologists utilising or associating with habitats onsite, including the red listed species Snipe (*Gallinago gallinago*) and Meadow Pipit (*Anthus pratensis*). The amber listed species Ringed Plover (*Charadrius hiaticula*), Mallard (*Anas platyrhynchos*), Sky Lark (*Alauda arvensis*; breeding) and Barn Swallow (*Hirundo rustica*) were also recorded during the survey.

Rabbit, hare, fox and otter were recorded on site by BnM and a Badger sett was noted in the small area of bog woodland at the northern margin of the site.

2.3.3 Drainage and connection to European Sites

The bog had field drains running in a general north-northwest to south-southeast orientation. Many of the drains have been blocked by previous rehabilitation efforts or have naturally infilled. One silt pond is present to the south-east of Ballycon (Plate 2-5) to manage discharges into the Ballaghassaan, Derrycricket and Daingean River which ultimately flow into the Figile River east of the site. This eventually flows into the River Barrow and River Nore SAC which is located at a hydrological distance of approximately 24km between the bog discharge point.

Plate 2-2 Wetland and pioneering poor fen habitat with bog cotton, reed mace and birch scrub in the south of the site

Plate 2-3 Mosaic of bare peat recolonising with heather, bog cotton, emergent birch and pine trees and small areas with standing water and occasional soft rush in the east of the site

Plate 2-4 Birch woodland in the north of the site

Plate 2-5 Silt pond surrounded by common reed and scrub to the south-east of the site

Drawing Title

Ballycon Bog Habitat Map

Project Title

Bord na Mona Bog Rehabilitation

Drawn By	Checked By
IR	PR
Project No.	Drawing No.
211019	2-3
Scale	Date
1:15000	09.02.2022

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2.3.4 Consequences of proposed rehabilitation for current habitats

Post rehabilitation, the majority of Ballycon Bog is expected to develop wetland habitats with open water, reed swamp and fen habitats with alkaline emission factors. Birch woodland is expected to develop on the drier mounds and peripheral headlands.

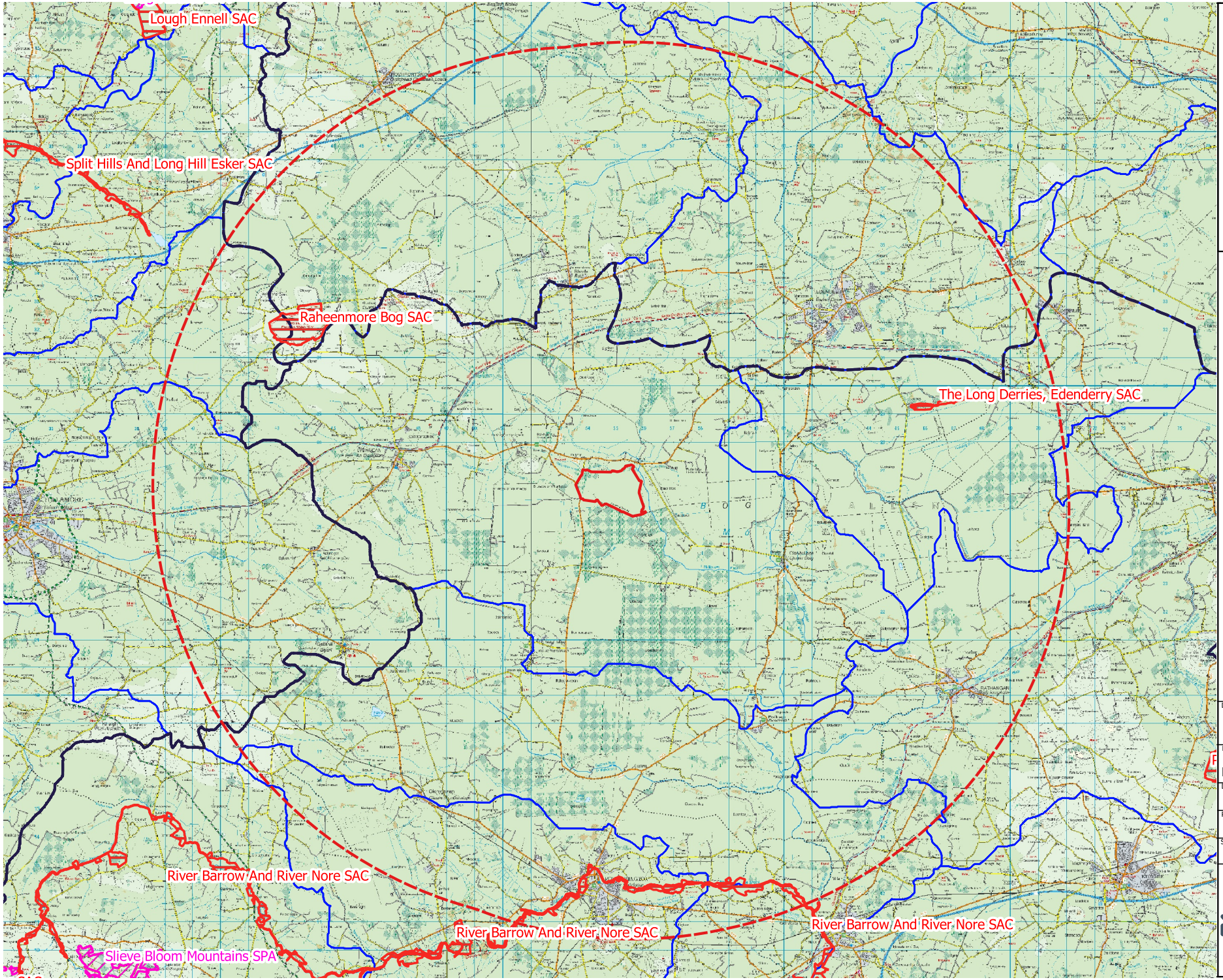
Habitats currently evaluated as not requiring rehabilitation (i.e., marginal land) will remain in line with existing baseline trends for these habitats.

