



# Lodge Bog Decommissioning and Rehabilitation Plan 2022

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SCREENING FOR APPROPRIATE ASSESSMENT | FEBRUARY 2022  
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# Lodge Bog Decommissioning and Rehabilitation Plan 2022 Appropriate Assessment Screening Report

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## 1.0 INTRODUCTION

### 1.1 Background

Roughan & O'Donovan (ROD) was appointed by Bord na Móna to produce, on its behalf, an Appropriate Assessment (AA) Screening Report in respect of the proposed Lodge Bog Decommissioning and Rehabilitation Plan 2021 ("the Plan"). The AA Screening Report is intended to determine whether or not the Plan, either individually or in combination with other plans or projects, is likely to have a significant effect on areas designated as being of European importance for nature conservation ("European sites"), thereby enabling the competent authority, Bord na Móna in this case, to fulfil its obligations under Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive").

This document comprises the AA Screening Report in respect of the Plan and was prepared by ROD on behalf of Bord na Móna and in accordance with the requirements of the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) ("the Habitats Regulations"). The aim of this AA Screening Report is to inform and assist the competent authority in carrying out its AA Screening by determining whether or not the Plan, either individually or in combination with other plans and projects, has the potential to significantly affect one or more European sites, in view of their Conservation Objectives.

It is the considered opinion of ROD, as the author of this AA Screening Report, that the Plan, either individually or in combination with other plans or projects, in view of best scientific knowledge, does not have the potential to significantly affect the Ballynafagh Lake SAC, the Ballynafagh Bog SAC, the Pollardstown Fen SAC, the River Barrow and River Nore SAC and The Long Derries, Edenderry SAC, or any other European site, in view of their Conservation Objectives, and, therefore, that AA is not required in respect of the Plan.

### 1.2 Legislative Context

The Habitats Directive and Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds ("the Birds Directive") list habitats and species which are, in a European context, important for conservation and in need of protection. This protection is afforded in part through the designation of sites that, in a European context, support significant examples of habitats or populations of species. These sites are generally referred to as "European sites". Specifically, sites designated for wild birds are termed "Special Protection Areas" (SPAs) and sites designated for natural habitat types or other species are termed "Special Areas of Conservation" (SACs). The complete network of European sites is referred to as "Natura 2000".

In order to ensure the protection of European sites in the context of land use planning and development, Article 6(3) of the Habitats Directive requires that:

*"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives."*

The Court of Justice of the European Union (CJEU) has interpreted this requirement as follows<sup>1</sup>:

*“Any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site’s conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects.”*

In accordance with the Precautionary Principle, the CJEU interpreted the word “likely” as meaning that as long as it cannot be conclusively demonstrated that a given effect will not occur, that effect is considered “likely” to occur. A likely effect considered to be “significant” only if it interrupts or causes delays in progress towards achieving the Conservation Objectives<sup>2</sup> of the relevant European site(s).

In Ireland, this requirement for AA is transposed into national law by Part 5 of the Habitats Regulations, and the process is termed “Appropriate Assessment” (AA). Stage 1 of the process, i.e. determining whether or not a plan or project meets the above criteria for requiring AA, is referred to as “AA Screening”.

In its judgment in *People Over Wind*<sup>3</sup>, the CJEU concluded that the determination of whether or not AA is required in respect of a project must be completed without consideration of “measures that are intended to avoid or reduce the harmful effects of the envisaged project on the site concerned”.

Article 6(3) of the Habitats Directive specifies that AA must be undertaken by the “competent national authorities”. In Ireland, the “competent authorities” are the national, regional or local authorities that are charged with or responsible for consenting, authorising, adopting or deciding to proceed with a plan or project. Consequently, the responsibility for carrying out AA Screening lies solely with the competent authority. In that respect, the AA Screening Report is not in itself an AA Screening but provides the competent authority with the information it needs in order to carry out its AA Screening.

### 1.3 Screening Methodology

At this stage of the process, the AA Screening Report assesses the potential impacts from the plan or project on the European sites within the likely zone of impact and evaluates them in view of the sites’ Conservation Objectives.

Best practice in undertaking AA Screening involves five steps as follows:

1. The first step involves gathering the information and data necessary to carry out a screening assessment. These include, but are not limited to, the details of all phases of the plan or project, environmental data pertaining to the area in which the plan or project is located, e.g. rare or protected habitats and species present or likely to be present, and the details of the European sites within the likely zone of impact.
2. The second step involves examining the information gathered in the first step and a scientific analysis of the potential impacts of the plan or project on the

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<sup>1</sup> Landelijke Vereniging tot Behoud van de Waddenzee, Nederlandse vereniging tot Bescherming van Vogels v. Staatssecretaris van Landbouw, Natuurbeheer en Visserij (Waddenzee) [2004] C-127/02 ECR I-7405.

<sup>2</sup> Conservation Objectives are referred to, but not defined, in the Habitats Directive. In Ireland, Conservation Objectives are set for Qualifying Interests (the birds, habitats or other species for which a given European site is selected) and represent the overall target that must be met for that Qualifying Interest to reach or maintain favourable conservation condition in that site and contribute to its favourable conservation status nationally.

<sup>3</sup> People Over Wind and Peter Sweetman v. Coillte Teoranta (People Over Wind) [2018] C-323/17.

- receiving environment, particularly the European sites in the likely zone of impact.
3. The third step evaluates the impacts analysed in the second step against the Conservation Objectives of the relevant European sites, thereby determining whether or not those impacts constitute “likely significant effects”, within the meaning of Article 6(3) of the Habitats Directive.
  4. The fourth step involves considering the potential for likely significant effects to arise from the combination of the impacts of the plan or project with those of other plans or projects. If it is determined in the third step that Stage 2 (AA) is required, consideration of potential cumulative impacts may be deferred to that stage.
  5. The last step involves the issuing of a statement of the determination of the AA Screening. Notwithstanding the recommendation made in the AA Screening Report, the responsibility for completing this step lies solely with the competent authority.

The following guidance documents informed the assessment methodology:

- DEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government, Dublin.
- EC (2021) *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Environment Directorate-General of the European Commission.
- EC (2018) *Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*. European Commission, Brussels.
- NPWS (2010a) *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*. Circular Letter NPWS 1/10 & PSSP 2/10. National Parks & Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.
- OPR (2021) *Practice Note PN01: Appropriate Assessment Screening for Development Management*. Office of the Planning Regulator.

## 1.4 Ecological Assessment

In order to fully inform this AA Screening Report in respect of the Plan, it was necessary to establish the baseline ecological conditions in the receiving environment, particularly with regard to European sites. This AA Screening Report was carried out by ROD Ecologists Patrick O'Shea and Rachel Heaphy. Patrick holds a Bachelor's degree in Botany from Trinity College Dublin and an MSc in Ecological Management and Conservation Biology from Queen's University Belfast. He is a full member of the Chartered Institute of Ecological and Environmental Management (CIEEM) and has 9 years' experience in ecological consultancy. Rachel is a graduate ecologist with a bachelor's degree in Zoology from University College Cork and a Master of Research from the University of Roehampton.

#### 1.4.1 Desk Study

During the preparation of the AA Screening Report, the statutory consultee, the National Parks & Wildlife Service (NPWS), provided data on designations of sites, habitats and species (including birds) of conservation interest. This included reports pursuant to Article 17 of the Habitats Directive<sup>4</sup> (NPWS, 2019a, NPWS, 2019b), Birds Directive Article 12 Reporting 2008-2012 (NPWS, 2012a) and the Site Synopses, Natura 2000 Standard Data Forms and Conservation Objectives (including supporting documents) for the relevant European sites.

The desk study involved a thorough review of existing information relating to ecology in the vicinity of the Plan and in the surrounding area. The following web-based geographic information systems (GISs) were used to obtain information relating to the natural environment surrounding the Plan. These included the NPWS *Designations Viewer* (NPWS, 2022), which provided information on the locations of protected sites and the Environmental Protection Agency's Unified GIS Application (EPA, 2022) which provided additional information on the wider environment.

The desk study was also informed by the following documents:

- Bord na Móna (2022) *Lodge Bog Cutaway Bog Decommissioning and Rehabilitation Plan 2022*
- Bord na Móna (2022) *Lodge Bog GIS Map Book 2022*
- RPS (2021) *Bord na Móna – Lodge Bog Drainage Management Plan*
- Bord na Móna (2021) *Peatland Climate Action Scheme – Methods for Peatland Rehabilitation*
- Bord na Móna (2021) *Peatland Climate Action Scheme – Environmental Management Plan*

#### 1.4.2 Assessment

Once established, the ecological baseline of the receiving environment was used to inform the assessment of the ecological effects likely to arise from the Plan, particularly with regard to European sites. Any assumptions that were made in view of gaps in the ecological data were made in strict accordance with the Precautionary Principle.

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<sup>4</sup> Under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive.

## 2.0 DESCRIPTION OF THE PLAN

### 2.1 Overview

Bord na Móna is planning to rehabilitate Lodge Bog, near Lullymore East in Co. Kildare. Peat harvesting is now ceased at Lodge Bog. Decommissioning 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.*

Funding is provided by the Irish Government through the Peatland Climate Action Scheme (PCAS) and by Bord na Móna.

The key objective of peatland rehabilitation is environmental stabilisation. This means developing habitats and vegetation back onto the bare peat and minimising the impacts downstream. Essentially this means putting a 'wet skin' of plants and mosses back on the peat. The bog was drained in the past to allow milled 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.

