

Appropriate Assessment Screening Report Rehabilitation of Carranstown Bog, Co. Westmeath/Meath

Technical Report

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Bord na Móna

Bord na Móna

Boora
Leabeg
TULLAMORE
Co Offaly

JBA Project Manager

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

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Prepared by Hannah Mulcahy BSc MSc
Ecologist

Mark Desmond BSc MSc
Assistant Ecologist

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

Purpose

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Abbreviations

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

1 Introduction

1.1 Background

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

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

1.2 Legislative Context

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

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

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

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

Article 6(4) states:

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

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

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

1.3 Appropriate Assessment Process

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

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

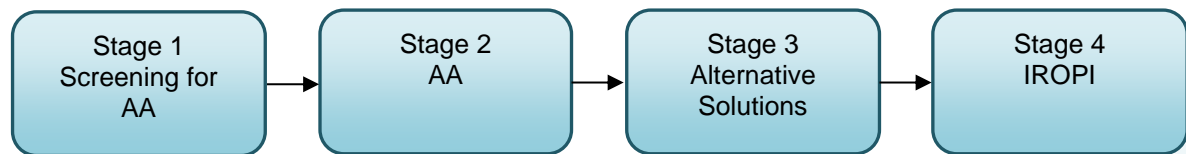


Figure 1-1: The Appropriate Assessment Process (DEHLG, 2009)

1.3.1 Stage 1 - Screening for AA

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

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

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

1.3.2 Stage 2 - AA

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

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

1.3.3 Stage 3 - Alternative Solutions

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

1.3.4 Stage 4 - IROPI

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

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

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

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

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

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

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

1.4 Methodology

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

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

1.4.1 Desktop study

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

- Aerial photography available from www.osi.ie and Esri World Imagery.

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

1.4.2 Reporting and surveys

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

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

An ecological site survey was carried out by Bord na Móna on a site visit in 2018 and another follow up survey in September 2021, and GIS data for habitat mapping has been supplied to JBA. Note that an ecological survey was not carried out by JBA and no site visits have been made to SAC/SPA sites outside the boundary of the proposed project.

1.4.3 In-combination Assessment

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

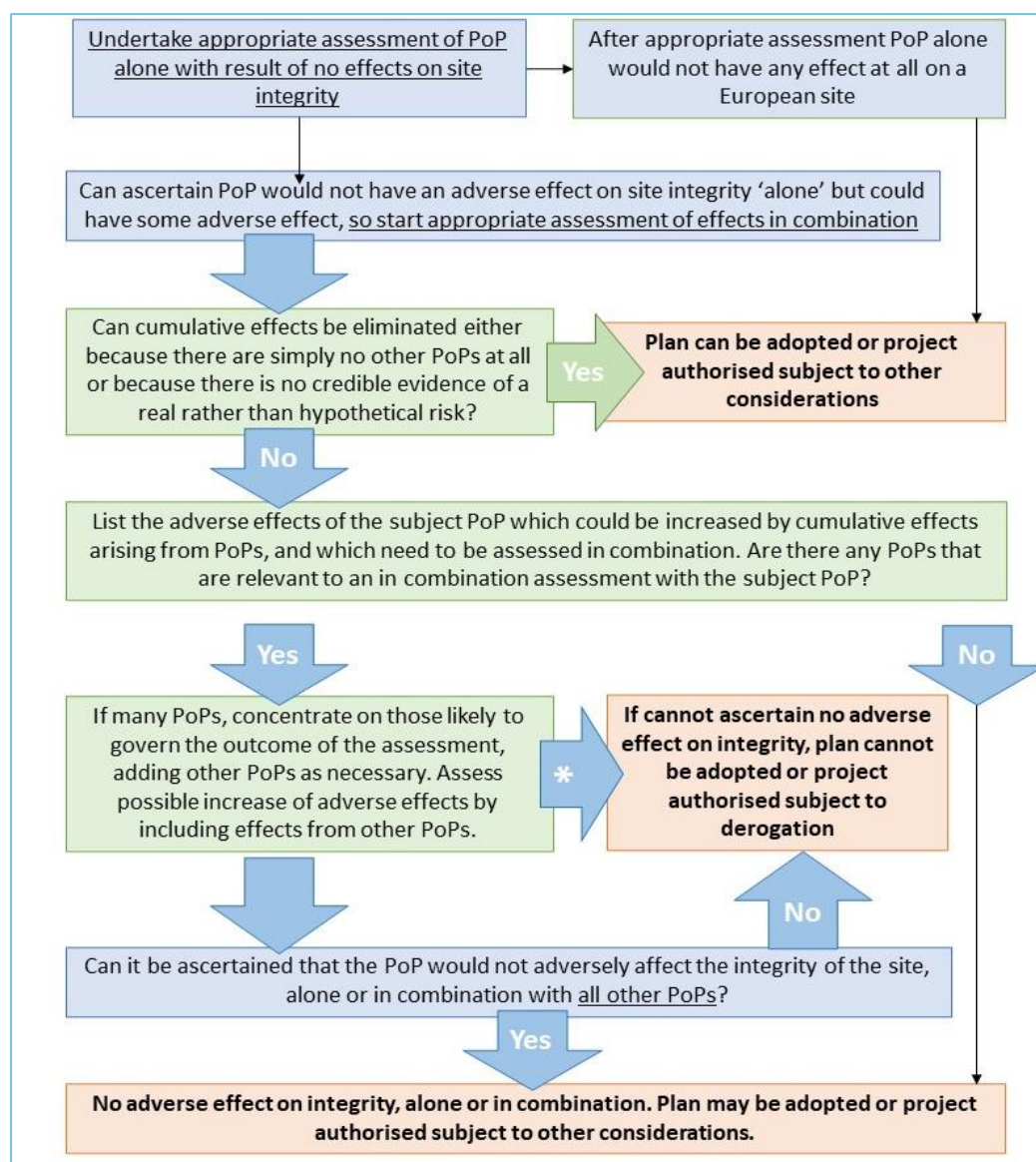


Figure 1-2: Flow diagram of process for in-combination assessment (modified from Chapman & Tyldesley, 2012)

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

1.5 Limitations and constraints

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

- This assessment is based on the methodology for proposed rehabilitation activities as described in this report. Where changes to methodology occur, an ecologist will need to be consulted to determine if the changes need reassessment.
- No SAC/SPA sites were visited and the assessment of effects on these sites is based on the desk study. Where necessary the precautionary principle is applied in determining the likely distribution of mobile species that can use habitats outside the designated site boundaries

2 Project Description

2.1 The 'Project'

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

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

2.2 Site location and description

Carranstown Bog is a large cutover bog (305 Hectares) located on the border of County Westmeath and County Meath, approximately 3.5km west of Ballivor Co. Meath and approximately 5km east of Raharney, Co. Westmeath, along the R156.

