

Bord na Móna

Timahoe South Bog, Co. Kildare

Natura Impact Statement

June 2022

This report considers the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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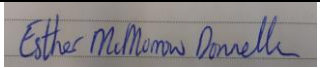




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The findings outlined within this report and the data we have provided are to our knowledge true and express our bona fide professional opinions. This report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) good practice guidelines. Where pertinent CIEEM Guidelines used in the preparation of this report include the *Guidelines for Ecological Report Writing* (CIEEM, 2017a), *Guidelines for Preliminary Ecological Appraisals* (CIEEM, 2017b) and *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine*, (CIEEM, 2019). CIEEM Guidelines include model formats for Preliminary Ecological Appraisal and Ecological Impact Assessment. Also, where pertinent, evaluations presented herein take cognisance of recommended Guidance from the EPA such as *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017), and in respect of European sites, *Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (European Commission, 2018).

Due cognisance has been given at all times to the provisions of the *Wildlife Acts 1976-2021*, the *European Communities (Birds and Natural Habitats) Regulations 2011-2021*, EU Regulation on Invasive Alien Species under *EU Regulation 1143/2014*, the *EU Birds Directive 2009/147/EC* and *Habitats Directive 92/43/EEC*.

No method of assessment can completely remove the possibility of obtaining partially imprecise or incomplete information. Any limitation to the methods applied or constraints however are clearly identified within the main body of this document.

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Notice

This report was produced by INIS Environmental Consultants Ltd. (INIS) on behalf of Bord na Móna, the client, for the specific purpose of the proposed Decommissioning and Rehabilitation Plan for Timahoe South Bog, Co. Kildare, with all reasonable skill, care and due diligence within the terms of the contract with the client, incorporating our terms and conditions and taking account of the resources devoted to it by agreement with the client.

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1. INTRODUCTION

This Natura Impact Statement (NIS) report has been prepared by Inis Environmental Consultants Ltd. to identify if the proposed rehabilitation and decommissioning at Timahoe South Bog, Co. Kildare has the potential for any adverse effects on the integrity of any European designated sites.

This document includes the initial Screening for Likely Significant Effects (LSE) stage (Stage 1), which screens and evaluates LSE of the proposed development upon designated European sites. Where significant effects are considered likely, in view of the Qualifying Interests (QIs) or Special Conservation Interests (SCIs) and the respective Conservation Objectives (COs) of relevant European sites, they cannot be screened out during Stage 1, in which case Appropriate Assessment (Stage 2) is required to identify any potential adverse effects on the integrity of the European sites. Where Appropriate Assessment identifies potential for adverse effects on the integrity of a European site, this NIS report prescribes mitigation measures for the avoidance of adverse effects on the site's integrity. This report is conducted in line with the requirements of Article 6(3) of the EU Habitats Directive (92/43/EEC) and the National Parks and Wildlife Service (NPWS) Guidance for Planning Authorities (2010).

The preparation of this NIS report has had regard to current legislation and best practice guidance (as described in **Section 3** of this report), and supplementary data obtained during a desk study and field surveys in 2022.

1.1. Appropriate Assessment Process

Appropriate Assessment is the process through which the possible nature conservation implications of any plan or project on the Natura 2000 site network is considered by a Competent Authority, before a decision is made to allow that plan or project to proceed.

1.1.1. Stages of the Appropriate Assessment Process

Appropriate Assessment involves a number of steps and tests that are applied using a stage-by-stage approach. Each step or stage in the assessment process precedes and provides a basis for other steps. The four stages in an Appropriate Assessment (AA) are further described below.

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 (DoEHLG) (2010). These guidance documents identify a staged approach to conducting an AA, as shown in **Figure 1.1**.

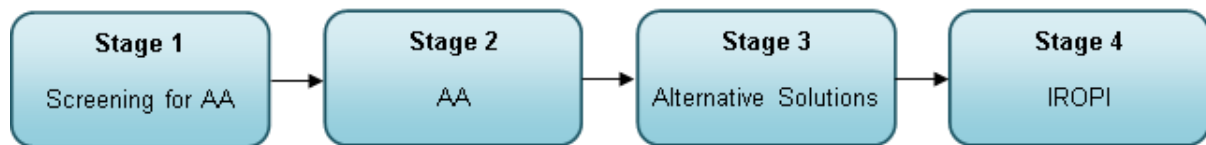


Figure 1.1: The Appropriate Assessment Process (from: Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, DoEHLG, 2010).

1.1.1.1. Stage 1 – Screening for AA

This stage examines the likely effects of a project either alone or in combination with other projects upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant.

1.1.1.2. Stage 2- Appropriate Assessment

In this stage, the impact of the project on the integrity of the Natura 2000 site is considered with respect to the conservation objectives of the site and to its structure and function. Mitigation measures should be applied to the point where no adverse impacts on the site(s) remain.

1.1.1.3. Stage 3 – Alternative Solutions

Should the Appropriate Assessment determine that adverse impacts are likely upon a Natura 2000 site, this stage examines alternative ways of implementing the project that, where possible, avoid these adverse impacts..

1.1.1.4. Stage 4 – IROPI

Assessment where no alternative solutions exist and where adverse impacts remain: where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the Natura site will be necessary. European case law highlights that consideration must be given to alternatives outside the project area in carrying out the IROPI test. It is a rigorous test which projects are generally considered unlikely to pass.

1.2. Statement of Authority

Ms Esther McMorrow Donnellan BA MSc QCIEEM wrote this report. She is an Ecologist with Inis Environmental Consultants and has an MSc in Environmental Leadership in NUI Galway and a BA in History and Geography from NUI Galway. Esther has extensive bird survey experience, including Vantage Point surveys and breeding wader walkover surveys, which are all undertaken following Best Practice Guidance and standardised methodologies (e.g. Hardey *et al.*, 2013; SNH, 2017). Esther also has extensive report writing experience, including the preparation of Ecology Reports, Screenings for Appropriate Assessment and Natura Impact Statements.

Dr Alex Copland BSc PhD MEnvSc is Technical Director with INIS and reviewed this report. He has over 25 years of professional experience working in both statutory and private companies, in third-level research institutions and with environmental NGOs. He is proficient in experimental design and data analysis and has managed several large-scale, multi-disciplinary ecological projects. These have included research and targeted management work for species of conservation concern, the design and delivery of practical conservation actions with a range of stakeholders and end-users, education and interpretation on the interface between people and the environment and the development of coordinated, strategic plans for birds and biodiversity. He has written numerous scientific papers, developed and contributed to evidence-based position papers, visions and strategies on birds and habitats in Ireland. He has supervised the successful completion of research theses for several post-graduate students, including doctoral candidates. He lectures to both undergraduate and post-graduate students at UCD, as well as being a collaborative researcher with both UCD and UCC. He also sits on the Editorial Panel of the scientific journal, *Irish Birds*, which publishes original ornithological research relevant to Ireland's avifauna.