Lodge Bog was drained and developed for industrial peat production in the 1970's. Lodge Bog formerly supplied milled horticultural peat and fuel peat. 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 reeds will thrive. Many Bord na Móna bogs cannot be restored back to raised bog, as so much peat has been removed and the environmental conditions have been modified. However other natural habitats will develop like shallow wetlands with reedbeds and birch woodland, and in time a naturalised peatland can be restored. Some sections with deeper residual peat have the capacity to regrow *Sphagnum* moss again, where there are suitable hydrological conditions. *Sphagnum* is a key species for restoring naturally functioning peatland conditions. 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 development of a range of habitats in Lodge Bog will support biodiversity including plants, insects, birds and mammals. This includes some species that are rare and protected in the wider landscape. It will increase the national area of native woodland. Many wetland habitats in the wider landscape have been reclaimed for agriculture and other uses and peatland rehabilitation is an opportunity to create new wetland and peatland habitats.

Measures proposed for Lodge Bog include drain blocking and other measures required to raise water levels to the surface of the peat (changing levels of pipes for example). Some fertiliser will be spread on headlands and other areas (a small part of the overall area) to encourage vegetation growth. Bord na Móna plan to carry out this work in 2022. These rehabilitation measures will be planned by a team consisting of ecologists, hydrologists and engineers. It is a principle of Bord na Móna rehabilitation planning that no actions will be taken that would negatively impact on adjacent land.

No boundary drains will be blocked. Water will still leave the site via the existing outlets. It will take some time for vegetation and habitats to fully develop at this bog, and a peatland ecosystem to be restored. However, it is expected that most of the site where bare peat exists will be developing pioneer habitats between 5-10 years. This is a peatland rehabilitation plan. This plan does not consider future after-use or development.

“Lodge Bog - Cutaway Bog Decommissioning and Rehabilitation Plan 2022” is provided in full in Appendix A to this report.

The Plan is neither connected to, nor necessary for the management of any European Site.

## 2.2 Location of Plan

Lodge bog is located adjacent to Lullymore and is 3 km west of Allenwood, Co. Kildare. Lodge Bog is bounded by the R414 to the north, and this road separates Lodge Bog from the adjacent Killinagh Bog. It also divides Lodge Bog from the adjacent Ballydermot Bog Group to the west. The location of the Plan is shown in Plate 1.

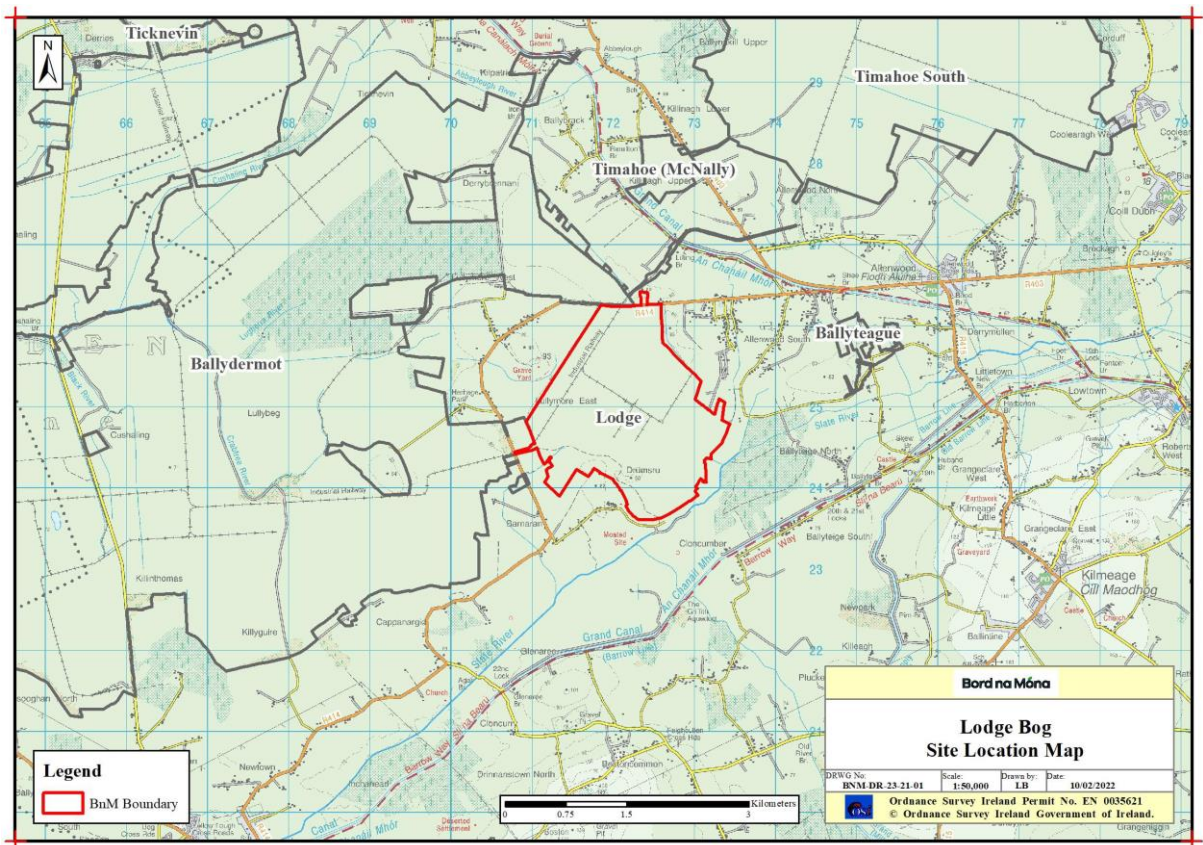


Plate 1 Lodge Bog Location

## 2.3 Receiving Natural Environment

The surrounding landscape comprises of a mosaic of low-lying agricultural land interspersed with other raised bogs, many of which have also been managed by Bord na Móna for peat production. Several sections of remnant raised bog are located along the margins of the site. A small area within the east of the site has also been used to produce domestic turf. Plantation forestry also occurs in the wider area, outside the northwest and southeast of the site.



There are two subcatchments located within the bog, separated by the central east-west railway line and travel path. A number of silt ponds occur across the site. Lodge bog is drained by the Slate River, located adjacent to the south of the site boundary. The Slate River is a tributary of the Figile River, which is in turn a tributary of the River Barrow.

The majority of the production bog is dominated by bare peat. A narrow band of raised bog remnant, scrub and birch woodland separates the site from the Slate River to the southeast. There is a small amount of pioneer cutaway vegetation developing at Lodge Bog (production-related cutaway). The ends of several fields have come out of production along the south-west margin of the bog where peat has been exhausted and the mixed till sub-soil is now exposed. These fields are colonising with a range of pioneer communities, dominated by poor fen. Some of the more-established vegetation is dominated by Soft Rush and Bog Cotton on lower fields where it is wetter. This area has now been re-wetted (2017) as part of a rehabilitation trial. Some dry grassland has developed along the railway on the central headland. The railway has been un-used for some time and parts are being overgrown with scrub. The habitats found with the site are presented in Plate 2 below.

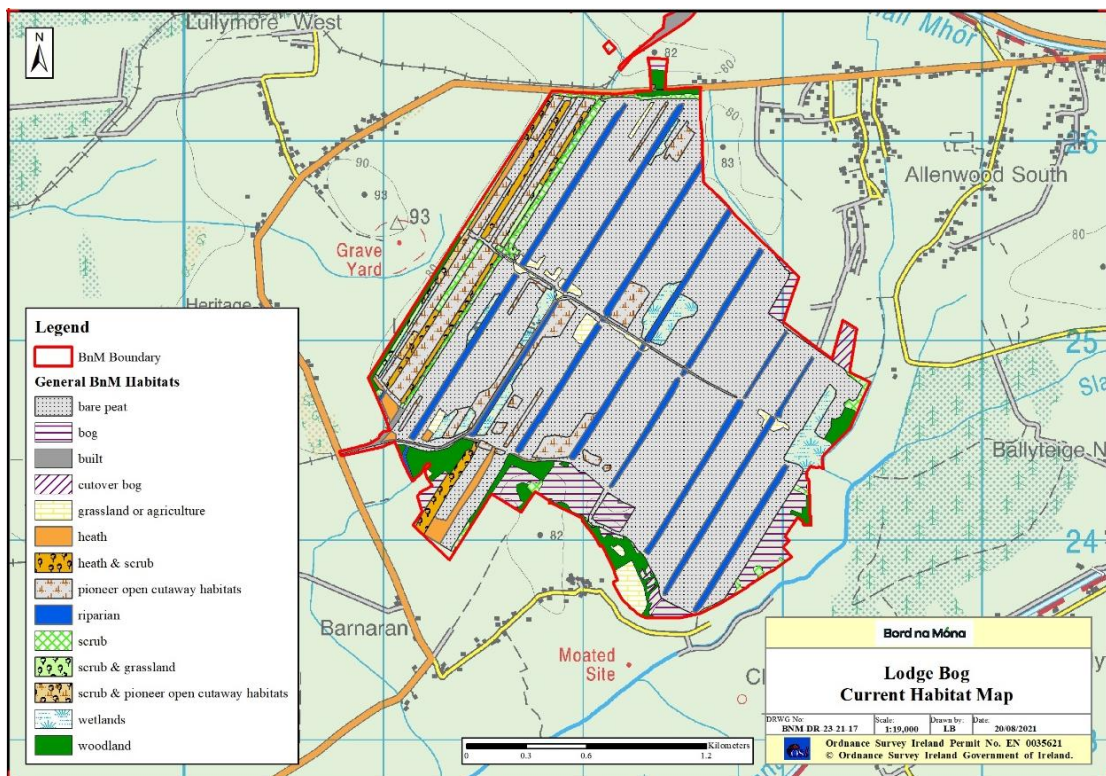


Plate 2 Lodge Bog Habitat Map

## 2.4 Description of the Plan

The following paragraphs describe the rehabilitation measures proposed at Lodge Bog:

- Re-assessment of the pumping regime; removal of the pump on site is desired if this has no significant external impact. Initial hydrological modelling indicates that parts of the centre and west of the site will develop a mosaic of open water and wetland habitats with permanent deeper water. Hydrological management will look to optimise summer water levels to maximise the development of wetland vegetation (by looking to set water depths at < 0.5m, where possible).