This bog is part of the Ballivor Bog Group and was drained and cut for energy production by Bord na Móna. A light rail track used by BNM separates the bog into approximately 1/3 to the west and 2/3 to the east. Unnamed minor roads border the bog on the west side and north side, and the east side of the bog is flanked by commercial forestry plantation with access roads. The surrounding landscape is composed agricultural grassland, commercial forestry plantation, and other cut-over bogs including Ballivor Bog, Bracklin Bog, Lisclogher bog and Lisclogher west bog that are part of the Ballivor Bog Group.

Carranstown bog forms part of the Boyne Sub-catchment Boyne_Sc_050, and majority of Carranstown Bog discharges to a boundary drain which discharges to the northeast of the bog to the Stonyford 040 also known as the Carranstown stream. The southeastern section of the bog discharges to the Boyne 060 also known as the Killaconnigan.

Site location is shown in Figure 2-1

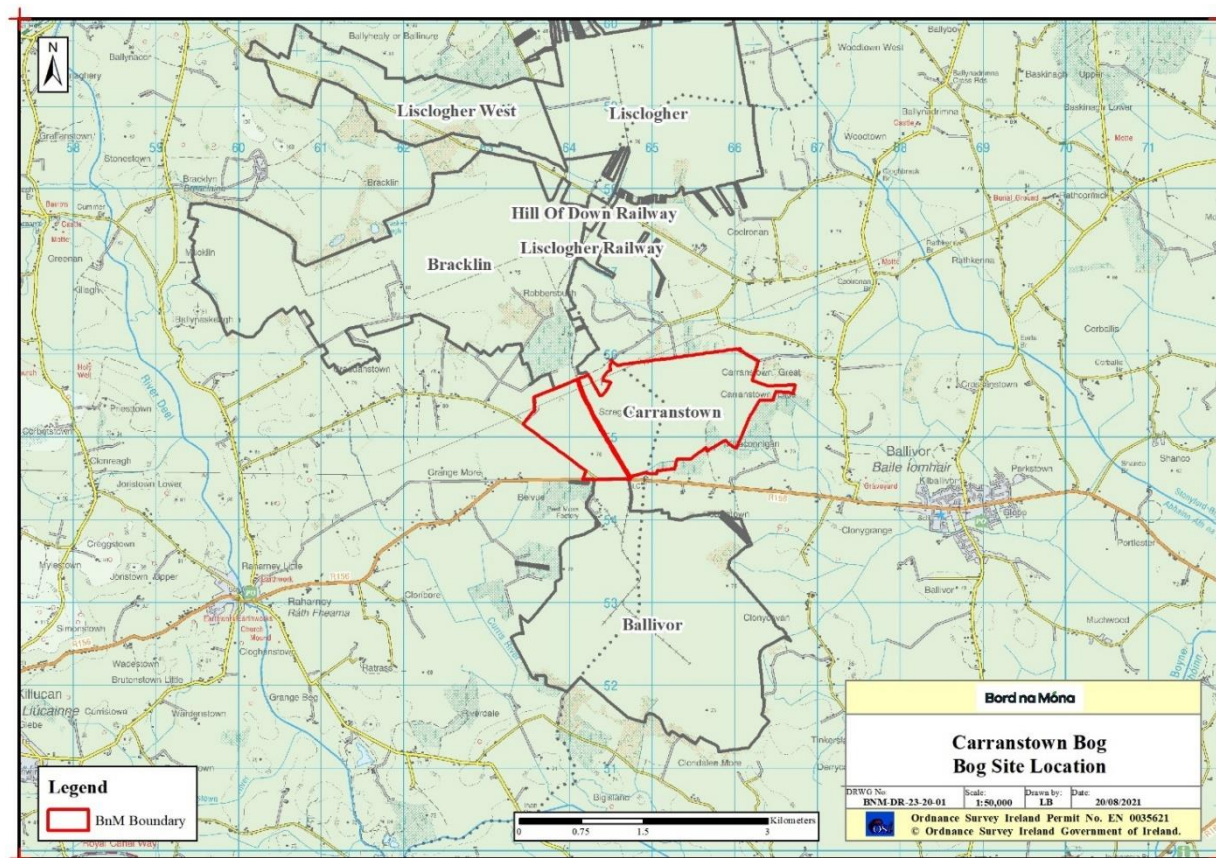


Figure 2-1: Site location (Image provided by Bord na Móna)

2.3 Proposed project

The aim of the rehabilitation activities of Carranstown Bog through re-wetting of peat to encourage development of typical vegetation of a raised bog including Sphagnum- rich vegetation.

This requires managing water-levels close to the surface of the peat for most of the year, and the methods for this is outlined in the following reports:

- Carranstown bog Cutaway Bog Decommissioning and Rehabilitation Plan (Bord na Mona 2021a)
- PCAS Methods for Peatland Rehabilitation, prepared by Bord na Móna,
- Civil Engineering Office (Bord na Móna 2021).

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

- Deep Peat measures including field re-profiling, bunding and drain-blocking, resulting in banded wetlands suitable for Sphagnum inoculation, on deeper peat;
- Intensive drain blocking around shallow peat areas / modelled depressions on little or no peat to create/promote the spread of wetland habitats,
- Modifying outfalls, and management of water levels with overflow pipes and blocking of internal outfalls;
- Regular drain blocking (3/100) on dry cutaway along with the blocking of outfalls and management of water levels;
- Intensive drain blocking (7/100) in areas to develop wetlands in areas of shallow peat. Measures include the blocking of outfalls, management of water levels and transplanting reeds and other rhizomes;
- Berms and field re-profiling (45m x 60m cell) in deep peat areas, along with blocking outfalls and managing overflows with a controlled weir outfall, includes drainage channels for excess water and

- Sphagnum inoculation;
- Targeted fertiliser applications to accelerate vegetation establishment on areas of bare peat on headlands and high fields, and within certain areas of dry cutaway. Areas where vegetation has established do not need fertiliser application.
- Seeding of vegetation and inoculation of Sphagnum will be undertaken where required.