He has been working on bird populations on cutaway peatland habitats in Ireland for over 12 years, covering both breeding and wintering birds at numerous sites. He managed breeding wader surveys on 11 Bord na Móna cutaway peatland sites in 2006 and 2012 and surveyed two additional Bord na Móna peatland sites for breeding wader in 2014. In 2010 and 2011, he undertook baseline bird recording at ten cutaway peatland sites, including bogs within the Derryarkin and Derryadd bog groups. In 2015 and 2016, Alex undertook breeding Curlew surveys at 14 individual bog sites. In collaboration with Bord na Móna, he has published several papers and abstracts in relation to the ecology of cutaway peatlands arising from several projects,

Mr Howard Williams MCIEEM BSc CEnv CBiol MRSB MIFM reviewed and signed off on this report. He is Lead Ecologist with Inis and has more than 20 years' experience as a professional ecologist, specialising in birds. Following his degree, he worked as a biologist for the ESB for three years (1997-2000). Mr Williams has completed in excess of 500 separate ecology assessments in Ireland and the UK since 2000. Mr Williams is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). He is a Chartered Environmentalist (CEnv) with the Society for the Environment (Soc Env) and a Chartered Biologist (CBiol) with the Society of Biology. He is also a full member of the Institute of Fisheries Management. Mr Williams is principal ecologist with INIS Environmental Consultants Ltd and currently project manager on all INIS projects in the Republic of Ireland and the UK.

2. DESCRIPTION OF THE PROPOSED PLAN

2.1. Location of the Proposed Plan

The proposed plan is at Timahoe South Bog, part of the Allen-Lullymore Bog group, located approximately 4km northwest of Allenwood, Co. Kildare.

Only part of the whole Timahoe South Bog will be subject to the proposed decommissioning and rehabilitation under this plan (see **Appendix A**). Other areas of Timahoe South Bog has been constrained out of the proposed decommissioning and rehabilitation due to alternative land uses. A portion of Timahoe South has been re-developed in recent years to build the Drehid Waste Management Facility. In addition a consented (2013) Mechanical Biological Treatment (MBT) Facility (Drehid MBT Facility) is to be located ca.1km to the south of the waste facility, and is presently (2021) under construction. A further portion of the bog, within the present IPC license extent is currently under consideration for a renewable energy development.

Much of the site is older cutaway and has been developing 30-40 years. This land is largely vegetated and is developing a mosaic of woodland, grassland, wetland and peatland habitats.

Three river waterbodies flow through the site; Upper Ballynakill (IE_SE_14S010050); Abbeylough (IE_SE_14A010840); and Figile (IE_SE_14F010061). The bog is also located 5km to the west of the Blackwater River (IE_EA_07B020100) and 1km north of the Grand Canal.

2.2. Description of the Proposed Plan

Timahoe South Bog has been drained and extracted for peat production from the 1950s. Industrial peat extraction at Timahoe South permanently ceased in the 1980's. The proposed Decommissioning and Rehabilitation Plan consists of the rehabilitation of Timahoe South Bog as part of Bord na Móna's Peatlands Climate Action Scheme (PCAS), an obligation under the Environmental Protection Agency (EPA) Integrated Pollution Control (IPC) Licence, by raising water levels to the surface through internal drain blocking and other techniques (**Appendix A**). The objective of the proposed Decommissioning and Rehabilitation Plan is to remove all peat harvesting infrastructure, such as pumps, railway lines, etc. and tidy up the site (decommissioning), and achieve environmental stabilisation through supporting national policies and strategies regarding the reduction of carbon emissions, supporting biodiversity, and improving water quality (rehabilitation).

Boundary drains can provide hydraulic breaks between the bog and adjacent land. In some areas of the Timahoe South Bog where a hydraulic break would be required there are existing boundary drains. Available information indicates that these drains are suitable to provide hydraulic breaks and can be designated as such and retained in the future. Observing and recording the suitability of the boundary drains is recommended and where they are found to be not functioning as predicted upgrade works will be required. This would involve modification of the drain to make them larger/deeper/wider/steeper. In Timahoe South Bog there are two boundary drains which will require upgrade works in order to function as hydraulic breaks (see **Appendix G**). Both drains are located in the west of Timahoe South Bog.

The works for the proposed Decommissioning and Rehabilitation Plan will be undertaken in 2022, by ecologists, hydrologists, and engineers, and will consist of the following:

- Decommissioning and removal of infrastructure on site, including railway lines and buildings, were required;
- No fertiliser will be spread on within or in proximity to European Sites. Fertiliser will not be spread within 25m of a hydraulic break (where slope indicates runoff potential); 25m of an area subject to annual winter inundation, 25m of a natural watercourse, or 25m of any drains where conveyance is to be retained through the proposed rehabilitation extent;
- Fertiliser will be applied to headlands and bare fields where the surface slope indicates runoff is directed away from the above areas, and to within 2m of internal drainage channels within the cutover high field areas. These drainage channels will be blocked in advance of fertiliser application, restricting potential run-off to downstream drainage channels. Intensive water management and internal drain blocking, to raise water levels;
- Continued use of existing outlets;
- Where required, boundary drains will be left unblocked to prevent negative effects on adjacent lands;
- In order to provide silt control measures to each catchment the silt ponds will be created by modifying existing deep drains. Silt ponds will continue to be maintained;
- Rewetting of residual peat, to slow water movement, minimising silt contamination;
- Quarterly monitoring to assess (changing to bi-annual monitoring after two years):
 - general site status;
 - silt pond conditions;
 - proposed Plan;
 - natural colonisation progress;
 - any potential impacts on neighbouring lands; and
 - land security.
- Monitoring of biodiversity using specific indicators (such as breeding bird monitoring and development of pioneer habitats);
- Water quality parameters monitoring for a minimum of two years;
- Examination of the EPA WFD monitoring programme to determine whether pressure from peat production on the local river catchment (WFD) has been reduced;
- The use of aerial survey for habitat condition assessment after rehabilitation will measure carbon emission reductions; and
- Decommissioning of silt-ponds will be assessed and carried out, where required.

Decommissioning activities will be completed within a period of 12 months and are scheduled to be completed before the end of 2023. Rehabilitation activities will be completed within a period of approximately 12 months. In general activities proposed for FY23 i.e. 2022 will be carried out between the months of April and October inclusive.

The duration of activities provided are approximate and may be slightly shorter or longer, depending on weather conditions and progress on rehabilitation prescriptions. Activities may cease for the winter months due to rainfall and poor ground conditions, in line with typical Bord na Móna work practice and Health and Safety requirements. In any case, the rehabilitation works will take approximately 12 months. The proposed activities will be undertaken during daylight hours (between 08.00 and 17.30hrs) during the working week (Monday to Friday).