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

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

The following methodology was used to establish which European Sites are within the Likely Zone of Impact of the proposed development:

- 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 09/02/2022. The datasets were utilized to identify European Sites which could feasibly be affected by the proposed development.
- All European Sites within a distance of 15km surrounding Ballycon Bog were identified and are shown on Figure 3-1. In addition, the potential for connectivity with European Sites at distances of greater than 15km from the site was also considered in this initial assessment. In this case, no potential for the proposed works to result in significant effects on sites located at a distance of over 15km from Ballycon Bog was identified.
- The catchment mapping was used to establish or discount potential hydrological connectivity between Ballycon Bog and any European Sites. The hydrological catchments are also shown in Figure 3-1.
- 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 development 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 which are within the likely Zone of Impact. The assessment considers any likely direct or indirect impacts of the rehabilitation works, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: 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 the works were considered in this screening 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 09/02/2022.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and considered in the Screening Assessment.



Map Legend

- Site boundary
- 15km Buffer
- Special Area of Conservation
- Special Protection Area
- Hydrological Catchment
- Hydrological Subcatchment

N

Drawing Title
European Sites within 15km radius of Ballycon Bog

Project Title
Bord na Mona Bog Rehabilitation

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Table 3-1: Identification of European Sites within Likely Zone of Impact

European Sites and distance from Ballycon Bog	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 09/02/2022)	Conservation Objectives	Likely Zone of Impact Determination
Special Area of Conservation			
Raheenmore Bog SAC [000582] **Distance:** 10.4km	› [7110] Active raised bogs › [7120] Degraded raised bogs still capable of natural regeneration › [7150] Depressions on peat substrates of the Rhynchosporion	Detailed conservation objectives for this site (Version 1, November 2015), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects on this SAC as the project footprint is located entirely outside the designated site. Due to the terrestrial nature of the QI habitats and the distance from the site, no complete source-impact-pathway was identified. As such, there is no potential for indirect effects to occur. **This site is not in the Likely Zone of Impact and no further assessment is required.**
River Barrow and River Nore SAC [002162] **Distance:** 12.km	› [1130] Estuaries › [1140] Mudflats and sandflats not covered by seawater at low tide › [1170] Reefs › [1310] *Salicornia* and other annuals colonising mud and sand › [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) › [1410] Mediterranean salt meadows (*Juncetalia maritimi*) › [3260] Water courses of plain to montane levels with the	Detailed conservation objectives for this site (Version 1, July 2011), were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct effects on this SAC as the project footprint is located entirely outside the designated site. The is no complete source-impact-pathway for the following QI habitats and species due to their terrestrial nature and distance from the site: › [4030] European dry heaths › [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › [1421] Killarney fern (*Trichomanes speciosum*)