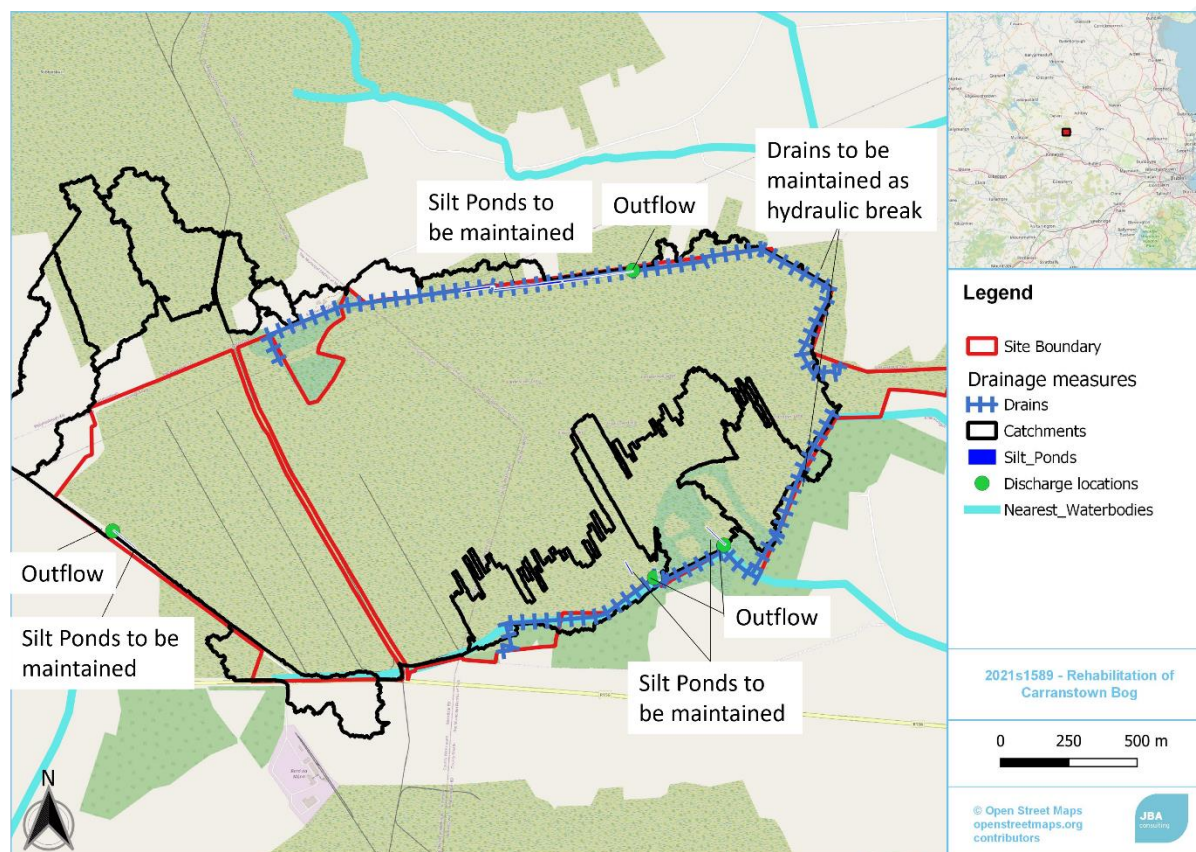


Figure 2-2 Indicative drawing of drainage features of the Carranstown Bog, and drainage management plan measures including maintenance of hydraulic break and silt ponds.

Drainage discharge

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

The engineering report outlines there are four sub-catchments of the bog by gravity, drained at four outfall points into existing ditches which act as hydraulic breaks.

The Drainage management plan includes an impact assessment of the proposed rehabilitation measures on the bog and surrounding landscape. Potential risk areas include surrounding agricultural land, woodland, roads and properties.

The drainage management plan outlines the methods that will ensure the following objectives:

1. To manage potential water table impacts between adjacent land and Carranstown bog during and after rehabilitation measures.
2. To maintain or reduce flows released from the bog at the discharge locations.
3. To manage sediment entering the Stonyford 040 and the Boyne 060 during and after rehabilitation, these measures are to ensure compliance with current discharge limits in IPC Licence.

These drainage measures include:

- DMP 1 Boundary drains that already exist around Carranstown Bog will be maintained to act as hydraulic breaks.
- DMP 2 Silt ponds where they exist at discharge points are to be maintained.
- DMP 4 There will be creation of new silt pond where a discharge point.
- DMP 4 A new drain will be created for hydraulic break to prevent flooding in to adjacent land.
- DMP 5 An area of field bog is excluded from bog rehabilitation as there is not a suitable boundary drain.

A Key Plan has been designed that outlines the main rehabilitation activities that will be carried out

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

It is considered that the existing silt pond and outfall infrastructure is satisfactory to accept the proposed discharge flow rates from the bog, post-rehabilitation, as peak flow rates will be reduced when the rehabilitation measures are completed in full.

Timescale

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

The alterations following the rehabilitation will be permanent.

Decommissioning

The decommissioning of onsite infrastructure will be likely be carried out after the rehabilitation activities. Bord na Mona must follow Condition 10 of the Integrated Pollution Control Licence issued by the Environmental Protection Agency to 'Decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution (Bord na Mona 2021c).

This will involve the following actions:

- Clean-up of bog (e.g. waste materials removed from site)
- Cleaning of silt ponds
- Peat Stockpile management/ removal
- Removal of septic tanks

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

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

Operation post-rehabilitation

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

Bord na M6na will maintain silt ponds to manage sediment entering the Stonyford 040 and the Boyne 060 during and after rehabilitation, these measures are to ensure compliance with current discharge limits in IPC Licence.

The bog rehabilitation of the bog to active growth, and this will result in 'operational' carbon capture and increased water storage, with controlled release.

3 Existing Environment

Bord na Móna has carried out a baseline ecological survey of Carranstown Bog and developed habitat maps. Carranstown Bog is largely cut over, with surrounding habitats include scrub, agricultural land, woodland, roads and properties. A light railway cuts through the western section of the Bog, connecting to other Bord na Móna owned bogs north and south.

3.1 Habitats

Habitats mapped by Bord Na Móna Ecology team in 2018 is included in the Table 3-1 and mapped in Figure 3-1, and included is the Fossitt code for each habitat, interpreted by JBA. Note that no site visit or habitat survey has been carried out by JBA for this report.

Table 3-1: List of habitats recorded on site

Habitat	Fossitt Code
Bare peat	PB4
Scrub	WS1
Woodland	WD1
Pioneer Cut Away	PB4
Riparian woodland	WN5
Bog (Raised bog PB1)	PB1
Heath (Wet heath HH3)	HH3
Heath and Scrub	HH3/WS1
Conifer Plantation	WD4
Fen (noted as Poor Fen PF2 per comms with BNM ecologist)	PF2
Agricultural grassland	GA1