It is inevitable that some sections will naturally have deeper water due to the topography at this site. Water-levels will be adjusted at outfalls and by adjusting piped drainage. More sustainable permanent gravity drainage solutions will be examined. Some targeted bunding may be required. It is expected that a natural seasonal regime of water fluctuation will develop, with water-levels fluctuating in association with levels in the adjacent watercourses and associated groundwater conditions.

- Intensive drain blocking around existing wetland or standing water to create/promote the spread of wetland habitats.
- Re-wetting some areas of the bog through regular field drain blocking using a dozer/excavator to create three peat barriers every 100 m along each field drain.
- Peat field re-profiling to reduce the camber of the fields and cell-bunding between high fields to manage/optimize water levels for revegetation.
- Re-alignment of piped drainage.
- Blocking drains in targeted existing pioneering vegetation mosaics, to accelerate re-wetting, and/or manage water levels to the correct height to accelerate current trajectory towards reed swamp and den, using a dozer/excavator.
- The creation of berms across some sections of the bog to control/retain water levels. This measure seeks to retain shallow (< 10 cm) water conditions across multiple fields.
- Re-wetting some deep peat areas of the bog through regular more intensive drain blocking using an excavator to create up to a maximum of seven peat dams/blockages ever 100m along each field drain, along with re-profiling and drain infilling if required.
- Re-wetting the deep peat areas of the bog using berms, drain blocking and field re-profiling. This enhanced measure seeks to create large (c. 45m x 60m) flat areas or cells of shallow (<10cm) water conditions on bare peat, across multiple fields that are enclosed by shallow berms to retain shallow surface water.
- Targeted fertiliser applications to accelerate vegetation establishment on areas of bare peat on headlands and high fields as required.
- Modifying water levels at outfalls, as it may be desirable to change and control water levels at the site over time, e.g. to increase water levels as the site becomes increasingly vegetated. This will further slow the movement of water through and out of Lodge Bog. There is some blocking of drains in marginal (degraded) remnant raised high bog areas proposed as part of this plan, although they are small in size and degraded nature.
- The existing silt pond will be retained and maintained during the rehabilitation phase. During the monitoring and verification phase the silt ponds will be continually inspected and maintained, where appropriate. When it is deemed that the silt ponds are not required, as the bog has been successfully stabilized and there is no run-off of suspended solids, the condition of the silt ponds will be reviewed. The 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).
- Seeding of vegetation and inoculation of Sphagnum will be undertaken where required. In some areas where vegetation has already established, seeding of vegetation is not required.

### 2.4.1 Rehabilitation Methodology

The following paragraphs describe the methodologies for each of the rehabilitation measures proposed at Lodge Bog:

#### **Rehabilitation Method AW 2: Additional Land**

In the case of Lodge bog, additional works have been prescribed in a number of areas for the following reasons:

- Targeted fertiliser application
- Targeted drain blocking and or berm creation, and
- The modification of outfall locations

These works apply to areas including those which are subject to previous rehabilitation within the west of the site, some targeted drain blocking within a small section of remnant high bog within the north of the site and the application of fertiliser and or some targeted drain blocking within an area within the northeast of the site. Such measures typically require minor works that can be subject to ground verification during the implementation of the plan.

#### **Rehabilitation Method DCT 2: 'Speed Bump' Peat Dam**

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.

#### **Rehabilitation Method DCT 3: Peat Dam Drain Blocking**

- 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.
- 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.
- 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).

- 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.
- 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.)
- 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.

### **Rehabilitation Method DPT 4A: Field Re-profiling**

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 field re-profiling is to level the surface of the individual peat production fields to retain surface water at the required depth. On peatlands with increased slopes it will be more advantageous to create shallow depressions.

This variation of the process, which uses a screw-leveller and bulldozer, can be described as a number of distinct phases.

#### Phase 1: Re-Profiling of Field Surface

The first operation in the re-profiling process begins with using a Screw-Leveller to remove the high central camber from individual production fields and deposit the peat on the lower-lying edges of the same production field. The Screw-Leveller, with a level axis, will run up the first side of the production field and down the other side close to the edge of the drain, resulting in some of the peat being tipped into the drain.

#### Phase 2: Infilling of Drains

Next the Bull-dozer will run up the first side of the production field and down the other side with the front blade at an angle placing the peat in the drain.

#### Phase 3: Final Levelling of Drains & Field

Next the Bull-dozer will track over the first of the infilled drains and then back down the other drain compacting and levelling the peat. It will also make a pass down the middle of field flattening any peat mounds left between Screw Leveller and Bulldozer runs.

#### Phase 4: Drain Blocking

Drain blocks are constructed using an Excavator operating at a perpendicular direction to the field drains. A key is cut in the drain approximately 500mm deep ensuring that it is wider than the actual drain. A 500mm depth of peat is removed from bottom of drain also and placed behind the machine for replacement later.

An area behind the machine, within reach of the excavator arm, is selected is to be used as a borrow pit. Turf and degraded peat is removed from the surface. This material is placed close by to be used as cover later. 'Clay' like peat is extracted from pit and compacted in 300mm layers using the excavator bucket, to form the drain block.

The peat is firmly compacted using the machine bucket before laying more peat from the borrow pit. The drain block is built up at least 300-500mm above the ground level of the bog to allow for subsequent shrinkage of the peat as it dries.

The borrow pit is then back filled with the peat extracted from the bottom of the drain. The sides of the borrow pit are pressed down and graded with the excavator bucket. (If any vegetation present, it is carefully removed at the start and left aside for replacement at the end of the process, to help bind and stabilise the top of the drain block.

#### Phase 5: Cross Berm

Next the Bull-dozer is used to form peat transverse (i.e. across the production field, and perpendicular to the drain on either side) Cross Berms approximately 5.0m wide x 300mm high at given centres along the length of the production field. This reduces sheet flow of water.

### **Rehabilitation Method DPT 4: 45m x 60m Cell with Berms**

#### Phase 1 Drain Blocking and Re-Profiling of Fields Surface

Drain blocks are constructed using an Excavator operating at a perpendicular direction to the field drains. A key is cut in the drain approximately 500mm deep ensuring that it is wider than the actual drain. A 500mm depth of peat is removed from bottom of drain also and placed behind the machine for replacement later.

An area behind the machine, within reach of the excavator arm, is selected to be used as a borrow pit. Turf and degraded peat is removed from the surface. This material is placed close by to be used as cover later. 'Clay' like peat is extracted from pit and compacted in 300mm layers using the excavator bucket, to form the drain block. The peat is firmly compacted using the machine bucket before laying more peat from the borrow pit. The drain block is built up at least 300-500mm above the ground level of the bog to allow for subsequent shrinkage of the peat as it dries.

The borrow pit is then back filled with the peat extracted from the bottom of the drain. The sides of the borrow pit are pressed down and graded with the excavator bucket. (If any vegetation present, it is carefully removed at the start and left aside for replacement at the end of the process, to help bind and stabilise the top of the drain block.

The centre of the cambered field is used as one side of the cell. A bulldozer is used to level and flatten the base of the cell and to infill the drains by removing the camber from the fields. Laser levels are mounted on bull-dozers to allow the machine drivers to move peat and create flat surfaces to the appropriate levels.

#### Phase 2: Formation of Surface Berms and Levelling Base of Cells

Berms are formed 45m in length and 60m across 4 fields to create an enclosed cell. The berms are relatively shallow (300mm high) and are 5.0 m wide.

The berms are constructed using a bull-dozer pushing the peat obtained from the original field camber to form mounds. The mounds of loose peat are then levelled and compacted using the machine's tracks to ensure that the berm retains shallow water in the cell. The top surface level of the berms is constructed with a high level of accuracy.

### Phase 3 Final Profile

Drainage pipes are incorporated into the berm construction at specific locations to manage overflows and prevent berm erosion.

#### **Rehabilitation Method MLT 2: Peat Block**

- 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.
- 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.
- 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).
- 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.
- 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.)
- 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.

This method is the same as that described under Deep Peat methodologies as 'DPT2' and Dry Cutaway methodologies as 'DCT3'.

#### **Rehabilitation Method WLT 2: Designated Wetland Areas**

This measure prescribes a combination of the following measures, with additional information further outlined below under 'Rehabilitation Method DPT/DCT/WLT/MLT Modifying of Outfalls & Managing Water Levels':

- 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

#### **Rehabilitation Method WLT 4: Peat Block**

- 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.
- 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.

- 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).
- 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.
- 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.)
- 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.

This method is the same as that described under Deep Peat methodologies as 'DPT2' and Dry Cutaway methodologies as 'DCT3'.

### **Rehabilitation Method DPT/DCT/WLT/MLT Modifying of Outfalls & Managing Water Levels**

A description of a number of techniques in respect of outfall modification and management of water levels follows. Some, such as blocking of outfalls, are applicable across multiple rehabilitation prescriptions, whilst techniques such as the cutting of 'taps' are more applicable to those bogs which are subject to periodic inundation e.g. through rainfall or flooding and where water needs to be diverted from one part of the bog to another by way of management, or to create wetland areas.

The cutting of what is colloquially called a 'tap' in a high (production) field is described first. This is effectively a method for diverting standing water from one side of a high field to another, to manage the water level in both fields and eventually direct excess surface water towards an outfall. The blocking of outfalls is a measure to prevent water discharge from a bog through a pre-existing pathway or drainage feature, whilst the raising of pipes works similarly to produce water flow at a higher invert level, within specified areas of the pre-existing drainage network. Both of these measures are essential to the management of water levels.

#### *'V' Tap Across High Field To Control Water Levels*

An excavator is used to Create a 'V'-Shaped Tap across a high field to allow water pass from a field with water to a field with little or none. The excavator approaches the proposed 'tap' location along the surface of the high field. It then proceeds to excavate a V-shaped trench or drain to the desired depth to permit water to flow between the fields to either side.

#### *Blocking of Outfall*

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.

#### Raise Piped Culverts to control water levels

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.