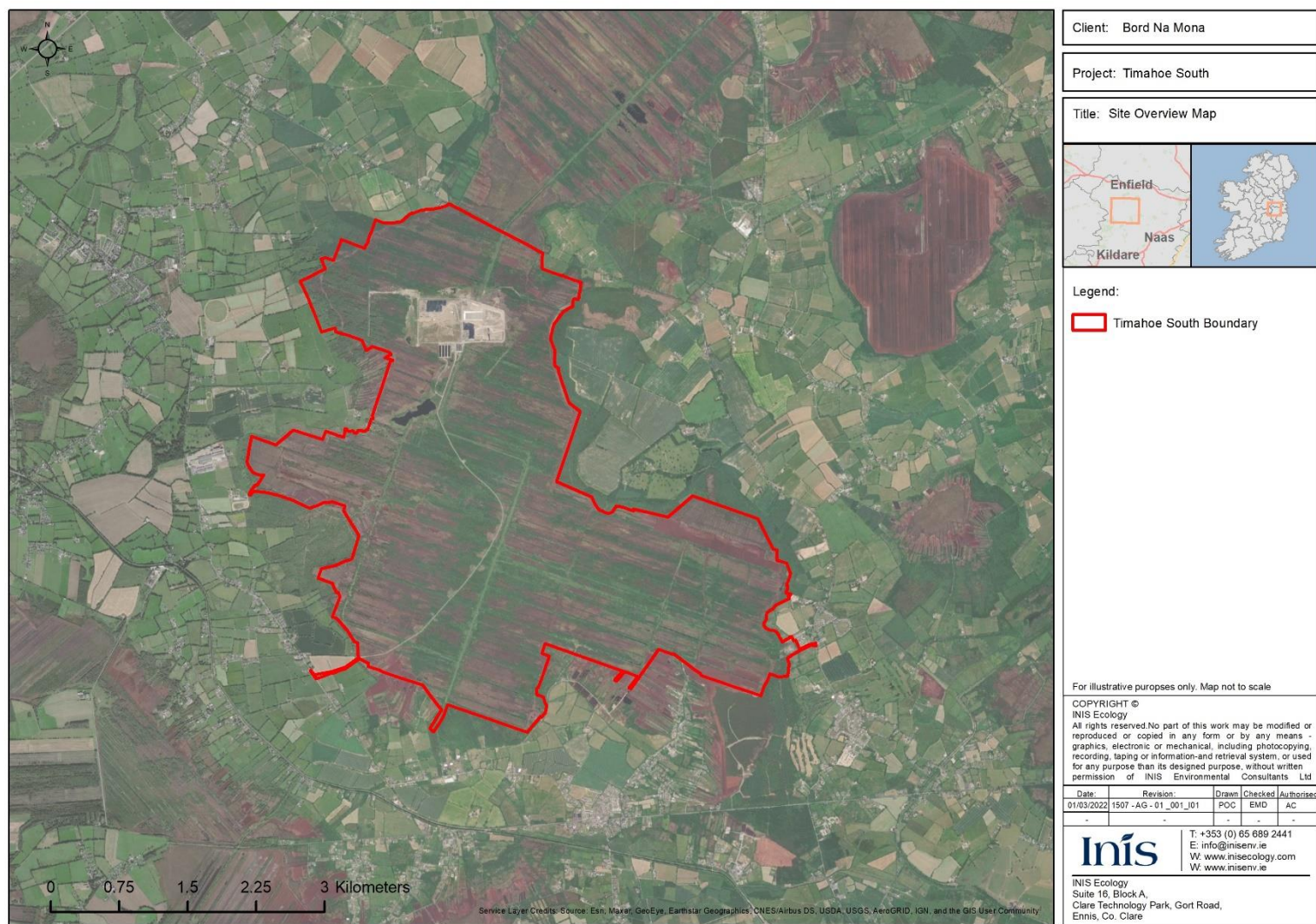


Figure 2.1: Site overview map of the location of Timahoe South Bog, Co. Kildare.

3. METHODOLOGY

3.1. Appropriate Assessment Guidance

EU and national guidance exist in relation to Member States' fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in relation to this AA has had regard to the following guidance:

- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of Environment, Heritage and Local Government (DoEHLG, 2010);
- Communication from the Commission on the Precautionary Principle (European Commission, 2000);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (known as MN2000), Office for Official Publications of the European Communities, Luxembourg (European Commission, 2018);
- Assessment of plans and projects significantly affecting Natura 2000 sites: 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. Office for Official Publications of the European Communities, Brussels (European Commission, 2021);
- 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, 2007);
- Nature and biodiversity cases: Ruling of the European Court of Justice (European Commission, 2006);
- Interpretation Manual of European Union Habitats. Version EUR 28. European Commission (European Commission, 2013);
- Article 6 of the Habitats Directive: Rulings of the European Court of Justice (Sundseth & Roth, 2014).
- Practice Note PN01: Appropriate Assessment Screening for Development Management. OPR (2021).
- Birds Directive (Council Directive 2009/147/EC);
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended);
- Communication from the Commission on the Precautionary Principle (European Commission, 2000);
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government (2010); and
- National Parks and Wildlife Service (NPWS) Guidance for Planning Authorities (2010).

3.2. Ecological Data

3.2.1. Desk Study

A desk study was completed to assess the potential for all Qualifying Interests (QI) and Special Conservation Interests (SCI) of European sites, given their ecological requirements identified by NPWS (NPWS, 2019a, b, c). SCI birds and mobile QI species can travel many kilometers from their core areas, and the desk study assessed the potential presence of such species beyond the European sites for which they are QIs/SCIs. The desk study had particular regard for the following sources:

- Tabulated lists for all European sites in Ireland of SCIs and QIs, obtained through NPWS¹;
- Information on ranges of mobile QI populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a, 2019b, 2019c), and associated digital shapefiles;
- Mapping of European site boundaries and Conservation Objectives (CO) for relevant sites and beyond, as relevant, available online from the NPWS¹;
- Distribution records for QI and SCI species of European sites held online by the National Biodiversity Data Centre (NBDC)²;
- Review of sensitive biodiversity receptors on the site and environs via the Environmental Sensitivity Mapping Tool³;
- Details of QIs/SCIs of European sites within the National Biodiversity Action Plan 2017-2021 (DoCHG, 2017); and
- Data including surface and ground water quality status, and river catchment boundaries available from the online database of the Environmental Protection Agency (EPA)⁴;
- Information on groundwater aquifers, recharge, and vulnerability available from the online database of Geological Survey Ireland (GSI)⁵;
- Boundaries for catchments with confirmed or potential Freshwater Pearl Mussel (FWPM) *Margaritifera margaritifera* populations in GIS format available online from the NPWS.⁶

3.2.2. Field Visit

A field visit was undertaken to Timahoe South Bog on 23rd February to view the site and habitats. A particular emphasis was placed on viewing the silt ponds and water outflows from the site, in addition to reviewing the various locations and habitats where rehabilitation activities area proposed to be undertaken. The Timahoe South site is considered to be comprised of a mosaic of habitats (Figure 2.1). These habitats include pioneer open cutaway habitats; scrub (WS1); heath (HH); wetland; bare peat; and bordered by conifer plantation (WD4) and agricultural grassland (GA1) (habitat codes after Fossitt, 2000).