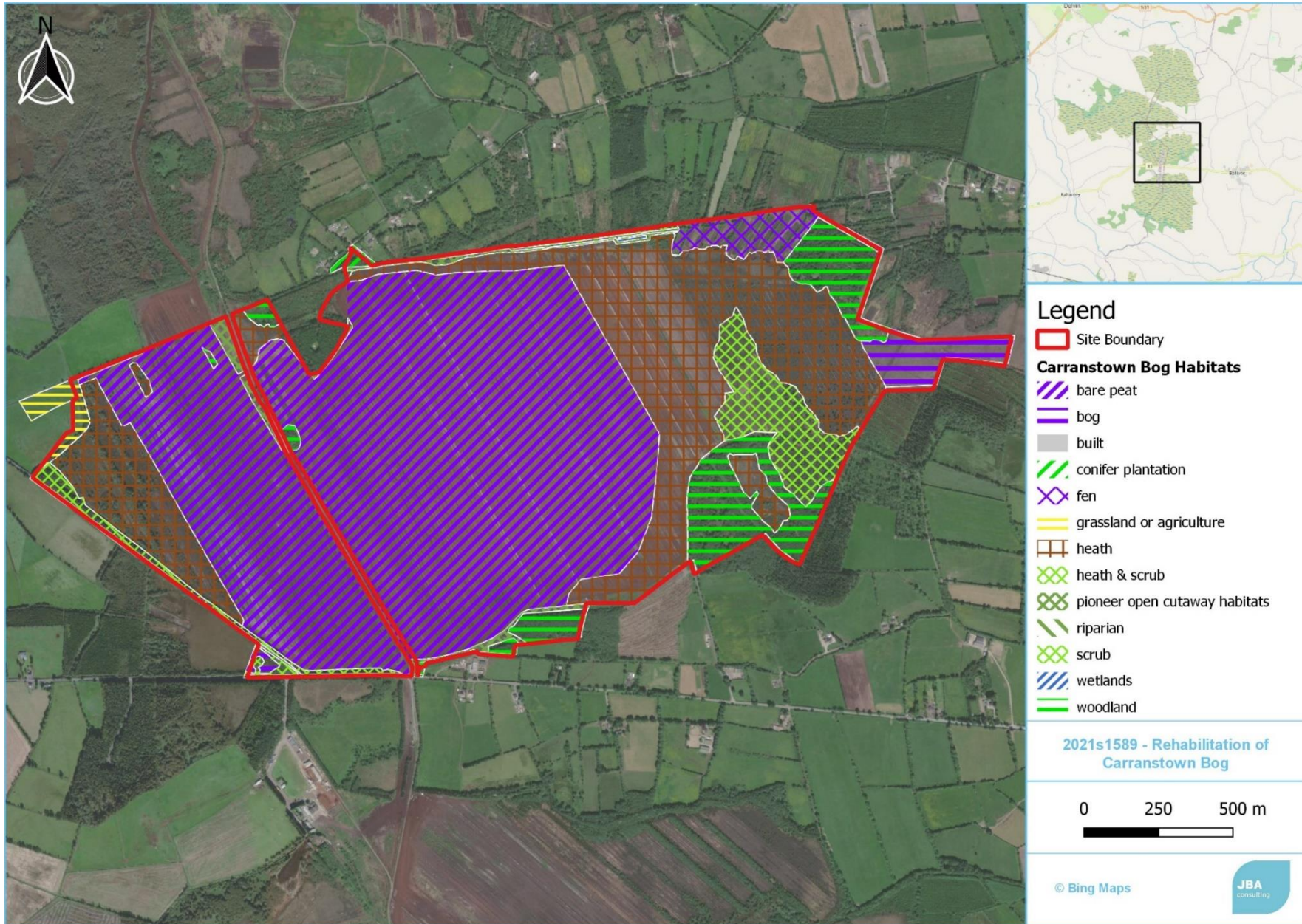


Figure 3-1: Habitat Map of Carranstown Bog, carried out by BNM

3.2 Nearby Annex listed species

European Otter *Lutra lutra* has been recorded within 2km of Carranstown Bog (NBDC 2021) but it is likely the majority of the cut over bog is unsuitable for this species, but may occur in the margins and nearby streams. Otter is protected under the EU Habitats Directive Annex II, Annex IV, and the Wildlife Acts and is a qualifying interest of the River Boyne and River Blackwater SAC.

Common Kingfisher *Alcedo atthis* was recorded by BNM Ecologists on Carranstown Bog during a survey carried out in September 2021. This species has also been recorded within 2km of Carranstown Bog (NBDC 2021). Kingfisher likely habits the nearby streams and rivers to this bog. This bird is protected under the EU Birds Directive Annex I and the Wildlife Acts. It is listed under Birds of Conservation Concern - Amber List. Kingfisher is a qualifying interest of the River Boyne and River Blackwater SPA.

Atlantic Salmon *Salmo salar* [1106] and River Lamprey *Lampetra fluviatilis* [1099] are also Qualifying interests of the River Boyne and River Blackwater SAC have not been recorded under NBDC in any nearby rivers. The Conservation objectives for River Boyne and River Blackwater SAC note there are many artificial barriers and weirs that block the movement and migration of these species in the Boyne (NPWS 2021a).

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

- Brown Long-eared Bat *Plecotus auritus* Annex IV
- Lesser Noctule *Nyctalus leisleri* Annex IV
- Pine Marten *Martes martes* Annex V
- Common Frog *Rana temporaria* Annex V
- Marsh Fritillary *Euphydryas aurinia* Annex II
- Large White-moss *Leucobryum glaucum* Annex V

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

- Little Egret *Egretta garzetta* Annex I
- Peregrine Falcon *Falco peregrinus* Annex I
- European Golden Plover *Pluvialis apricaria* Annex I, III
- Common Kingfisher *Alcedo atthis* Annex I and qualifying interest of nearby SPA
- Whooper Swan *Cygnus cygnus* Annex I
- Rock Pigeon *Columba livia* Annex II, III
- Common Pheasant *Phasianus colchicus* Annex II, III
- Common Wood Pigeon *Columba palumbus* Annex II, III
- Mallard *Anas platyrhynchos* Annex II, III
- Grey Partridge *Perdix perdix* Annex II, III
- Red Grouse *Lagopus lagopus* Annex II, III
- Common Coot *Fulica atra* Annex II, III
- Common Pochard *Aythya ferina* Annex II, III
- Eurasian Teal *Anas crecca* Annex II, III
- Eurasian Wigeon *Anas penelope* Annex II, III
- Tufted Duck *Aythya fuligula* Annex II, III
- Common Snipe *Gallinago gallinago* Annex II, III
- Eurasian Woodcock *Scolopax rusticola* Annex II, III
- Common Goldeneye *Bucephala clangula* Annex II
- Eurasian Curlew *Numenius arquata* Annex II
- Northern Lapwing *Vanellus vanellus* Annex II

4 Natura 2000 Sites

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

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

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

- River Boyne and River Blackwater SAC (002299)
- River Boyne and River Blackwater SPA (000210)
- Mount Hevey Bog SAC (004232)
- Girley (Drewstown) Bog SAC (002203)
- Wooddown Bog SAC (002205)

There are no sites designated under the EU Habitats Directive and EU Birds Directive, i.e. SACs and SPAs, located within the footprint of the proposed rehabilitation activities. The site is only connected to Natura 2000 sites via a surface water connection and potentially groundwater to surface water.

The nearest connected designated sites is the River Boyne and River Blackwater SAC and SPA, located approximately 6km downstream of the drainage. The bog does not drain into the Stonyford Stream, located approximately 2km away. All other European sites are located upstream of the catchment are not connected.

All European Sites within 15km are connected to the same Groundwater body (Athboy IE_EA_G_001), however only River Boyne and River Blackwater SAC and SPA are downstream of Carranstown.