Methodology Drawings are provided in Appendix B.

### **2.4.2 Programme**

The programme for completion of the Plan are as follows:

- 2022. 1st phase of rehabilitation. Field drain blocking with dozer/excavator.
- 2022. 2nd phase. Further realignment of piped drainage and other re-wetting measures dependent on success of 1st phase re-wetting, as determined by ongoing monitoring of water levels and re-vegetation.
- Other enhancement measures such as fertiliser treatment will be carried out, if needed. These will be determined by ongoing monitoring.
- 2022-2025. Evaluate success of short-term rehabilitation measures outlined above and remediate where necessary.
- 2025. Decommission silt-ponds, if necessary
- All works will be scheduled to take place in the summer months when conditions are drier, and during daylight hours.

### **2.4.3 Monitoring**

A programme for monitoring, aftercare and maintenance has been designed to meet the Conditions of the IPC Licence:

- 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 neighbouring land, general land security, boundary management, dumping and littering. The number of site visits will reduce after 2 years to bi-annually. These site visits will assess the need to any additional rehabilitation.
- A water quality monitoring programme will be established.
- Monitoring results will be 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](http://www.epa.ie).
- The parameters to be included (as per condition 6.2 of the IPC Licence) include monthly monitoring for pH, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour, DOC 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.



The monitoring, aftercare and maintenance programme is detailed in full in “*Lodge Bog - Cutaway Bog Decommissioning and Rehabilitation Plan 2022*” provided in Appendix A to this Report

## **2.5 Likely Effects of the Natural Environment**

Several elements of the Plan are considered likely to give rise to environmental and ecological impacts.

The Plan could lead to an increase in sediment laden runoff, an increase or a reduction in flows and changes to the flooding regime locally and downstream.

The presence of machinery on the bog could lead to disturbance of mammals, birds and other wildlife.

The Plan also has the potential to introduce and spread of invasive species through the movement of equipment to, from, or within the site.

## 3.0 IDENTIFICATION OF LIKELY SIGNIFICANT EFFECTS

### 3.1 Establishing the Likely Zone of Impact

Section 3.2.3 of DEHLG (2010) outlines the procedure for selecting the European sites to be considered in AA. It states that European sites potentially affected should be identified and listed, bearing in mind the potential for direct, indirect and cumulative effects. It also states that the specific approach in each case is likely to differ depending on the scale and likely effects of the plan or project. However, it advises that the following sites should generally be included:

- All European sites within or immediately adjacent to the plan or project area;
- All European sites within the likely zone of impact of the plan or project; and,
- In accordance with the Precautionary Principle, all European sites for which there is doubt as to whether or not they might be significantly affected.

The “likely zone of impact” of a plan or project is the geographic extent over which significant ecological effects are likely to occur. In the case of plans, this zone should extend to a distance of 15 km in all directions from the boundary of the plan area. In the case of projects, however, the guidance recognises that the likely zone of impact must be established on a case-by-case basis, with reference to the following key variables:

- The nature, size and location of the project;
- The sensitivities of the ecological receptors; and,
- The potential for in-combination effects.

For example, in the case of a project that could affect a watercourse, it may be necessary to include the entire upstream and/or downstream catchment in order to capture all European sites with water-dependent Qualifying Interests.

Having regard to the above key variables, the likely zone of impact was defined as:

- The entire area within 8 km of the Plan boundary; and,
- All watercourses hydrologically connected to the Plan boundary, downstream as far as the River Barrow.

This was based on the maximum extent of potential impacts associated with the proposed development.

A geographical representation of the likely zone of impact was produced in QGIS 3.16.9 using the proposed development boundary and publicly available OpenStreet Maps. This was used in combination with NPWS shapefiles to identify the boundaries of European sites in relation to the likely zone of impact (Appendix C).

It was determined that six European sites, namely the Ballynafagh Lake SAC, the Ballynafagh Bog SAC, the Mouds Bog SAC, the Pollardstown Fen SAC, the River Barrow and River Nore SAC and The Long Derries, Edenderry SAC occur within the likely zone of impact. These sites are listed in Table 3.1 which also assesses whether or not there are pathways for impacts to the sites. Where pathways exist, a detailed description is provided in Section 3.2.

**Table 3.1 European sites with closest proximity to the Plan.**

European site [site code]	Are there potential pathways for impacts from the Plan to this site? Explain.
<b>Ballynafagh Lake SAC [001387]</b>	<b>Yes.</b> This European site is located c. 5.9 km to the east of the Plan. The SAC is located c. 10.3 km upstream of the Plan along the Slate River. Marsh Fritillary is a Qualifying Interest of this SAC and has been recorded on Lodge Bog, therefore the effective distance is considered to be 5.9 km.
<b>Ballynafagh Bog SAC [000391]</b>	<b>No.</b> This European site is located c. 7.4 km to the west of the Plan. The SAC is located c. 10 km upstream of the Plan along the Slate River. The eastern side of Lodge Bog is in the same subcatchment as the SAC, although there is no direct hydrological connection.
<b>Mouds Bog SAC [002331]</b>	<b>No.</b> This European site is located c. 5.9 km to the southeast of the Plan area. The Plan area is in the same subcatchment as part of the SAC, however there is no direct hydrological connection.
<b>Pollardstown Fen SAC [000396]</b>	<b>No.</b> This European site is located c. 7.6 km to the southeast of the Plan. The Cloncumber Stream, which is a tributary of the Slate River, drains the Pollardstown Fen SAC which is 8 km upstream of the Plan although there is no direct hydrological connection.
<b>River Barrow and River Nore SAC [002162]</b>	<b>Yes.</b> This European site is located c. 15.5 km to the southwest of the Plan. The SAC is c. 21.6 km downstream of the Plan via the Slate and Figile rivers.
<b>The Long Derries, Edenderry SAC [000925]</b>	<b>No.</b> This European site is located c. 5.8 km to the northwest of the Plan. The western side of Lodge Bog is in the same subcatchment as the SAC, although there is no direct hydrological connection.

## 3.2 Site Descriptions

The following sections describe the European sites where potential pathways for impacts between the Plan and these sites have been identified.

### 3.2.1 Ballynafagh Lake SAC

The description of the Ballynafagh Lake SAC provided here is based on the Site Synopsis (NPWS, 2013), Conservation Objectives (NPWS, 2021), and Natura 2000 Standard Data Form (NPWS, 2009a) for the site.

#### Site Overview

Ballynafagh Lake is located about 2 km north-west of Prosperous in Co. Kildare. It is a shallow alkaline lake with some emergent vegetation. The Blackwood Feeder, which connects Ballynafagh Lake to the Grand Canal, is also included in the site.

Ballynafagh Lake is a shallow alkaline lake with patches of emergent vegetation in the middle, as well as around the shore. Submerged plants include starworts (*Callitriche* spp.) and Lesser Bladderwort (*Utricularia minor*), with Common Duckweed (*Lemna minor*) and the liverwort *Riccocarpus natans* occurring on the surface.

Alkaline fen vegetation occurs at the lake edge, including a plant community dominated by Blunt-flowered Rush (*Juncus subnodulosus*) and Black Bog-rush (*Schoenus nigricans*), and with frequent sedges (e.g. *Carex lepidocarpa* and *C. rostrata*). Other species in this area include Marsh-marigold (*Caltha palustris*), Marsh Lousewort (*Pedicularis palustris*), Marsh Arrowgrass (*Triglochin palustris*), Water Mint (*Mentha*

*aquatica*) and Bulrush (*Typha latifolia*). Extensive stands of Common Reed (*Phragmites australis*), Bulrush and Bottle Sedge (*Carex rostrata*) occur around the open water. A stand of Great Fen-sedge (*Cladium mariscus*) occurs in the western corner.

The lake is surrounded by acid grassland, heath and bog. Here the vegetation includes Common Bent (*Agrostis capillaris*), Purple Moor-grass (*Molinia caerulea*), Bogmyrtle (*Myrica gale*), Bracken (*Pteridium aquilinum*), Gorse (*Ulex europaeus*) and Heather (*Calluna vulgaris*). Wet woodland of birch (*Betula* spp.), willow (*Salix* spp.) and Alder (*Alnus glutinosa*) occurs in the north-west corner of the lake.

A wide diversity of insects is also found at Ballynafagh Lake, including the Marsh Fritillary butterfly, a species listed on Annex II of the E.U. Habitats Directive.

Breeding birds of the lake include Little Grebe, Mallard, Moorhen, Coot, Snipe and Water Rail. In May 1993 a pair of Curlew was observed holding territory. Sedge Warbler, Reed Bunting and Whitethroat breed within the site. Black-headed Gulls formerly bred at the lake but only single birds were observed in 1993. Wintering waterfowl include: Whooper Swan 20, Teal 114, Mallard 110, Golden Plover 40 and Curlew 117.

Although originally a reservoir, Ballynafagh Lake has developed a very natural vegetation with some interesting plant communities, including alkaline fen, a habitat that is listed on Annex I of the E.U. Habitats Directive. The site supports a high diversity of molluscan species, with some rare species recorded, including *Vertigo moulinsiana*, a species that is listed on Annex II of the E.U. Habitats Directive. The site is also of ornithological importance.

#### **Qualifying Interests of the Site**

- [7230] Alkaline fens
- [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)
- [1065] Marsh Fritillary (*Euphydryas aurinia*)

### **3.2.2 River Barrow and River Nore SAC**

The description of the River Barrow and River Nore SAC provided here is based on the Site Synopsis (NPWS, 2016), Conservation Objectives (NPWS, 2011), and Natura 2000 Standard Data Form (NPWS, 2020) for the site.

#### **Site Overview**

This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlinton, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King's Rivers on the Nore.

Good examples of alluvial forest (a priority habitat on Annex I of the E.U. Habitats Directive) are seen at Rathsnagadan, Murphy's of the River, in Abbeyleix estate and along other shorter stretches of both the tidal and freshwater elements of the site.

Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*).

A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Palustriella commutata* and *Eucladium verticillatum*, have been recorded.

The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix; at Kyleadohir, on the Delour, Forest Wood House, Kylecorragh and Brownstown Woods on the Nore; and at Cloghristic Wood, Drummond Wood and Borris Demesne on the Barrow, though other patches occur throughout the site. Abbeyleix Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the 16th century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved Bellflower and the moss *Leucodon sciuroides*. The rare Myxomycete fungus, *Licea minima* has been recorded from woodland at Abbeyleix.

Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by oak (*Quercus* spp.), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*), with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the trees are regenerating through a cover of Bramble (*Rubus fruticosus* agg.), Foxglove (*Digitalis purpurea*), Great Wood-rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*).

Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include water-starworts (*Callitriche* spp.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum* spp.), the pondweed *Potamogeton x nitens*, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and crowfoots (*Ranunculus* spp.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996).

Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites australis*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickcloney, Ballinlaw Ferry and Rochestown on the west bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley

(*Hordeum secalinum*) are found. The very rare and also legally protected Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*).

The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (both *Margaritifera margaritifera* and *M. m. durrovensis*), White-clawed Crayfish, Salmon, Twaite Shad, three lamprey species – Sea Lamprey, Brook Lamprey and River Lamprey, the tiny whorl snail *Vertigo moulinsiana* and Otter. This is the only site in the world for the hard water form of the Freshwater Pearl Mussel, *M. m. durrovensis*, and one of only a handful of spawning grounds in the country for Twaite Shad. The freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning.

The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Common Frog. The rare Red Data Book fish species Smelt (*Osmerus eperlanus*) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater mussel species, *Anodonta anatina* and *A. cygnea*.

The site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois, and also along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country. The old oak woodland at Abbeyleix has a typical bird fauna including Jay, Long-eared Owl and Raven. The reedbed at Woodstown supports populations of typical waterbirds including Mallard, Snipe, Sedge Warbler and Water Rail.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, over-grazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel (*Prunus laurocerasus*) and Rhododendron (*Rhododendron ponticum*). The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red

Data Book plant species including three rare plants in the salt meadows and the population of the hard water form of the Freshwater Pearl Mussel, which is limited to a 10 km stretch of the Nore, add further interest to this site.

### Qualifying Interests of the Site

- [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 maritima*)
- [1410] Mediterranean salt meadows (*Juncetalia maritimi*)
- [3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-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*)
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1103] Twait Shad (*Alosa fallax fallax*)
- [1106] Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)
- [1421] Killarney Fern (*Trichomanes speciosum*)
- [1990] Nore Pearl Mussel (*Margaritifera durrovensis*)

### 3.3 Evaluation Against Conservation Objectives

Tables 3.2 and 3.3 below detail the evaluation of the likely effects of the Plan in view of the Conservation Objectives of the sites identified in Section 3.1 and described in Section 3.2. As explained in Sections 1.2 and 1.3, AA Screening is carried out in view of the Conservation Objectives of the relevant European sites, which are in turn defined by detailed Attributes and corresponding Targets. Therefore, the evaluation of whether or not a likely effect is significant (in view of the Conservation Objective in question) is made with regard to these Attributes and Targets.

**Table 3.2 Evaluation of the likely effects of the Plan in view of the Conservation Objectives of the Ballynafagh Lake SAC [000391]**

Qualifying Interest	Conservation Objective (NPWS, 2021a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<b>Alkaline fens [7230]</b>	<i>“To restore the favourable conservation condition of Alkaline fens in Ballynafagh Lake SAC”</i>	Alkaline fens occur in this SAC at least 5.9 km east over land and 10.3 km upstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of the Plan over 10.3 km upstream of the SAC, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) [1016]</b>	<i>“To maintain the favourable conservation condition of Desmoulin's Whorl Snail in Ballynafagh Lake SAC”</i>	Suitable habitat for Desmoulin's whorl snail is at least 10.3 km upstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of the SAC over 10.3 km upstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Marsh Fritillary (<i>Euphydryas aurinia</i>) [1065]</b>	<i>“To maintain the favourable conservation condition of Marsh Fritillary in Ballynafagh Lake SAC”</i>	Marsh Fritillary is a Qualifying Interest of the SAC, which is located 5.9 km east of the Plan, over land. A Marsh Fritillary larval web was recorded within the Plan boundary, west of the site, during a Bord na Móna survey in August 2021. The main Plan site is currently dominated by bare peat, which is not suitable habitat for Marsh Fritillary at any life stage. Marsh Fritillary larval webs require high densities of Devil's Bit Scabious ( <i>Succisa pratensis</i> ). Suitable areas of seminatural habitat were noted along the site margins and access tracks, but not on the main bog. Following an assessment of the habitat maps which were provided by Bord na Móna, it is apparent that the area of suitable habitat for Marsh Fritillary is a very small, fragmented, and limited to the northwest of the site, and is unlikely to support a significant population. The rehabilitation measures in this area will be limited to 'Wetland' and 'Additional Works'. Many of the other rehabilitation measures which will take place on Lodge Bog will be undertaken in areas unsuitable for this species. Considering the location of the SAC relative to the Plan, the small area of suitable habitat for Marsh Fritillary in the Plan area, the nature and scale of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No



**Table 3.2 Evaluation of the likely effects of the Plan in view of the Conservation Objectives of the River Barrow and River Nore SAC [002162]**

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<b>Estuaries [1130]</b>	<i>“To maintain the favourable conservation condition of Estuaries in the River Barrow and River Nore SAC”</i>	Estuaries occur in this SAC which is at least 113 km downstream of the Plan at Saint Mullins, Co. Carlow. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 113 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Mudflats and sandflats not covered by seawater at low tide [1140]</b>	<i>“To maintain the favourable conservation condition of the Mudflats and sandflats not covered by seawater at low tide in the River Barrow and River Nore SAC”</i>	Mudflats and sandflats not covered by seawater at low tide occur in this SAC which is at least 113 km downstream of the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 113 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Reefs [1170]</b>	<i>“To maintain or restore the favourable conservation condition of the reefs in the River Barrow and River Nore SAC”</i>  The Attributes and Targets for this Qualifying Interest have been taken from the Conservation Objectives for the Lower River Shannon SAC (NPWS, 2012b) which is <i>“To maintain the favourable conservation condition of reefs in the SAC”</i> (NPWS, 2012b).	Reefs occur in this SAC at least 113 km downstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 113 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<b>Salicornia and other annuals colonising mud and sand [1310]</b>	<i>“To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand in the River Barrow and River Nore SAC”</i>	Salicornia and other annuals colonising mud and sand occur in this SAC which is at least 113 km downstream of the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 113 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]</b>	<i>“To restore the favourable conservation condition of Atlantic salt meadows in the River Barrow and River Nore SAC”</i>	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> ) and Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) occur in this SAC which is at least 113 km downstream of the Plan. There is a hydrological connection between the Plan and these Qualifying Interests, however, owing to the nature and scale of the Plan, as well as the location of these Qualifying Interests, over 113 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on these Qualifying Interests, in view of their Conservation Objectives.	No
<b>Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]</b>	<i>“To restore the favourable conservation condition of Mediterranean salt meadows in the River Barrow and River Nore SAC”</i>		
<b>Water courses of plain to montane levels with the <i>Ranuncion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]</b>	<i>“To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranuncion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation in the River Barrow and River Nore SAC”</i>	Floating River Vegetation occurs in this SAC at least 21.6 km downstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 21.6 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on these Qualifying Interests, in view of its Conservation Objective.	No
<b>European dry heaths [4030]</b>	<i>“To maintain the favourable conservation condition of European dry heaths in the River Barrow and River Nore SAC”</i>	European dry heaths occur in this SAC at least 15.5 km southwest of the Plan. This habitat is terrestrial and therefore there are no pathways for impacts between the Plan and this Qualifying Interest. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<b>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]</b>	<i>“To maintain the favourable conservation condition of Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels in the River Barrow and River Nore SAC”</i>	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels occur in this SAC at least 21.6 km downstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 21.6 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on these Qualifying Interests, in view of its Conservation Objective.	No
<b>Petrifying springs with tufa formation (Cratoneurion) [7220]</b>	<i>“To maintain the favourable conservation condition of Petrifying springs with tufa formation (Cratoneurion) in the River Barrow and River Nore SAC”</i>	Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) occur in this SAC at least 21.6 km downstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 21.6 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</b>	<i>“To restore the favourable conservation condition of Old oak woodland with <i>Ilex</i> and <i>Blechnum</i> in the River Barrow and River Nore SAC”</i>	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles occur in this SAC at least 15.5 km southwest of the Plan. This habitat is terrestrial and therefore there are no pathways for impacts between the Plan and this Qualifying Interest. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>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]</b>	<i>“To restore the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) in the River Barrow and River Nore SAC”</i>	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> ) occur in this SAC at least 21.6 km downstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of this Qualifying Interest, over 21.6 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<b>Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) [1016]</b>	<i>"To maintain the favourable conservation condition of Desmoulin's Whorl Snail in the River Barrow and River Nore SAC".</i>	Desmoulin's whorl snail is known at a location at least 21.6 km downstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of the suitable habitat within the SAC over 21.6 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1029]</b>	<p><i>"The status of the Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) as a qualifying Annex II species for the River Barrow and River Nore SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species."</i></p> <p>For the purpose of this report, the Conservation Objective is taken as: <i>"To restore the favourable conservation condition of Freshwater Pearl Mussel" (as per the Lower River Suir SAC [002137] (NPWS, 2017)).</i></p>	Freshwater Pearl Mussel is known in this SAC at least 21.6 km downstream of the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of the suitable habitat within the SAC over 21.6 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest.	No
<b>White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092]</b>	<i>"To maintain the favourable conservation condition of White-clawed crayfish in the River Barrow and River Nore SAC"</i>	White-clawed Crayfish is known at a location at least 21.6 km downstream from the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, however, owing to the nature and scale of the Plan, as well as the location of the suitable habitat within the SAC over 21.6 km downstream of the Plan, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Sea Lamprey (<i>Petromyzon marinus</i>) [1095]</b>	<i>"To restore the favourable conservation condition of Sea lamprey in the River Barrow and River Nore SAC"</i>	Lamprey are a Qualifying Interest of this SAC, which is 21.6 km downstream of the Plan. There is a hydrological connection between the Plan and these Qualifying Interests, and the Plan has the potential to affect these species	No