An additional field visit was also undertaken to Timahoe South Bog on 2nd June to assess the presence of Invasive Alien Species (IAS) within the site.

¹ Available at <https://www.npws.ie/protected-sites>. Accessed in March 2022.

² Available at <https://maps.biodiversityireland.ie/Map>. Accessed in March 2022.

³ Available at <https://airomaps.geohive.ie/ESM/>. Accessed in March 2022.

⁴ Available at <https://gis.epa.ie/EPAMaps/>. Accessed in March 2022.

⁵ Available at <https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx>. Accessed in March 2022.

⁶ Available at <https://www.npws.ie/maps-and-data/habitat-and-species-data>. Accessed in March 2022.

3.3. Relevant European Sites

The identification of relevant European sites to be included in this report was based on the identification of the Zone of Influence (Zoi) of the proposed Decommissioning and Rehabilitation Plan, a source-pathway-receptor model of effects, and the likely significance of any identified effects.

3.3.1. Zone of Influence

The proximity of the proposed Decommissioning and Rehabilitation Plan to European sites, and more importantly QIs/SCIs of European sites, is of importance when identifying potentially likely significant effects. During the initial scoping of this report, a 15km Zoi was applied for impact assessment. A conservative approach has been used, which minimises the risk of overlooking distant or obscure effect pathways, while also avoiding reliance on buffer zones within which all European sites should be considered. This approach assesses the complete list of all QIs/SCIs of European sites in Ireland (i.e. potential receptors), instead of listing European sites within buffer zones. This follows Irish departmental guidance on AA:

“For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects” (DoEHLG, 2010; p.32, para 1).

Following the guidance set out by the NRA (2009), the proposed plan has been evaluated based on an identified Zoi with regard to the potential impact pathways to ecological features (e.g. mobile and static). The Zoi of the proposed plan on mobile species (e.g. birds, mammals, and fish), and static species and habitats (e.g. saltmarshes, woodlands, and flora) is considered differently. Mobile species have ‘range’ outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies considerably, from several meters (e.g. in the case of whorl snails *Vertigo* spp.), to hundreds of kilometers (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have Zoi’s within close proximity of the proposed plan, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometers downstream from a pollution source.

Hydrological linkages between the proposed Decommissioning and Rehabilitation Plan area and European sites (and their QIs/SCIs) can occur over significant distances; however, any effect will be site specific depending on the receiving water environment and nature of the potential impact. A reasonable worst-case Zoi for water pollution from the proposed Decommissioning and Rehabilitation Plan area is considered to be the hydrological pathway from the proposed plan until it reaches the first lentic water body (e.g. lake), as the depositional nature of these water bodies would limit the transport capacity of any potential influences from the proposed Decommissioning and Rehabilitation Plan to European sites located downstream.

See **Figure 4.1** for the location of Natura 2000 sites within the identified Zoi.

3.3.2. Source-Pathway-Receptor Model Decommissioning and Rehabilitation Plan

The likely effects of the proposed Decommissioning and Rehabilitation Plan on European sites has been appraised using a source-pathway-receptor model, where:

- A 'source' is defined as the individual element of the proposed Decommissioning and Rehabilitation Plan that has the potential to impact on a European site, its qualifying features and its conservation objectives;
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor; and
- A 'receptor' is defined as the Special Conservation Interests of Special Protection Areas (SPA) or Qualifying Interests (QI) of Special Areas of Conservation (SAC) for which Conservation Objectives have been set for the European sites being screened.

A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source-pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potentially links to European site. These are termed as 'relevant' European sites/QIs/SCIs throughout this report.

3.3.3. Likely Significant Effect

The threshold for a Likely Significant Effect (LSE) is treated in the screening exercise as being above a *de minimis* level⁷. The opinion of the Advocate General in CJEU case C-258/11 outlines:

"the requirement that the effect in question be 'significant' exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on a European site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill."

In this report, therefore, 'relevant' European sites are those within the potential Zol of activities associated with the proposed plan, where LSE pathways to European sites were identified through the source-pathway-receptor model.

3.4. Screening Process

The Screening for Appropriate Assessment will incorporate the following steps:

- Determining whether a project or plan is directly connected with or necessary to the conservation management of any European sites;
- Describing the project or plan;
- Identifying the European sites potentially affected by the project or plan;
- Identifying and describing any potential effects of the project or plan on European sites, alone, in-combination and cumulatively with other plans/projects; and
- Assessing the likelihood of significant effects on European sites.

⁷ *Sweetman v. An Bord Pleanála (Court of Justice of the EU, case C-285/11). A de minimis effect is a level of risk that is too small to be concerned with when considering ecological requirements of an Annex I habitat or a population of Annex II species present on a European site necessary to ensure their favourable conservation condition. If low level effects on habitats or individuals of species are judged to be in this order of magnitude and that judgment has been made in the absence of reasonable scientific doubt, then those effects are not considered to be likely significant effects.*

4. RECEIVING ENVIRONMENT

4.1. Desk study

4.1.1. Protected and Invasive Species

A search was undertaken on the National Biodiversity Data Centre⁸ for Protected and Invasive Species presence in the vicinity of the proposed Decommissioning and Rehabilitation Plan. Timahoe South Bog is located within the 10x10km Grid Squares; N73 and N72. Protected and invasive species records available for this location and of relevance to European Sites are shown in **Table 4.1** below (records exceeding 50 years were excluded from the table).

Table 4-1 NBDC records of protected and invasive species within the proposed plan location.