European Sites and distance from Ballycon Bog	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 09/02/2022)	Conservation Objectives	Likely Zone of Impact Determination
	Ranunculion fluitantis and Callitricho-Batrachion vegetation › [4030] European dry heaths › [6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels › [7220] Petrifying springs with tufa formation (Cratoneurion) › [91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles › [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) › [1016] Desmoulin's whorl snail (*Vertigo moulinsiana*) › [1029] Freshwater pearl mussel (*Margaritifera margaritifera*) incorporating Nore freshwater pearl mussel (*M. margaritifera durrovensis*) › [1092] White-clawed crayfish (*Austropotamobius pallipes*) [1095] Sea lamprey (*Petromyzon marinus*) › [1096] Brook lamprey (*Lampetra planeri*)		The QI habitat [7220] Petrifying springs with tufa formation (Cratoneurion) and the QI species [1029] Freshwater pearl mussel (*Margaritifera margaritifera*) incorporating Nore freshwater pearl mussel (*M. margaritifera durrovensis*) are only found in the Nore catchment of the SAC with no hydrological connection to the site and the following habitats are located more than 100km away from Ballycon Bog: › [1130] Estuaries › [1140] Mudflats and sandflats not covered by seawater at low tide › [1170] Reefs › [1310] *Salicornia* and other annuals colonising mud and sand › [1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) › [1410] Mediterranean salt meadows (Juncetalia maritimi) As such, there is no potential for indirect effects on these habitats and species. Following the precautionary principle, a potential pathway for effect on the following QI habitats and species was identified through surface water connectivity via the Ballaghassaan, Derrycricket and Daingean River into which the bog drains and which ultimately flow into the River Barrow:

European Sites and distance from Ballycon Bog	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 09/02/2022)	Conservation Objectives	Likely Zone of Impact Determination
	› [1099] River lamprey (*Lampetra fluviatilis*) › [1103] Twaite shad (*Alosa fallax*) › [1106] Atlantic salmon (*Salmo salar*) › [1355] Otter (*Lutra lutra*) › [1421] Killarney fern (*Trichomanes speciosum*)		› [6430] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels › [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) › [1016] Desmoulin's whorl snail (*Vertigo moulinsiana*) › [1092] White-clawed crayfish (*Austropotamobius pallipes*) › [1095] Sea lamprey (*Petromyzon marinus*) › [1096] Brook lamprey (*Lampetra planeri*) › [1099] River lamprey (*Lampetra fluviatilis*) › [1103] Twaite shad (*Alosa fallax*) › [1106] Atlantic salmon (*Salmo salar*) › [1355] Otter (*Lutra lutra*) However, the objective of the works involved in the D & R is to stabilise the bog. These works are specifically, designed to reverse the drainage of the bog and to minimise the run-off of waters from it. The works will be similar in intensity to the active production that was undertaken until recently, but will be less invasive, short term and will involve an estimated six machines/crews working at any one time on the bog for an expected period of 2 years. There is no potential for these works to result in significant effects on downstream watercourses and ecological receptors as the works primarily involve the blocking of drainage

European Sites and distance from Ballycon Bog	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 09/02/2022)	Conservation Objectives	Likely Zone of Impact Determination
			pathways from the bog. 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. The potential for disturbance to otter, where it occurs outside the SAC was also assessed. While otter has been recorded from Ballycon Bog during the BnM surveys, the SAC is located more than 12km away and it is highly unlikely that otter associated with this European Site will occur here. In addition, the works will not result in any loss of otter habitat, are 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 works, in the absence of any mitigation, to result in significant disturbance to this QI species. **There is no potential for significant effects on this SAC and no further assessment is required.**
The Long Derries, Edenderry SAC [000925] **Distance:** 9.9km	› [6210] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-	Detailed conservation objectives for this site (Version 1, November 2021), were reviewed as	There will be no direct effects on this SAC as the project footprint is located entirely outside the designated site.

European Sites and distance from Ballycon Bog	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 09/02/2022)	Conservation Objectives	Likely Zone of Impact Determination
	Brometalia) (* important orchid sites	part of the assessment and are available at www.npws.ie	Due to the terrestrial nature of the QI habitat and the distance from the site, no complete source-impact-pathway was identified. As such, there is no potential for indirect effects to occur. **This site is not in the Likely Zone of Impact and no further assessment is required.**

3.2 European Sites with the potential to be significantly affected by the PCAS activities

No European Site has the potential to be significantly impacted by the proposed works.