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<b>Brook Lamprey (<i>Lampetra planeri</i>) [1096]</b>	<i>“To restore the favourable conservation condition of Brook lamprey in the River Barrow and River Nore SAC”</i>	<p>outside the SAC boundary, which could in turn lead to significant effects on all lamprey species within the SAC.</p> <p>There is considered to be no risk of likely significant effects to lamprey for the following reasons:</p> <ul style="list-style-type: none"> <li>• The works will be temporary</li> <li>• The works will not involve the alteration of any watercourse.</li> <li>• Noise and vibration impacts from machinery will be temporary and very localised.</li> <li>• The SAC boundary is 21.6 km downstream, therefore any water quality impacts at the Plan site would dissipate long before reaching the SAC.</li> </ul> <p>It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on these Qualifying Interests in view of their Conservation Objectives.</p>	
<b>River Lamprey (<i>Lampetra fluviatilis</i>) [1099]</b>	<i>“To restore the favourable conservation condition of River lamprey in the River Barrow and River Nore SAC”</i>		

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<p><b>Twaite Shad (<i>Alosa fallax fallax</i>) [1103]</b></p>	<p><i>“To restore the favourable conservation condition of Twaite shad in the River Barrow and River Nore SAC”</i></p>	<p>The nearest habitat for this Qualifying Interest for Twaite Shad is 113 km downstream of the Plan at the upper tidal reaches of the River Barrow at St. Mullins. There is a hydrological connection between the Plan and this Qualifying Interest, and the Plan has the potential to affect this species outside the SAC boundary, which could in turn lead to significant effects on Twaite Shad within the SAC.</p> <p>There is considered to be no risk of likely significant effects to Twaite Shad for the following reasons:</p> <ul style="list-style-type: none"> <li>• The works will be temporary</li> <li>• The works will not involve the alteration of any watercourse.</li> <li>• Noise and vibration impacts from machinery will be temporary and very localised.</li> <li>• The SAC boundary is 21.6 km downstream and suitable Twaite Shad habitat occurs at least 113 km downstream. Therefore any water quality impacts at the Plan site would dissipate long before reaching the SAC.</li> </ul> <p>It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest in view of its Conservation Objectives.</p>	<p>No</p>

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<p><b>Salmon (<i>Salmo salar</i>) [1106]</b></p>	<p><i>“To restore the favourable conservation condition of Salmon in the River Barrow and River Nore SAC”</i></p>	<p>Salmon are a Qualifying Interest of this SAC, which is 21.6 km downstream of the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, and the Plan has the potential to affect this species outside the SAC boundary, which could in turn lead to significant effects on Salmon within the SAC.</p> <p>There is considered to be no risk of likely significant effects to Salmon for the following reasons:</p> <ul style="list-style-type: none"> <li>• The works will be temporary</li> <li>• The works will not involve the alteration of any watercourse.</li> <li>• Noise and vibration impacts from machinery will be temporary and very localised.</li> <li>• The SAC boundary is 21.6 km downstream, therefore any water quality impacts at the Plan site would dissipate long before reaching the SAC.</li> </ul> <p>It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest in view of its Conservation Objectives.</p>	<p>No</p>

Qualifying Interest	Conservation Objective (NPWS, 2011a)	Does the Plan provide for any potential delay or interruption in the achievement of this Conservation Objective, as defined by its Attributes and Targets?	Likely Significant Effect
<b>Otter (<i>Lutra lutra</i>) [1355]</b>	<i>“To restore the favourable conservation condition of Otter in the River Barrow and River Nore SAC”</i>	<p>Otter is a Qualifying Interest of this SAC, which is 21.6 km downstream of the Plan. There is a hydrological connection between the Plan and this Qualifying Interest, and the Plan has the potential to affect this species outside the SAC boundary.</p> <p>There is considered to be no risk of likely significant effects on Otter for the following reasons:</p> <ul style="list-style-type: none"> <li>• The works will be temporary and will occur during daylight hours only.</li> <li>• The works will not involve the alteration of any watercourse.</li> <li>• Noise and vibration impacts from machinery will be temporary and very localised.</li> <li>• The SAC boundary is 21.6 km downstream, therefore any water quality impacts at the Plan site would dissipate long before reaching the SAC.</li> </ul> <p>It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest in view of its Conservation Objective.</p>	No
<b>Killarney Fern (<i>Trichomanes speciosum</i>) [1421]</b>	<i>“To maintain the favourable conservation condition of Killarney Fern in the River Barrow and River Nore SAC”</i>	Killarney Fern occurs in this SAC at least 15.5 km southwest of the Plan. This species is terrestrial and therefore there are no pathways for impacts between the Plan and this Qualifying Interest. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No
<b>Nore Pearl Mussel (<i>Margaritifera durrovensis</i>) [1990]</b>	<i>“To restore the favourable conservation condition of the Nore freshwater pearl mussel in the River Barrow and River Nore SAC”</i>	Nore Pearl Mussel is known to occur in this SAC at least 21.6 km downstream from the Plan and in a different catchment. There is no direct hydrological connection between the Plan and this Qualifying Interest. There is the potential for indirect effects on this species through impacts on Salmonids, which are part of the Pearl Mussels life cycle, however, given the nature and scale of the Plan, as well as the lack of direct hydrological connection, there is no potential for effects. It can therefore be concluded beyond reasonable scientific doubt that the Plan, will not lead to likely significant effects on this Qualifying Interest, in view of its Conservation Objective.	No



### **3.4 Summary of Likely Significant Effects**

In Section 3.1, it was established that six European sites, namely the Ballynafagh Lake SAC, the Ballynafagh Bog SAC, the Mouds Bog SAC, the Pollardstown Fen SAC, the River Barrow and River Nore SAC and The Long Derries, Edenderry SAC, occur within the likely zone of impact of the Plan. It was determined that potential pathways for effects exist between the Plan and two of the sites, namely the Ballynafagh Lake SAC and the River Barrow and River Nore SAC. There are no pathways for effects between the Plan and any other European sites. The sites were described in detail in Section 3.2.

In Section 3.3, it was established, in light of best scientific knowledge, that the Plan will not give rise to ecological impacts which would constitute significant effects on any of the sites, in view of the sites' Conservation Objectives. This finding had regard to the nature, size and location of the Plan as well as the sensitivities of the Qualifying Interests of the sites concerned.

## **4.0 IN-COMBINATION EFFECTS**

### **4.1 Introduction**

Article 6(3) of the Habitats Directive requires that AA be carried out in respect of plans and projects that are likely to have significant effects on European sites, “*either individually or in combination with other plans or projects*”. Therefore, regardless of whether or not the likely effects of a plan or project are significant when considered on their own, the significance of the combination of the effects of the plan or project under assessment with the effects of other past, present or foreseeable future plans or projects must also be evaluated.

### **4.2 Methodology**

Plans and projects with potential for interactions with the proposed development were selected for assessment. For the purposes of the assessment, small scale and domestic developments were not considered given the nature of the proposed development and the fact that these developments would be subject to stringent planning controls.

The ePlanning website for Kildare County Council, Offaly County Council and EIA Portal was used to search for planning applications. Information provided by Bord na Móna on other bog rehabilitation plans was also considered.

### **4.3 Outcome**

Table 4.1 below details the assessment of the likelihood of significant effects arising from the Plan in combination with other plans or projects. This assessment was undertaken in view of the Conservation Objectives of the relevant European sites and found that the Plan does not have the potential to significantly affect any European site in combination with other plans or projects.

**Table 4.1 Assessment of the potential of likely significant effects in combination with other plans and projects.**

Plan or Project	Description of Plan or Project	In-combination effect(s)
Timahoe South Cutaway Bog Decommissioning and Rehabilitation Plan 2022	Bord na Móna propose to 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). Timahoe South Bog is proposed to be part of this this proposed Scheme (PCAS) and this rehabilitation plan outlines the approach taken. The Timehoe South Cutaway Bog is located within the same sub-catchment as the Lodge Bog. This Plan is subject to Appropriate Assessment in accordance with Article 6(3).	Owing to the nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Timahoe South Cutaway Bog Decommissioning and Rehabilitation Plan 2022
Gilltown Cutaway Bog Decommissioning and Rehabilitation Plan 2022	Bord na Móna propose to 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). Gilltown Bog is proposed to be part of this this proposed Scheme (PCAS) and this rehabilitation plan outlines the approach taken. The Gilltown Cutaway Bog is located within the same sub-catchment as the Lodge Bog. This Plan is subject to Appropriate Assessment in accordance with Article 6(3).	Owing to the nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Gilltown Cutaway Bog Decommissioning and Rehabilitation Plan 2022
Prosperous Cutaway Bog Decommissioning and Rehabilitation Plan 2022	Bord na Móna propose to 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). Prosperous Bog is proposed to be part of this this proposed Scheme (PCAS) and this rehabilitation plan outlines the approach taken. The Prosperous Cutaway Bog is located within the same sub-catchment as the Lodge Bog. This Plan is subject to Appropriate Assessment in accordance with Article 6(3).	Owing to the nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Prosperous Cutaway Bog Decommissioning and Rehabilitation Plan 2022
Mouds Cutaway Bog Decommissioning and Rehabilitation Plan 2022	Bord na Móna propose to 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). Mouds Bog is proposed to be part of this this proposed Scheme (PCAS) and this rehabilitation plan outlines the approach taken. The Mouds Cutaway Bog is located within the same sub-catchment as the Lodge Bog. This Plan is subject to Appropriate Assessment in accordance with Article 6(3).	Owing to the nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Mouds Cutaway Bog Decommissioning and Rehabilitation Plan 2022
Timahoe North Solar Farm	Bord na Móna Powergen Ltd. and ESB Wind Development Ltd have applied to An Bord Pleanála for planning permission for the proposed construction of an electrical substation, overhead line grid connection and all associated site works in the townland of Timahoe East, County Kildare. This application is being made directly to An Bord Pleanála as 'Strategic Infrastructure Development' (SID) under the provisions of Section 37 of the	Owing to the nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Timahoe North Solar Farm.