Common name	Scientific name	Date of record	Designation*
Grid Square N73			
Invasive Alien Species			
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	31/12/2012	Regulation S.I. 477 (Ireland)
Japanese Knotweed	<i>Fallopia japonica</i>	06/06/2021	Regulation S.I. 477 (Ireland)
Rhododendron ponticum	<i>Rhododendron ponticum</i>	29/03/2011	Regulation S.I. 477 (Ireland)
American Mink	<i>Mustela vison</i>	15/09/2012	Regulation S.I. 477 (Ireland)
Brown Rat	<i>Rattus norvegicus</i>	23/04/2013	Regulation S.I. 477 (Ireland)
Fallow Deer	<i>Dama dama</i>	04/02/2015	Regulation S.I. 477 (Ireland)
Greylag Goose	<i>Anser anser</i>	31/12/2011	Regulation S.I. 477 (Ireland)
Mammals			
European Otter	<i>Lutra lutra</i>	09/04/2015	EU Habitats Directive >> Annex II Annex IV
Aquatics			
Freshwater White-clawed Crayfish	<i>Austropotamobius pallipes</i>	19/07/2018	EU Habitats Directive >> Annex II >> Annex V
Birds			
Common Kingfisher	<i>Alcedo atthis</i>	31/12/2011	EU Birds Directive >> Annex I Birds of Conservation Concern - Amber List
Hen Harrier	<i>Circus cyaneus</i>	16/05/2015	EU Birds Directive >> Annex I Birds of Conservation Concern - Amber List
Grid Square N72			
Invasive Alien Species			

⁸ Available at: <https://maps.biodiversityireland.ie/Map>. Accessed in March 2022.

Common name	Scientific name	Date of record	Designation*
Eastern Grey Squirrel	<i>Sciurus carolinensis</i>	31/12/2011	Regulation S.I. 477 (Ireland)
Canadian Waterweed	<i>Elodea canadensis</i>	31/12/1999	Regulation S.I. 477 (Ireland)
Japanese Knotweed	<i>Fallopia japonica</i>	24/08/2005	Regulation S.I. 477 (Ireland)
Rhododendron ponticum	<i>Rhododendron ponticum</i>	21/04/2010	Regulation S.I. 477 (Ireland)
American Mink	<i>Mustela vison</i>	03/03/1992	Regulation S.I. 477 (Ireland)
Brown Rat	<i>Rattus norvegicus</i>	21/10/2016	Regulation S.I. 477 (Ireland)
Fallow Deer	<i>Dama dama</i>	04/02/2015	Regulation S.I. 477 (Ireland)
Mammals			
European Otter	<i>Lutra lutra</i>	27/03/2015	EU Habitats Directive >> Annex II Annex IV
Aquatics			
Freshwater White-clawed Crayfish	<i>Austropotamobius pallipes</i>	22/08/2017	EU Habitats Directive >> Annex II >> Annex V
Invertebrates			
Desmoulin's Whorl Snail	<i>Vertigo (Vertigo) moulinsiana</i>	01/09/2006	EU Habitats Directive >> Annex II
Marsh Fritillary	<i>Euphydryas aurinia</i>	28/05/2020	EU Habitats Directive >> Annex II
Birds			
Common Kingfisher	<i>Alcedo atthis</i>	17/08/2017	EU Birds Directive >> Annex I Birds of Conservation Concern - Amber List
Hen Harrier	<i>Circus cyaneus</i>	31/12/2011	EU Birds Directive >> Annex I Birds of Conservation Concern - Amber List

* Birds of Conservation Concern in Ireland 2020–2026 (Gilbert *et al.*, 2021).

4.1.2. Protected Habitats

The Environmental Sensitivity Mapping Tool³ was used to confirm the presence of designated habitats within the proposed plan boundary and surrounding environment. However, no records of any Annex I habitats of the EU Habitats Directive were displayed in the results of the Environmental Sensitivity Mapping Tool.

4.1.3. Consultation

Consultation with the National Parks and Wildlife Service (NPWS) was undertaken in conjunction with the writing of this report. A request for scientific data, data relating to rare and protected species and sensitive data pertaining to the 10km grid squares in which the Timahoe South Bog Site is located was sent to the NPWS. This data was received. However, due to the confidential nature of the data results

cannot be displayed in this report. Nonetheless, no sensitive species were recorded in the grid squares within which the proposed Plan is located and this information was used to inform the report writing process.

4.1.4. Flora and Fauna Recorded within Timahoe South Bog

According to the Timahoe South Decommissioning and Rehabilitation Plan, key biodiversity features of interest in Timahoe South Bog include the Amber listed Hen Harrier (*Circus cyaneus*) (occurs during the winter months and possibly roosts on site) and Whooper Swan (*Cygnus cygnus*). Species of bird breeding at Timahoe South include the Red listed Common Snipe (*Gallinago gallinago*) and Eurasian Woodcock (*Scolopax rusticola*) (Bord na Móna, 2021).

Greater White toothed Shrew (*Crocidura russula*) was recorded from Timahoe South in September of 2021. Regarding invasive alien flora, Cotoneaster (*Cotoneaster spp.*) can be found near the old rail line in the west of Timahoe South in several locations. A broad range of common garden escapes are occasionally present around the margins of Bord na Móna bogs, and although spatial overlap with the PCAS is expected to be limited, these are, where necessary, to be treated in line with Best Practice during PCAS activities (Bord na Móna, 2021).

4.1.5. Invasive Alien Species recorded at Timahoe South Bog

During the field survey undertaken on 2nd June, Invasive Alien Species were observed at three locations within or directly adjacent to the Timahoe South Bog site (see **Appendix E**). Snowberry was observed within the site adjacent to a drain/waterbody while Japanese Knotweed was located in two locations adjacent to the border of the bog and on access tracks adjacent to the bog.

4.1.6. Aquatic Environment

90% of the proposed rehabilitation plan is located within the Barrow Water Framework Directive (WFD) Catchment (14) and the north section of the rehabilitation plan in Timahoe South Bog is located within the Boyne WFD Catchment (07). The north section of the rehabilitation plan is located within the Blackwater[Longwood]_SC_010 WFD Sub-catchment (07_6), while the mid-western section of the bog is located within the Figile_SC_010 WFD Sub-catchment (14_3). The south-eastern section of the bog is located within the Slate_SC_010 WFD Sub-catchment (14_16).

There are 15 existing outflow points onsite. Seven river water bodies flow from or adjacent to the Timahoe Bog Site (Table 4.2). Searches of the EPA Unified GIS Application⁹ and the EPA Catchments database¹⁰ were conducted for water bodies draining and located adjacent to the proposed plan area and their water quality for 2013-2018. Four river waterbodies run through the site; the Figile_010; the Abbeylough_010; the Slate_040; and the Blackwater (Longwood)_020.

⁹Available at <https://gis.epa.ie/EPAMaps/>. Accessed in February 2022.

¹⁰ Available at <https://www.catchments.ie/>. Accessed in February 2022.