Only River Boyne and River Blackwater SAC and SPA may have impacts via air pathways, as they are within 5km of the site, and both sites have mobile species that could be disturbed within Carranstown Bog.

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

- River Boyne and River Blackwater SAC (002299)
- River Boyne and River Blackwater SPA (000210)

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

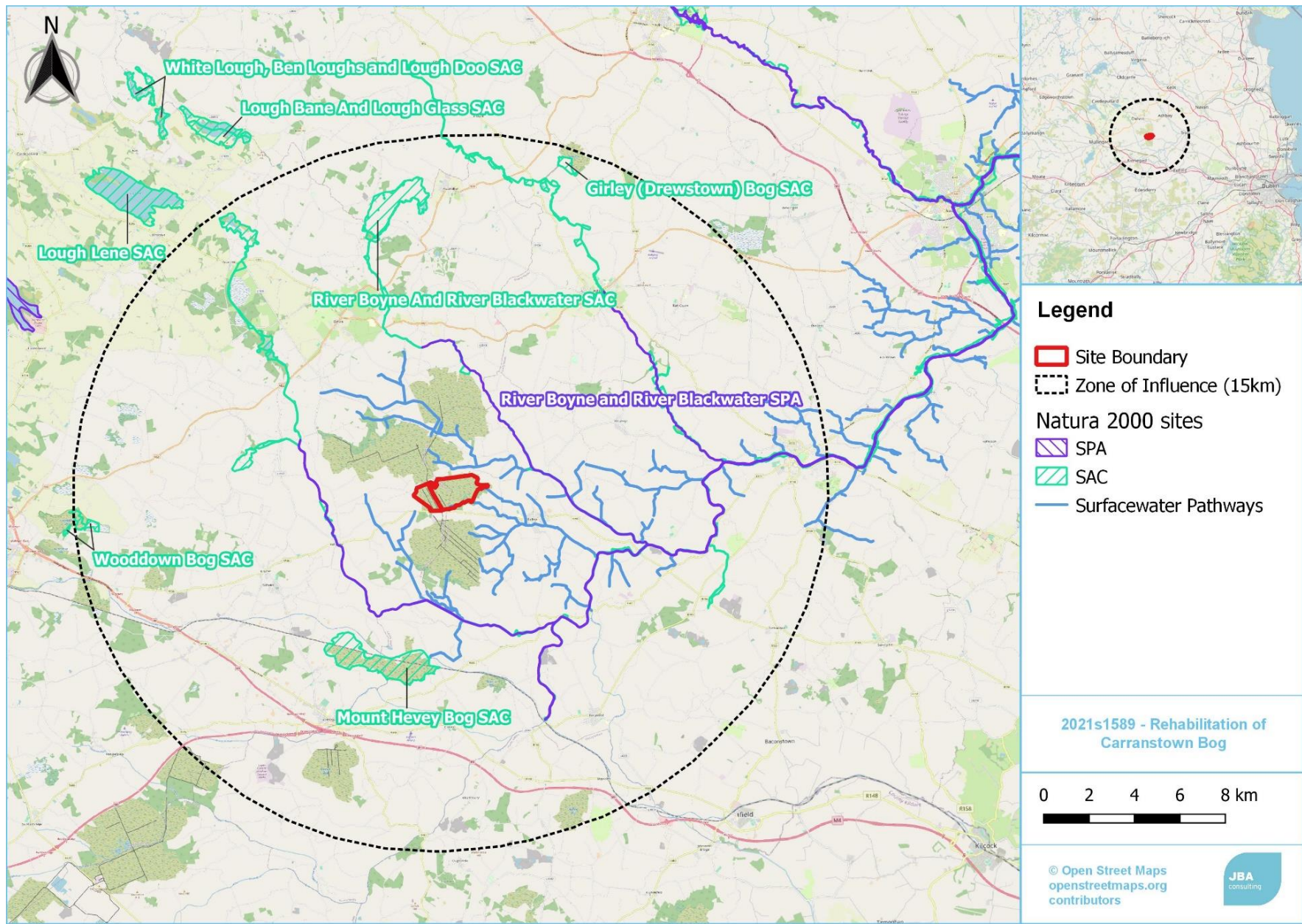


Figure 4-1: Natura 2000 sites and site location.

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

European Sites within 15km	Qualifying Interests of site	Distance	Surface water pathway	Groundwater pathway	Air Pathway	Disturbance pathway	Further assessment required?
River Boyne and River Blackwater SAC (002299)	Alkaline fens [7230] Alluvial forests [91E0]* River Lamprey [1099] Salmon [1106] Otter [1355]	1.8km	Yes- Bog drains into minor streams which joins River Boyne 6km downstream and Stonyford stream which is approx. 2 km ds	Yes - Bog is situated in same GWB	Yes- within 5km	Possible Otter may be in local area.	Yes
River Boyne and River Blackwater SPA (000210)	Kingfisher [A229]	2km	Yes- Bog drains into minor streams which joins River Boyne 6km downstream and Stonyford stream which is approx. 2 km ds	Yes - Bog is situated in same GWB	Yes- within 5km	Possible- Kingfisher may be in local area	Yes
Mount Hevey Bog SAC (004232)	Active raised bogs [7110]* Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	6km	No- near River Deel but is located upstream	In same GWB but separated by River Boyne and River Deel therefore no pathway.	No	No	No
Girley (Drewstown) Bog SAC (002203)	Degraded raised bogs still capable of natural regeneration [7120]	14km	No - upstream of Athaboy River	In same GWB but separated by Athaboy river and Stonyford Stream therefore no pathway	No	No	No
Wooddown Bog SAC (002205)	Degraded raised bogs still capable of natural regeneration [7120]	14km	No - Upstream of Deel and Riverstown	In Same GWB but separated by River Deel	No	No	No