Plan or Project	Description of Plan or Project	In-combination effect(s)
	<p>Planning and Development (Strategic Infrastructure) Act 2006, the Planning and Development Act 2000 as amended, and the associated Planning Regulations.</p> <p>The proposed development will constitute the provision of the following:</p> <ul style="list-style-type: none"> <li>• 1no. 110kV onsite electrical substation with associated electrical plant, electrical equipment, welfare facilities and waste water holding tank and security fencing</li> <li>• 110kV overhead line grid connection cabling</li> <li>• Upgrade of existing tracks and provision of new site access roads</li> <li>• Site drainage</li> <li>• All associated site development and ancillary works</li> </ul> <p>The proposed development forms part of a larger renewable energy project at this location. The Timahoe solar energy project is the subject of a planning application directly to Kildare County Council, as instructed by the Board in the direction that issued. The larger renewable energy project provides for a solar photovoltaic array and all associated infrastructure including temporary construction compounds, battery storage compound, upgrade of existing tracks and provision of new site access roads, site drainage, forestry felling and replanting, permanent signage and all associated site development and ancillary works.</p>	
<p>Ballydermot Wind Farm</p>	<p>Bord na Móna is proposing to develop a wind farm on the Ballydermot Bog Group, located in Counties Kildare and Offaly. Ballydermot Bog is adjacent to the communities of Allenwood, Clonbullogue, Derrinturn, Edenderry and Rathangan. Ballydermot Bog Group. It is envisaged that a planning application will be lodged in Summer 2022 for the proposed development. It is intended to submit the planning permission application directly to An Bord Pleanála, under the provisions of the Planning and Development (Strategic Infrastructure) Act 2006.</p>	<p>This project will be carried out after the proposed rehabilitation measures are in place on Lodge Bog and will be subject to its own Article 6(3) assessment. Owing to the timing, nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Ballydermot Wind Farm.</p>
<p>Cloncreen Wind Farm</p>	<p>Bord na Móna is developing a wind farm on Cloncreen Bog, located in eastern Offaly. Cloncreen bog is adjacent to the village communities of Clonbullogue and Rhode. Cloncreen Wind Farm is located within the same catchment as the Lodge Bog, with parts located in the same sub-catchment.</p> <p>Bord na Móna received planning permission for the Cloncreen Wind Farm in May 2017. Construction of the wind farm began in Summer 2020 and is due to enter commercial operation in the Autumn 2022.</p>	<p>Owing to the timing, nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Cloncreen Wind Farm.</p>

Plan or Project	Description of Plan or Project	In-combination effect(s)
Mountlucas Wind Farm	<p>Bord na Móna has developed a wind farm on Mountlucas Bog, located near Daingean, Co. Offaly. The Mountlucas bog forms part of the Derrygreenagh group of bogs that crossed counties Kildare, Offaly and Westmeath. Mountlucas Wind Farm is located within the same catchment as the Lodge Bog.</p> <p>The Mountlucas Wind Farm has been in commercial operation since 2014.</p>	<p>Owing to the timing, nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Mountlucas Wind Farm.</p>
Drehid Landfill / Composting / Landfill Gas Facility	<p>Bord na Móna has developed a landfill facility in Timahoe Bog, located Killinagh Upper, Carbury Co. Kildare. The Drehid Landfill Facility is located within the same sub-catchment as much of the Lodge Bog. This engineered landfill commenced operations in 2008 and is currently licensed to accept 120,000 tonnes per annum of household, commercial &amp; industrial waste.</p>	<p>Owing to the timing, nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Drehid Wind Farm.</p>
Roadstone Allen Quarry	<p>Roadstone Allen Quarry is located in Carrick, Naas, Co. Kildare adjacent to the Hill of Allen and the communities of Allen, Kilmeague and Milltown. Allen Quarry is located within the same sub-catchment as the part of the Lodge Bog. Roadstone is a manufacturer and supplier of building materials in Ireland. Roadstone had been granted permission from Kildare County Council to quarry Allen Quarry for 50 years, beginning in 2008.</p>	<p>Owing to the timing, nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Roadstone Allen Quarry.</p>
Edenderry Power Station	<p>The existing Edenderry Power Station is located in the townland of Ballykilleen 6.4 km to the South of the town of Edenderry and 3.2 km to the North of the village of Clonbullogue. The current planning permission for Edenderry Power expires in December 2023. Bord na Móna are proposing to continue operating the plant from 2024 until the end of 2030, exclusively using 100% biomass. It is intended that the burning of peat at EPL will cease in 2023. All infrastructure required to operate the plant is already in-situ and there will be no requirement for any additional infrastructure. Ash from the peat and biomass combustion process is currently taken off site to a licenced ash repository which is owned and operated by Bord na Móna. The ash repository is located at Cloncreen Bog and it is also intended that planning permission will be sought to continue operating the ash repository up to 2030 in line with the proposed planning for Edenderry Power. As it is only biomass that will be consumed at the power plant from 2023 onwards, the volume of ash that will be generated at the power plant will greatly reduce.</p>	<p>The Figile River runs along the eastern boundary of Edenderry Power Station. There is a hydrological connection between the Plan and Edenderry Power Station as the Slate River runs into the Figile River 15.6 km downstream from Lodge Bog. Owing to the distance, nature and scale of the Plan, it does not have the potential to cause likely significant effects in-combination with the Edenderry Power Station.</p>
Electrical Battery Storage Facility, Cloncreen Bog (PL2152)	<p>In line with national renewable energy targets supporting the transition to low carbon energy systems, Bord na Móna is considering the development of a maximum 25MW of battery energy storage at Cloncreen on the proposed wind farm site. This facility would complement the wind farm in providing essential grid stabilising services while also enabling energy storage during periods of high wind generation, for later release back to the grid at times of low wind. Availability of battery energy storage will allow better utilisation</p>	<p>The Figile River runs along the eastern boundary of Cloncreen Bog. There is a hydrological connection between the Plan and Cloncreen Bog as the Slate River runs into the Figile River 15.6 km downstream from Lodge Bog. Owing to the distance, nature and scale of</p>

Plan or Project	Description of Plan or Project	In-combination effect(s)
	of wind generating assets helping avoid output restrictions of turbines during periods of high wind. The proposed battery development would consist of up to 28 low level modules and ancillary equipment located on a 100m x 40m stoned compound.	the Plan, it does not have the potential to cause likely significant effects in-combination with the Electrical Battery Storage Facility in Cloncreen Bog.
Allen Bog Group	Following receipt of Leave to Apply for Substitute Consent from An Bord Pleanála (ref ABP306241-19), Bord na Móna plc. intend to apply for Substitute Consent for peat extraction and ancillary works carried out since September 2012 on the following bogs in the Allen Bog Group: Daingean Derries, Daingean Rathdrum, Clonad, Ballykean, Esker, Garrymore Derrylea, Glashabaun South, Glashabaun North, Codd North, Codd South Ballydermot North, Ballydermot South, Blackriver, Barnaran and Lodge. The development consists of peat extraction carried out by the Applicant since 2012, the provision and maintenance of drainage and silt ponds, the provision of temporary peat stock piles and temporary rail lines at various locations within the production area, the provision of hard standing and car parking areas, offices, buildings, gates, fenced storage areas and other associated works. The development is subject to an existing Integrated Pollution Control Licence (Ref P0503) granted by the Environmental Protection Agency. The application is accompanied by a remedial Environmental Impact Assessment Report and a remedial Natura Impact statement.	The peat extraction and ancillary works for which the substitute consent is being applied for has already taken plan and is considered to part of the baseline receiving environment. Therefore, the Plan does not have the potential to cause likely significant effects in-combination with the Allen Bog Group peat extraction and ancillary works undertaken to date.
Cloncant Renewable Energy Ltd – Cushaling Wind Farm development	The development will consist of up to 1 (one) wind turbine with a tip height of up to 187 metres, and all associated foundations and hardstanding areas, 20 metres of new wind farm road, and all associated underground electrical and communications cabling. This single turbine application forms part of a larger wind farm development located within County Offaly and Kildare with a separate planning application being submitted to Offaly County Council concurrently. The Overall development will consist of up to 9 turbines (8 in Offaly & 1 in Kildare) with a tip height of up to 187 metres, and all associated foundations and hardstanding areas, approximately 4,750 metres of new internal access roads, associated drainage and turning areas; upgrade of approximately 3,500 metres of the existing L50062 public road including upgrade of the existing bridge; a new bridge crossing of the Figile River to provide access between Turbine 3 and Turbine 4; a 2,950-metre recreation trail and all associated development to include gravel pathways, a footbridge across the Figile River, a parking area, signage, information boards and outdoor fitness equipment; an off-site electrical substation and a battery energy storage facility; all associated underground electrical and communications cabling to connect the turbines to the substation including approximately 1,550m along the R401 Regional Road; a spoil storage area; a permanent meteorological mast up to 110.5 metres high; 2 no. temporary construction compounds; 2 no. temporary blade adapter set-down areas within the wind	The Lullymore East stream runs from the northwest of the Lodge Bog site into the Figile River 5.9 km downstream of the Plan. The Figile River runs alongside the proposed Cushaling Wind Farm development. Owing to the distance, nature and scale of the Plan as well as the findings and recommendations of the Cushaling Wind Farm development NIS, it does not have the potential to cause likely significant effects in-combination with the Cushaling Wind Farm Development.