Table 4-2 WFD river water bodies forming the hydrological pathway of the proposed Decommissioning and Rehabilitation Plan for Timahoe South Bog

River Waterbody Name	River Waterbody Code	Water Quality 2013-2018	Location in relation to bog
Figile_010	IE_SE_14F010061	Poor	West
Abbeylough_010	IE_SE_14A010840	Unassigned	West
Slate_050	IE_SE_14S010100	Moderate	South-west
Slate_040	IE_SE_14S010050	Poor	South
Blackwater (Longwood)_010	IE_EA_07B020060	Poor	North-east
Blackwater (Longwood)_020	IE_EA_07B020100	Moderate	North-west

Monitoring is in place at a number of outflows from Timahoe South Bog. The main emission limit value associated with this bog is 35mg/l suspended solids, with trigger levels for ammonia of 3.00 mg/l and COD 100mg/l. Initial monthly ammonia concentrations from August 2020 to December 2021 have a range of 0.007 to 0.593 mg/l with an average of 0.180mg/l. Results for suspended solids for the same period indicate a range of 2 to 16mg/l with an average of 5.8mg/l.

4.1.7. European sites

The nearest European site to the rehabilitation plan is separated by a minimum distance of approximately 1.7km – Ballynafagh Lake SAC (**Table 4.3**). No EU Annex I habitats occur within the Timahoe South Bog Site. A precautionary distance of 15km was chosen for the preliminary ZOI of the proposed plan to evaluate the potential for significant effects on European sites, alone and/or in combination with other plans or projects, further extended to include the full extent of a potential hydrological pathway, from the proposed plan until the first lentic water body (as described in **Section 3.3.1**). Further, the ZOI was extended to include the Slieve Bloom Mountains SPA due to the possible presence of Hen Harrier utilising habitat within the bog or nearby. In total, the considered ZOI of the proposed plan intersects nine European sites (**Figure 4.1**). While the Annex I raised bog habitat is located within the ZOI of the PCAS interventions, due to the nature of the works any significant effects on the habitat will be positive. There are no other Annex I habitats overlapping the PCAS extent or occurring within the ZOI of the PCAS interventions.

Potential pathways between the proposed plan and European sites are appraised in **Table 4.3**, including hydrological connectivity. The CO of the relevant European sites are also presented and illustrated in **Figure 4.1**.

Table 4-3 Distance from European sites within Zol and the proposed plan.

Site code	Site name	Distance to proposed plan
001387	Ballynafagh Lake SAC	1.7km
000391	Ballynafagh Bog SAC	2.4km
000925	The Long Derries, Edenderry SAC	4.9km
002331	Mouds Bog SAC	7.8km
000396	Pollardstown Fen SAC	10.5km
002299	River Boyne and River Blackwater SAC	13km
004232	River Boyne and River Blackwater SPA	13km
002162	River Barrow and River Nore SAC	19.8km
004160	Slieve Bloom Mountains SPA	40km

Table 4-4 Relevant European sites, Conservation Objectives and connectivity to the proposed plan (highlighted CO/European sites are identified with potential pathways for effects with the proposed plan).

Designated site [code]	Conservation Objectives version	Qualifying Interests [code]/Special Conservation Interests [code]	Connectivity with the proposed plan
Ballynafagh Lake SAC [001387]	Version 1, 10 th December 2021 (NPWS, 2021a)	Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) [1016]	No. The rehabilitation plan is not hydrologically connected with the Ballynafagh Lake SAC .
		Marsh Fritillary (<i>Euphydryas aurinia</i>) [1065]	Yes. While the rehabilitation plan is not hydrologically connected with the Ballynafagh Lake SAC, there is a terrestrial separation distance of ~1.7km between Timahoe South Bog and the SAC. It is possible that suitable habitat for use by the QI species occurs within the site.
		Alkaline fens [7230]	No. The rehabilitation plan is not hydrologically connected with the Ballynafagh Lake SAC .

Designated site [code]	Conservation Objectives version	Qualifying Interests [code]/Special Conservation Interests [code]	Connectivity with the proposed plan
Ballynafagh Bog SAC [000391]	Version 1, 10 th November 2015 (NPWS, 2015a)	Active raised bogs [7110]*	No. The rehabilitation plan is not hydrologically connected with the Ballynafagh Bog SAC.
		Degraded raised bogs still capable of natural regeneration [7120]	
		Depressions on peat substrates of the Rhynchosporion [7150]	
The Long Derries, Edenderry SAC [000925]	Version 1, 11 th November 2021 (NPWS, 2021b)	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]	No. The rehabilitation plan is not hydrologically connected with the Long Derries, Edenderry SAC.
Mouds Bog SAC [002331]	Version 1, 20 th November 2015 (NPWS, 2015b)	Active raised bogs [7110]*	No. The rehabilitation plan is not hydrologically connected with the Mouds Bog SAC.
		Degraded raised bogs still capable of natural regeneration [7120]	
		Depressions on peat substrates of the Rhynchosporion [7150]	
Pollardstown Fen SAC [000396]	Version 1, 14 th January 2022 (NPWS, 2022)	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210]*	No. The rehabilitation plan is not hydrologically connected with the Pollardstown Fen SAC.
		Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]*	
		Alkaline fens [7230]	
		Geyer's Whorl Snail (<i>Vertigo geyeri</i>) [1013]	
		Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>) [1014]	
		Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) [1016]	

Designated site [code]	Conservation Objectives version	Qualifying Interests [code]/Special Conservation Interests [code]	Connectivity with the proposed plan
River Boyne and River Blackwater SAC [002299]	Version 1, 3 rd December 2021 (NPWS, 2021c)	Alkaline fens [7230]	Yes. The rehabilitation plan is hydrologically connected with the River Boyne and River Blackwater SAC, with a hydrological separation distance of ~22km.
		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]*	
		River Lamprey (<i>Lampetra fluviatilis</i>) [1099]	
		Salmon (<i>Salmo salar</i>) [1106]	
		Otter (<i>Lutra lutra</i>) [1355]	
River Boyne and River Blackwater SPA [004232]	Generic Version 8.0, 23 rd March 2021 (NPWS, 2021d)	Kingfisher (<i>Alcedo atthis</i>) [A229]	Yes. The rehabilitation plan is hydrologically connected with the River Boyne and River Blackwater SPA, with a hydrological separation distance of ~22km.
River Barrow and River Nore SAC [002162]		Desmoulin's whorl snail (<i>Vertigo moulinsiana</i>) [1016]	Yes. The rehabilitation plan is hydrologically connected with the River Barrow and River Nore SAC, with a hydrological separation distance of ~26.1km.
		Freshwater pearl mussel (<i>Margaritifera margaritifera</i>) [1029]	
		White-clawed crayfish (<i>Austropotamobius pallipes</i>) [1092]	
		Sea lamprey (<i>Petromyzon marinus</i>) [1095]	
		Brook lamprey (<i>Lampetra planeri</i>) [1096]	
		River lamprey (<i>Lampetra fluviatilis</i>) [1099]	
		Twaite shad (<i>Alosa fallax</i>) [1103]	
		Atlantic salmon (<i>Salmo salar</i>) (only in fresh water) [1106]	