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

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

Site Name	Brief	Qualifying Interests	Project Relevant Threats / Pressures: Impact (Source)
River Boyne and River blackwater SAC (002299)	This site comprises those freshwater dependent habitats of the River Boyne and its major tributaries, most notably the River Blackwater as far as Lough Ramor as well as the Deel, Stonyford and Athboy Rivers. The SAC runs through areas of extensive agriculture. Most of the river channels have been subjected to arterial drainage, resulting in a limited number of natural flood plains. There are, however, a number of freshwater and reed swamps along the fringes of the river, as well as wet grassland. Alluvial woodland of the <i>Salicetum albo-fragilis</i> type have developed on three alluvium islands within the site. Habitat succession is present at lough Shesk with a transition from raised bog to open water. The River Boyne is considered a premier salmonid fishery with a number of <i>Salmo salar</i> spawning grounds and is a designated Salmonid Water under the EU Freshwater Fish Directive. <i>Lampetra fluviatilis</i> are present within the SAC and <i>Lutra lutra</i> are widespread. Some of the grassland areas along the Boyne and Blackwater are used by a nationally important winter flock of <i>Cygnus cygnus</i> (NPWS 2014)	<ul style="list-style-type: none"> - Alkaline fens [7230] - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> [91E0]* - River Lamprey <i>Lampetra fluviatilis</i> [1099] - Salmon <i>Salmo salar</i> [1106] - Otter <i>Lutra lutra</i> [1355] (NPWS 2021a)	<p>Pollution to surface waters - limnic & terrestrial, marine & brackish (High - inside). Bridge, viaduct (Low - inside). Removal of hedges and copses or scrub (Moderate - inside). Siltation rate changes, dumping, depositing of dredged deposits (Moderate, inside). Management of aquatic and bank vegetation for drainage purposes (Moderate - inside) Human induced changes in hydraulic conditions. (Moderate - inside) Other human intrusions and disturbances (Low - inside). Full list: (NPWS 2019)</p>
River Boyne and River Blackwater SPA (000210)	This is a linear SPA found along the route of the River Boyne and its major tributaries, most notably the River Blackwater as well as the Deel, Stonyford and Athboy Rivers. The site stretches from the Aqueduct in Drogheda Co. Louth, to a number of lower order sections of the tributaries mentioned above, found in counties Cavan, Meath and Westmeath, This site supports nationally important numbers of <i>Alcedo atthis</i> . Other species which occur within the site include <i>Cygnus olor</i> , <i>Anas crecca</i> , <i>Anas platyrhynchos</i> , <i>Phalacrocorax carbo</i> , <i>Ardea cinerea</i> , <i>Gallinula chloropus</i> , <i>Gallinago gallinago</i> and <i>Riparia riparia</i> . (NPWS 2010)	<p>Kingfisher <i>Alcedo atthis</i> [A229]</p> (NPWS 2021b)	<p>Human induced changes in hydraulic conditions (Moderate - inside).</p> (Full list: (NPWS 2020))

5 Screening Assessment

This screening exercise will focus on assessing the likely adverse effects of the project on the Natura 2000 site identified in Section 4 above, which includes:

- River Boyne and River Blackwater SAC (002299)
- River Boyne and River Blackwater SPA (000210)

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

5.1 Assessment

5.1.1 Description of the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites

5.1.2 Surface water

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

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

Construction phase

The rehabilitation of Carranstown bog will involve Excavators to block drains and Screw-levellers and Bulldozers to carry out the field re-profiling of the cut over bog and to form peat-berms. The impacts from the rehabilitation of the bog to surface water will include possible release of suspended solids and pollutants. Any release of suspended solids and pollutants could impact water dependant QIs *Lampetra fluviatilis* (River Lamprey) [1099], *Salmo salar* (Salmon) [1106] and indirectly affect *Lutra lutra* (Otter) [1355] and Kingfisher (*Alcedo atthis*) [A229], as well as impact habitat QIs Alkaline fens [7230] and Alluvial Forests [91E0].

The drainage management plan has been developed to ensure that no sediment will enter the Stonyford 040 and the Boyne 060 during and after rehabilitation, as all outfalls from the bog empty through silt ponds, which Bord na Móna must continue to maintain, before releasing to local streams.

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

Operation phase

The rehabilitation will change the hydrology of the bog and the surrounding catchment by holding back water and allowing the water to be released more slowly. Evidence from bogs that have previously been the subject of rehabilitation measures demonstrates that the measures proposed at Carranstown, which are all aimed at reducing runoff and retaining water within the bog, have the effect of reducing the frequency and magnitude of flood events by restoring a more natural hydrological regime. Rehabilitation / rehabilitation has been successfully applied to numerous Bord na Móna bog sites as well as SAC sites such as Clara Bog (East), Raheenmore Bog, Carrownagappul Bog and Lisnageeragh Bog.

While it is anticipated that rehabilitation will generally lead to dampening of peak flows and support sustained flows during dry periods, there is a potential risk that during prolonged dry periods that the rehabilitation measures may lead to downstream watercourses drying out as a result of increased infiltration, increased rates of evapotranspiration along with the additional storage capacity created

within the bog. The drainage management plan has assessed the Risk of drying out has been classed as Low risk for all four catchment of the Carransown Bog (see Figure 3-4 in Drainage Mananagement Plan).

This is likely to cause positive impacts to the River Boyne SAC and SPA and its qualifying interests as it will ensure water will slowly be released into the catchment during low rainfall events and will hold water back during flood conditions.

It is unlikely any sediment will be released during post-rehabilitation as all drains outfall first through silt traps which will be maintained and monitored by Bord na Móna.

Decommissioning phase

Decommissioning will occur during and after rehabilitation, with an aim to ensuring that no environmental liability remains from the industrial harvesting infrastructure. The decommissioning will likely affect small areas of the bog area and mostly on built land. In the unlikely event of pollution or sediment release, this will drain and settle in the silt ponds and hydraulic break and not enter the nearby watercourses. Therefore there are no anticipated impacts from surface water pathways or ground water pathways to nearby European Sites from decommissioning.