3.3 Likely cumulative impact of the PCAS activities on European Sites, in-combination with other plans and projects

3.3.1 Review of other plans and projects

The potential for the rehabilitation works to contribute to a cumulative impact on European Sites was considered. The following plans and projects were considered for their potential to result in in-combination effects:

- The Planning Application Finder of Offaly County Council was consulted on the 09.02.2022 and a number of mostly small-scale proposed or consented developments were found within 5km of Ballycon Bog. Larger projects that were considered include a small quarry/borrow pit for the extraction of c.200,000 tonnes of sand and gravel on c. 3.2ha of lands. The development will include a site office (portacabin), chemical toilet (portaloo), mobile wheelwash, mobile screening and crushing plant, car parking, temporary overburden storage, and upgrade of existing agricultural entrance onto regional road R402 for duration of the works. The site will be restored to agricultural use including importation of inert soil and stones subject to a waste management facility permit and/or, notification under article 27 of the European Communities (waste directive) regulations 2011, S.I. NO. 126 of 2011
- Bord na Móna provided a GIS shapefile of bogs where decommissioning and rehabilitation activities are scheduled to occur within the same timeframe as in Ballycon Bog. One bog within the Allen/Clonsast bog group, that shares downstream connectivity to European Sites, was identified, namely Cloncreen.
- Parts of Ballycon Bog (within and outside the areas owned and under the control of Bord na Móna) are currently being 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. In addition, unauthorised turbary is likely to occur at various locations within 15km of Ballycon Bog, including several locations where the pathways for downstream in combination effects on European Sites may exist, primarily via drainage to EPA blue line watercourses.
- There is a current ongoing NPWS Raised Bog Restoration Project, however, there are no raised bogs within 15 km of Ballycon Bog, where restoration might overlap with the D & R activities in 2022.
- Coillte has applied for permission to fell the forestry block in the western section of Ballycon Bog and an NIS was supplied with the application. A felling license has been issued by the DAFM in October 2021 which is valid until the end of 2023.
- The Offaly County Development Plan 2021-2027 and Kildare County Development Plan 2017-2023 were also consulted and considered as part of this assessment. Section 4.7 'Peatlands' of the Offaly County Development Plan states: '*The Council recognises other potential long term opportunities on rehabilitated peatlands such as the development of;• a 'Regional Peatway' connecting natural and cultural attractions and the development of a National Park for the raised bog peatlands in the midlands; and• Wilderness corridors at the following locations; Cavemount, Esker, Ballycon, Derrycricket, Clonsast North, Clonsast and Derryounce in East Offaly; and Blackwater, Ballaghurt and Belmont Bogs in West Offaly, from Clonmacnoise in the direction of Belmont village, all of which can be linked to routes identified in Figure 6.13 'Midlands Cycling Destination, Offaly Network Map.' The Council envisages that Wilderness Corridors will be large areas that are; • characterised by an absence of intrusive human activity, settlements, infrastructure or visual disturbance encouraging visitors to 'go off the beaten track',*

'to get away from it all' and 'to immerse themselves in nature'; • composed of natural habitats and species and regenerated peatlands; • located close to major tourist attractions such as Clonmacnoise, the River Shannon and the Grand Canal Greenway which provide opportunities to develop a network of interlinked 'peatways' by reusing existing turbary access tracks and bog railway lines along with routes of this nature.'

3.3.2 Conclusion of in-combination/cumulative assessment

Due to the nature, scale and short-term duration of the PCAS activities, no pathway or mechanism for the proposed works to result in any significant effect on any European Site was identified when considered on its own during the assessment process and therefore there is no potential for it to contribute to any such effects when considered in-combination with any other development or works.

The review of plans and projects that is described above did not reveal any additional potential pathways for effect on European Sites that may have arisen as a result of those plans or projects.

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

In preparation of the assessment, the following sources were used to gather information:

- Review of NPWS Site Synopses, mapping and Conservation Objectives for the various European Sites within the Likely Zone of Impact.
- Review of 2019 EU Habitats Directive (Article 17) Report.
- Review of OS maps and aerial photographs of the site of the proposed development.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA), Water Framework Directive (WFD).
- Review of relevant databases including National Biodiversity Ireland Database (NBDC).
- Review of other plans and projects within the area.
- Review of location and layout mapping for proposed rehabilitation.
- Review of the results of previous ecological surveys of Ballycon Bog.
- Review of the detailed description of proposed rehabilitation measures, including methodologies specific to the main categories of land types under consideration.
- Review of BnM's Peatland Climate Action Scheme Environmental Management Plan.
- Liaison with Sorcha Cahill from Bord na Móna.
- Site visit conducted by Inga Reich on 11/02/2022.

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 works, individually or in combination with other plans and projects, will not have a significant effect on any European Site.

It is acknowledged that, following D & R, the presence of undisturbed wetland habitats in Ballycon Bog, may provide foraging opportunities and attract wildfowl species as a refugium. For the avoidance of doubt however, this is not considered in the evaluation above, nor is any reliance placed on this in the consideration of effects.

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