Designated site [code]	Conservation Objectives version	Qualifying Interests [code]/Special Conservation Interests [code]	Connectivity with the proposed plan
		1130 Estuaries	
		1140 Mudflats and sandflats not covered by seawater at low tide	
		1310 Salicornia and other annuals colonizing mud and sand	
		1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	
		1355 Otter (<i>Lutra lutra</i>)	
		1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	
		1421 Killarney fern (<i>Trichomanes speciosum</i>)	
		1990 Nore freshwater pearl mussel (<i>Margaritifera durrovensis</i>)	
		3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	
		4030 European dry heaths	
		6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	
		Petrifying springs with tufa formation (Cratoneurion) [7220]*	

Designated site [code]	Conservation Objectives version	Qualifying Interests [code]/Special Conservation Interests [code]	Connectivity with the proposed plan
		91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles	
		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]*	
Slieve Bloom Mountains SPA [004160]	Generic Version 8.0, 23 rd March 2021 (NPWS, 2021e)	Hen Harrier (<i>Circus cyaneus</i>) [A082]	Yes. While the Slieve Bloom Mountains SPA is not hydrologically connected with Timahoe South Bog, the SCI species was observed utilising habitat within the Timahoe South Bog site in the past.

* indicates a priority habitat under the Habitats Directive.

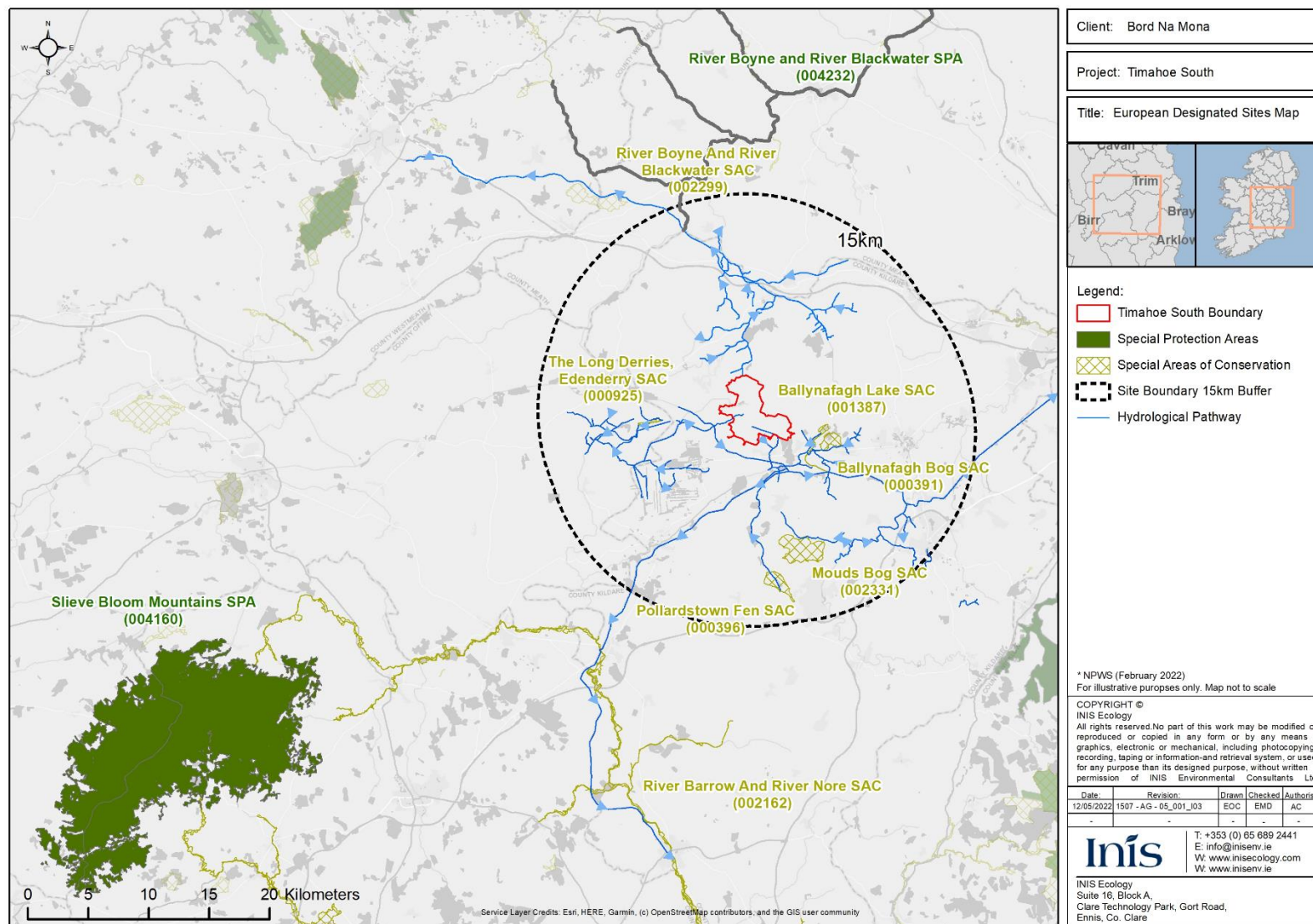


Figure 4.1: Designated sites within the considered ZOI of proposed plan.

5. STAGE 1: SCREENING OF LIKELY SIGNIFICANT EFFECTS

5.1. Screening Process

The Screening process examines the likely effects of the proposed Decommissioning and Rehabilitation Plan, as described, either alone or in combination, with other projects or plans, upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant.

5.2. Screening: Is the Project Directly Connected to or Necessary for Management of a European site?

For a project or plan to be 'directly connected with or necessary to the management of the site', the 'management' component must refer to management measures that are for conservation purposes, and the 'directly' element refers to measures that are solely conceived for the conservation management of a site and not direct or indirect consequences of other activities.

Finding: **No**, the proposed Decommissioning and Rehabilitation Plan is not directly connected to, or necessary for the management of, a European site.

5.3. Assessment of Source-Pathway-Receptor Model

As described in the methodology (Section 3), the AA Screening Report appraisal adopts a comprehensive and precautionary approach for which the starting point is a complete list of all QIs/SCIs of European sites in Ireland. In this context, **Table 5-1** assesses a specific source-pathway-receptor model for this proposed Decommissioning and Rehabilitation Plan for Timahoe South Bog.