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

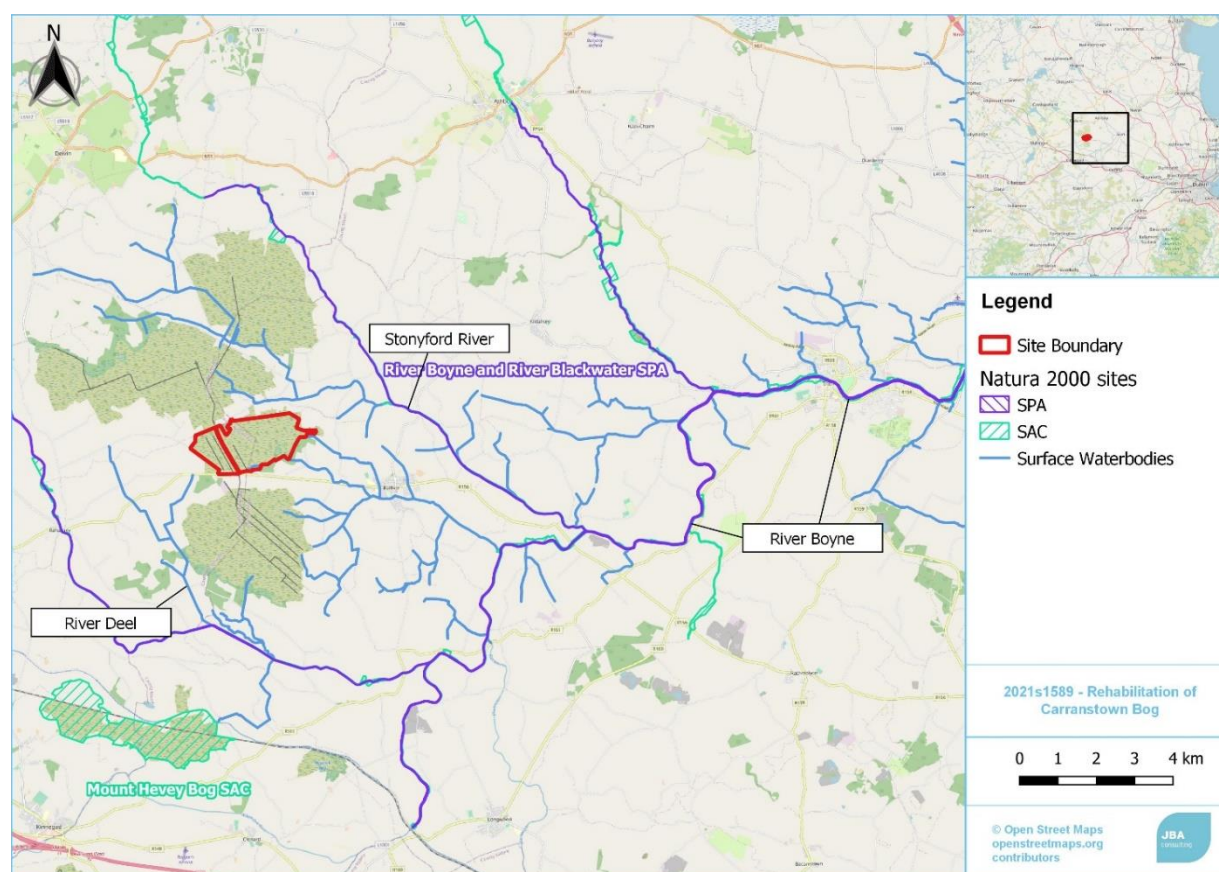


Figure 5-1: Site location and Natura 2000 sites, with surface water sub-catchment.

5.1.3 Groundwater

As a result of the rehabilitation measures, the groundwater level will change in the bog, as the water table will rise in the bog following the blocking of drains. However, the wet peat is isolated from the adjacent landscape by hydrological breaks (bunds and ditches) around the margins, with infiltration

limited by the bed of lacustrine clays under the bog. The resulting impact on groundwater is therefore contained entirely within the bog rehabilitation and will not impact anything beyond the boundary.

Groundwater dependant features of the River Boyne and River Blackwater SAC QIs include Alkaline fens [7230] and Alluvial Forests [91E0]. However Alluvial woodland in the River Boyne SAC is unlikely to be impacted as will be impacted given that Alluvial woodland (NSNW sitecode 668 and NSNW sitecode 572) is mapped at the Boyne Estuary, approximately 40km downstream, and Alkaline Fen has only been documented the upper reaches of Stonyford River and Lough Shesk 10km upstream of the Carranstown bog.

Note that fen has been recorded by Bord na Móna ecologists in 2018 in the north-east of Carranstown Bog. Fens are highly sensitive to groundwater changes. The Bord na Móna ecologist, has described this as 'poor fen and is an area of revegetating cutover bog' and is unlikely to correspond to Annex I habitat 'alkaline fens (7230)'. In any regard, this habitat is not functionally linked to any alkaline fens in the River Boyne and River Blackwater SAC.

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

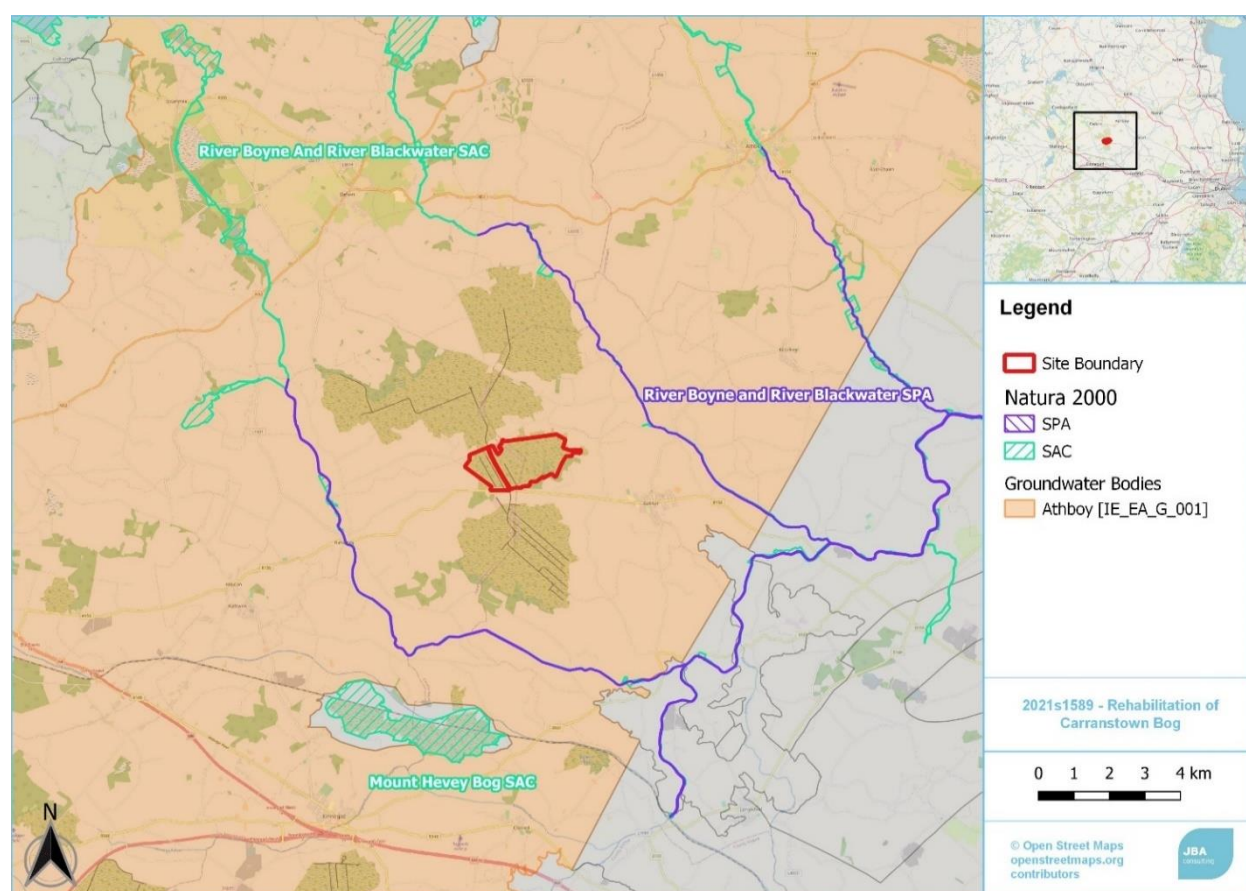


Figure 5-2 Groundwater Body Athboy in relation to Carranstown Bog and European Sites

5.1.4 Land and Air

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

Land (physical on-site and noise disturbance)

Direct physical impacts and indirect impacts, such as visual and noise impacts, have the potential to physically disturb habitats as well as the floral and faunal species within them. The SAC and SPA is located >2km from Carranstown bog and therefore there will be no direct physical impact to these European Sites.