Plan or Project	Description of Plan or Project	In-combination effect(s)
	<p>farm site and at the junction of the R402 and R401 at Rathmore, Edenderry, Co. Offaly; turbine delivery route works including widening of the junction of the R420 and R402 at Ballina, Geashill, Co. Offaly and all associated site development works. This application is accompanied by an Environmental Impact Assessment Report and a Natura Impact Statement.</p>	
<p>NPWS/ Coillte Raised Bog Restoration Project (LIFE09 222)</p>	<p>This Project “Demonstrating Best Practice in Raised Bog Restoration in Ireland” is a nature conservation project jointly funded by EU DG-Environment, the Department of Arts, Heritage, and the Gaeltacht and Coillte under the EU LIFE-Nature Programme.</p> <p>The project is being managed by Coillte and focuses on the restoration of 636 ha of raised bog habitat on 17 Coillte owned sites within the Natura 2000 Network and in Natural Heritage Areas. The closest bogs to the Plan are Cangort Bog NHA (72 km south west of the plan) and Wooddown Bog NHA (36.4 km north west of the Plan).</p>	<p>Owing to the nature, scale and location of the Plan, it does not have the potential to cause likely significant effects in-combination with the Raised Bog Restoration Project.</p>

## 5.0 CONCLUSION

In accordance with Article 6(3) of the Habitats Directive, Regulations 42 of the Habitats Regulations, the relevant case law, established best practice and the Precautionary Principle; this AA Screening Report has examined the details of the Plan and the relevant European sites and has concluded, on the basis of objective information, that the Plan, either individually or in combination with other plans or projects, is not likely to give rise to impacts that would constitute significant effects in view of the Conservation Objectives of those sites.

In light of this conclusion, it is the considered opinion of ROD, as the author of this AA Screening Report, that the Competent Authority, Bord naMóna, may find in completing its AA Screening in respect of the Lodge Bog Decommissioning and Rehabilitation Plan, that the Plan, either individually or in combination with other plans and projects, is not likely to have a significant effect on any European site, in view of best scientific knowledge and the Conservation Objectives of the sites concerned. Therefore, it is the recommendation of the author of this AA Screening Report that the Competent Authority may determine that AA is not required in respect of the Plan.



## 6.0 REFERENCES

Bord na Móna (2022) *Draft Lodge Bog Cutaway Bog Decommissioning and Rehabilitation Plan 2022*

Bord na Móna (2021) *Peatland Climate Action Scheme – Methods for Peatland Rehabilitation*. Bord na Móna, Co Kildare.

Bord na Móna (2021) *Peatland Climate Action Scheme - Environmental Management Plan*. Bord na Móna, Co Kildare.

Bord na Móna (2022) *Lodge Bog GIS Map Book 2022*. Bord na Móna, Co Kildare.

Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Official Journal of the European Communities, L206/7.

DEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*. Department of the Environment, Heritage and Local Government, Dublin.

Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (the Birds Directive). Official Journal of the European Union, L20/7.

EC (2021) Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Environment Directorate-General of the European Commission.

EC (2018) *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC*. Environment Directorate-General of the European Commission.

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 European Commission.

EPA (2022) *EPA Maps* <<https://gis.epa.ie/EPAMaps>> [Accessed 31/01/2022]. Environmental Protection Agency, Wexford.

European Communities (Birds and Natural Habitats) Regulations, 2011. *SI No. 477/2011*.

European Communities (Birds and Natural Habitats) (Amendment) Regulations, 2013. *SI No. 499/2013*.

European Communities (Birds and Natural Habitats) (Amendment) Regulations, 2015. *SI No. 355/2015*.

NPWS (2022) *Online Map Viewer* <<http://webgis.npws.ie/npwsviewer/>> [Accessed 10/01/2022]. Department of Culture, Heritage and the Gaeltacht, Dublin.

NPWS (2021) *Conservation objectives for Ballynafagh Lake SAC [001387]. Published 10/12/2021. Version 1.0.* National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2020) *Natura 2000 Standard Data Form for the River Barrow and River Nore SAC [IE0002162]. Updated October 2020.* National Parks & Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.

NPWS (2019a). *The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments.* Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill

NPWS (2019b). *The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments.* Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.

NPWS (2019c) *Natura 2000 Standard Data Form for Ballynafagh Lake SAC [IE0001387]. Updated September 2019.* National Parks & Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Dublin.

NPWS (2017) *Conservation objectives for the Lower River Suir SAC [002137]. Published 28/03/2017. Version 1.0.* Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2016) *Site Synopsis for the River Barrow and River Nore SAC [002162] Published 09/02/2016.* National Parks & Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.

NPWS (2013) *Site Synopsis for the Ballynafagh Lake SAC [001387]. Published 11/10/2013.* National Parks & Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin.

NPWS (2012a) *Ireland's Summary Report for the period 2008 – 2012 under Article 12 of the Birds Directive. Unpublished Report,* National Parks & Wildlife Services, Department of Culture, Heritage and the Gaeltacht, Dublin.

NPWS (2012b) *Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2011) *Conservation objectives for River Barrow and River Nore SAC [002162]. Published 19/07/2011. Version 1.0.* National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2010) *Circular NPW 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Department of the Environment, Heritage and Local Government, Dublin.

OPR (2021) *Practice Note PN01: Appropriate Assessment Screening for Development Management. Published March 2021.* Office of the Planning Regulator.

People Over Wind and Peter Sweetman v. Coillte Teoranta [2018] C-323/17.

Rossmore v. An Bord Pleanála [2014] IEHC 557.

RPS (2021) *Bord na Móna – Lodge Bog Drainage Management Plan*. Bord na Móna, Co Kildare.

Sweetman & Others v. An Bord Pleanála [2013] C-258/11.

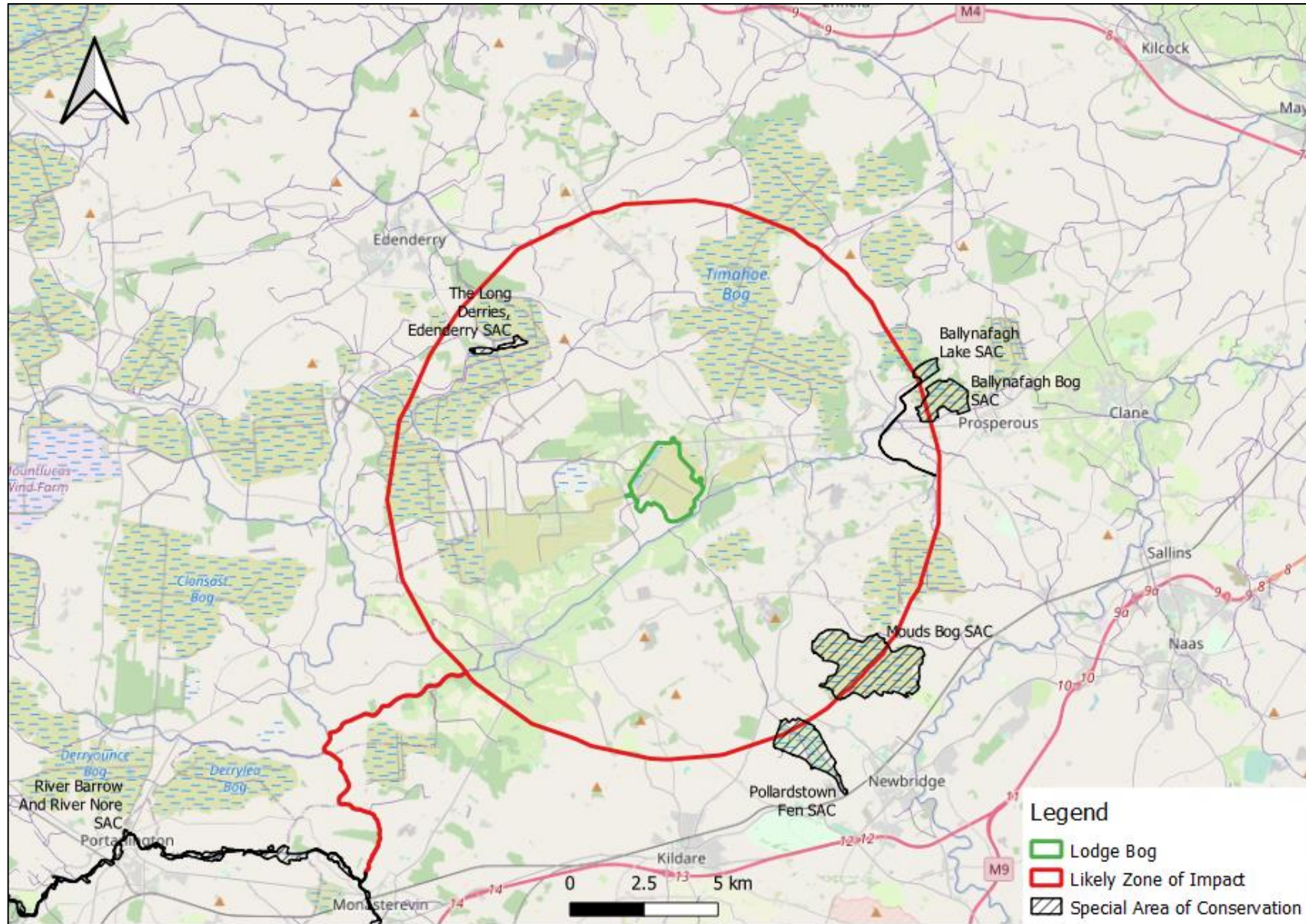
**APPENDIX A**  
**Lodge Bog - Cutaway Bog Decommissioning and Rehabilitation**  
**Plan 2022**

## **APPENDIX B**

### **Rehabilitation Methodology Drawings**

## **APPENDIX C**

### **Location and Likely Zone of Impact**





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