The proposed site may provide suitable ex-situ foraging habitat for any QIs of the Natura 2000 sites, notably Otter *Lutra lutra* [1355] and Kingfisher (*Alcedo atthis*) [A229], however it likely unsuitable currently due to the highly disturbed cutover bog. However these species are likely to occur in the nearby streams and rivers and may frequent the bog now and then. The post-rehabilitation of Carranstown Bog will continue to provide habitat for these species, particularly in the bog edges, including the woodlands, drains and marginal land surrounding the bog once the measures have been complete and will likely have positive impacts for these QIs.

Air Pollution

Regarding adverse air-based impacts, the release of dust and vehicle emissions can travel up to 5km, but given the small nature of rehabilitation activities, and the general wet environment of the bog, it is expected that any emissions will settle out close to the source.

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

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

5.2 Cumulative Effects

The previous section has identified that the project will have no effect at all on the Natura 2000 sites along and therefore no in-combination impacts are possible. No detailed in-combination assessment is therefore included. However, the following significant local projects are noted in case the project is re-assessed at a later date:

- Ballivor Wind Farm- A plan for 26 wind turbines to be constructed on Ballivor Bog Group in counties Meath & Westmeath, namely Ballivor, Bracklin, Carranstown, Lisclogher and Lisclogher West bogs. It is envisaged that a planning application will be submitted in early 2022 for the proposed project.
- Bracklyn Wind Farm Limited- A proposed Construction and operation of a 9turbine wind farm. This case is due to be decided by 12/04/2022 by An Bord Pleanala. The proposed development has been the subject the of a Natura Impact Statement (NIS) for Appropriate Assessment
- Lisclogher West Windfarm located approximately 2.5km north and due for construction in 2023
- Bracklin Wind farm Post Windfarm Construction is located adjacent to the northern Boundary
- Lisclogher Post Windfarm Construction is located approximately 1.5Km north
- Ballivor Post Windfarm Construction is located adjacent to the southern boundary, bogs seperated by the R156

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

5.3 Summary

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

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

Project Elements	Comment
Size and scale	<p>The proposed rehabilitation measures will involve the decommissioning, and rehabilitation of 305 Hectares of the cut-over Carranstown Bog by Bord Na Móna.</p> <p>The rehabilitation measures will involve Drain blocking, berm and field re-profiling, Blocking outfalls, Managing overflows and overflow pipes, Sphagnum moss inoculation, Maintain existing silt ponds and Creation of wetland.</p> <p>The surrounding landscape is composed agricultural grassland, commercial forestry plantation, and other cut-over bogs including Ballivor Bog, Bracklin Bog, Lisclogher bog and Lisclogher west bog that are part of the Ballivor Bog Group.</p> <p>There will be decommissioning of former industrial harvesting infrastructure, which will be carried out after the rehabilitation measures.</p>
Land-take	There will be no direct land take from any of Natura 2000 sites.
Distance from Natura 2000 site or key features of the site	<p>The Natura 2000 sites and their proximity to the proposed site:</p> <ul style="list-style-type: none"> • River Boyne and River Blackwater SAC 1.8km • River Boyne and River Blackwater SPA 2km
Resource requirements (water abstraction etc.)	There will be no water abstraction requirements.
Emissions (disposal to land, water or air)	<p>Construction (rehabilitation) phase:</p> <p>Excavators, screw levellers, and bull-dozer will be used to carry out the rehabilitation measures. Dust, noise and vibration will occur from the machinery, but this will be localised and in low volumes, and occur along mostly existing trackways. Dust and noise limits are currently set on IPC licenses. The presence of staff on site will cause small amount of waste and disturbance.</p> <p>Operation phase:</p> <p>During post-rehabilitation continued monitoring of surface water and drains will be carried out by Bord na Móna, as well as vegetation monitoring. Very little emissions will result from this, mostly from presence of surveyors and their mode of transport.</p> <p>Decommissioning phase:</p> <p>Decommissioning will occur during and after rehabilitation, with an aim to ensuring that no environmental liability remains from the industrial harvesting infrastructure. The decommissioning will likely affect small areas of the bog area and mostly on built land. In the unlikely event of pollution or sediment release, this will drain and settle in the silt ponds and hydraulic break and not enter the nearby watercourses. Small amounts of dust may be released during decommissioning of industrial infrastructure but this is small in scale and will settle nearby.</p>
Excavation requirements	Surface excavations will be carried out on the cut-over bog during the filed re-profiling, and one drain will be constructed to provide an hydraulic break and adding in pipes where necessary. However this will involve shallow excavation and involve moving peat layer only.
Transportation requirements	Temporary Impacts: Levels of traffic to the site during the rehabilitation phase will increase traffic to the area but will be temporary in nature. All access to the site will be on pre-existing roads and transportation requirements will not affect Natura sites.

Project Elements	Comment
	Permanent Impacts: On-going monitoring of the post-rehabilitation phase will require visits to the site. Given the size, scale and location of the proposed project, transportation requirements will not affect Natura 2000 sites.
Duration of construction, operation, decommissioning etc.	Construction/ rehabilitation measures will last approximately 7 months from April to October 2022. Operation/post-rehabilitation will be permanent. Decommissioning will occur during operation and be carried out as required in 2-3 years after 2022.

5.3.2 Description of likely changes to the Natura 2000 sites

Potential Impact	Comments
Reduction of habitat area	There will be no temporary or permanent reduction in habitat area for any of the European sites.
Disturbance to key species	There will be no disturbance to any QIs within any of the Natura 2000 sites.
Habitat or species fragmentation	There will be no temporary or permanent habitat or species fragmentation within any of the Natura 2000 sites.
Reduction in species density	There will be no temporary or permanent reduction in species density within any of the Natura 2000 sites, or any QIs of these sites.
Changes in key indicators of conservation value (water quality etc.)	Water flow and quality are likely to be improved close to the pre-degraded 'natural' conditions. Any changes are likely to be beneficial to downstream ecological features.
Climate change	The project is expected to result in the bog reverting from a carbon source (as peat cutting releases carbon and GHG) to a carbon sink through rehabilitation measures proposed and therefore reduce some of the effects of climate change. There is no direct link to screened in Natura 2000 sites beyond the benefit of such actions generally

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

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

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

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

Change to key elements of the site (e.g. water quality etc.)	Potential temporary changes to key elements (i.e. water quality) of the site are anticipated but these will be contained within the site and will not impact downstream watercourses.
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5.3.4 Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is unknown

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

5.4 Concluding Statement

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

- River Boyne and River Blackwater SPA [004232]
- River Boyne and River Blackwater SAC [002299]

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

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[Ireland](#)

t: +353 (0) 61 345463

e: info@jbaconsulting.ie

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