Table 5-1: *Source-Pathway-Receptor Model for the Proposed Plan.*

Source of Potential Effect	Description of Pathway	Potential Zone of Influence of the Effect
<ul style="list-style-type: none"> • Noise, vibration; • Human presence; • Movements of vehicles; and • Upgrading of drains to hydraulic breaks. 	<p>Noise or other works-related disturbance could reduce the ability of populations of QI/SCI species to forage, roost or breed.</p> <p>The movement of vehicles and human presence could lead to degradation of suitable habitat, resulting in habitat loss.</p> <p>The movement of vehicles could lead to the direct mortality of individual QIs.</p>	<p>Varies by species. Generally assessed within 500 m of the proposed plan footprint for wintering birds (see Madsen, 1985; Smit & Visser, 1993; and Rees <i>et al.</i>, 2005). However, distance can be significantly lower (e.g. 150 m for otter underground sites - NRA, 2006), or higher (e.g. hen harriers may be disturbed when nesting at up to 500 - 1000m from disturbance (Currie & Elliott, 1997)).</p>

Source of Potential Effect	Description of Pathway	Potential Zone of Influence of the Effect
<ul style="list-style-type: none"> • Use of contaminants (e.g. hydrocarbons). • Earthworks (e.g. Digging); • Movement of People, soils, and vehicles; and • Upgrading of drains to hydraulic breaks. 	Contamination through surface water runoff.	Surface water run-off carrying suspended silt or contaminants into local water bodies can be restricted to the first lentic waterbody that is hydrologically downstream from the proposed Decommissioning and Rehabilitation Plan.
<ul style="list-style-type: none"> • Spread of Invasive Alien Species 	Spread of IAS through surface water runoff and the movement of humans and vehicles.	The Zone of Influence of effects for spread of terrestrial invasive species is difficult to accurately estimate, as plant fragments may be spread on tyre treads to distant unrelated sites. In relation to water-borne spread of vegetation, the Zone of Influence can be generally restricted to the first lentic waterbody which is hydrologically downstream from the proposed Decommissioning and Rehabilitation Plan.

5.4. Scoping of Effects

5.4.1. Ex-situ mortality of, disturbance and habitat loss to mobile QIs and SCIs

The noise, vehicle, machinery and personnel movement and upgrading of drains to hydraulic breaks associated with the proposed rehabilitation can potentially disturb several SCIs and QIs of European Sites within a Zone of Influence. The decommissioning and rehabilitation works may also potentially result in ex-situ habitat loss for QI and SCI populations associated with protected sites within the ZOI.

The Timahoe South Bog holds suitable habitat for Hen Harriers which are SCIs within the Slieve Bloom Mountains SPA and which have been previously observed onsite (see Section 2.2). As such, ex-situ disturbance and habitat loss are potential likely significant effects which cannot be ruled out. Hen Harriers are brought forward for discussion in Stage Two (See **Table 6-2**).

The proposed Decommissioning and Rehabilitation Plan area has the potential to hold suitable habitat for Marsh Fritillary, a QI Species within the Ballynafagh Lake SAC. Ex-situ habitat loss and disturbance effects cannot be ruled out as long-range dispersal over 5-20km can occur. Due to a terrestrial separation distance of ~ 1.7km between the SAC and the protected site, this species is brought forward for discussion in Stage Two (See **Table 6-2**).

The proposed Plan holds suitable habitat for the Otter and is hydrologically upstream of the River Boyne and River Blackwater SAC within which the Otter (*Lutra lutra*) is a QI. While the proposed Plan is within the foraging range of the Otter (Reid *et al.*, 2013; Chanin 2003a), Otters typically forage at

night (Chanin, 2003b), so the proposed period for undertaking the rehabilitation works (during the day) limits likely disturbance impacts in addition to a minimal temporal overlap which limits direct mortality impacts as a result of collision. This, coupled with the abundance of availability of alternative habitat in the vicinity of the proposed rehabilitation for foraging Otter, means that any effects are considered unlikely. Further, it is the aim of the plan to rehabilitate the bog which may result in increased suitable habitat for use by Otters.

5.4.2. Contamination

Potential contamination effects from surface water run-off are related to the potential sources for likely significant effects, identified in the conceptual source-pathway-receptor model (**Table 5.1**), and the identified hydrological connectivity with European sites (**Table 4.3**).

The works associated with the proposed Decommissioning and Rehabilitation Plan, such as the creation of silt ponds and upgrading of existing drains to hydraulic breaks, may cause contamination of river waterbodies which are hydrologically connected with the proposed Decommissioning and Rehabilitation Plan area. Hydrological pathways have been identified between the proposed Decommissioning and Rehabilitation Plan for Timahoe South Bog and three European sites – the River Boyne and River Blackwater SAC [002299], River Boyne and River Blackwater SPA [004232] and River Barrow and River Nore SAC [002162]. This potential contamination may be caused by siltation caused by the release of soil/earth in the form of suspended sediments in addition to the accidental leakage of hydrocarbons onsite (e.g. fuel, oil) or any other contaminant used on the land (e.g. fertiliser). As there are no lentic waterbodies between the proposed Decommissioning and Rehabilitation Plan area that may intercept any contaminants arising from the proposed rehabilitation actions, potential likely significant effects arising from the proposed Decommissioning and Rehabilitation Plan cannot be ruled out.

5.4.3. Spread of Invasive Alien Species

Cotoneaster was recorded within the Timahoe South Bog Site (Bord na Móna, 2021) and Japanese Knotweed, Canadian Waterweed and Rhododendron ponticum were recorded within the 10km grid squares within which the proposed Plan is located. The potential spread of IAS is related to the potential sources for likely significant effects, identified in the conceptual source-pathway-receptor model (**Table 5.1**), and the identified hydrological connectivity with European sites (**Table 4.3**).

Hydrological pathways have been identified between the proposed plan and three European sites – the River Boyne and River Blackwater SAC [002299], River Boyne and River Blackwater SPA [004232] and River Barrow and River Nore SAC [002162]. As the first lentic waterbody in this hydrological pathway is the coastal estuaries, it is possible that the spread of IAS to the interceding waterbodies will give rise to likely significant effects on the above-mentioned European Sites.

5.5. In-Combination Effects

Legislation, guidance and case law (**Section 1.1** and **Section 3.1**) requires that in-combination effects with other plans or projects are considered. On this basis, a range of other plans and projects were considered in terms of their potential to have in-combination effects with the proposed plan. This included accounting for synergistic effects where two or more impact types acting together may create a combined effect on one or more receptors greater than the impacts separately.

5.5.1. Kildare County Biodiversity Plan 2017-2023

The Kildare County Development Plan 2017-2023 (Kildare County Council, 2017) corresponds with a number of other plans and projects in accordance with the Habitats Directive, in which the council is deemed responsible for, including:

- Supports the transition to a low carbon, climate resilient communities and a healthy environment with high quality air and water.
- Protecting the environment by implementing an environmental protection policy which recognises the various environmentally sensitive zones within the county but not to mutually exclude appropriate and otherwise acceptable uses and development.

5.5.2. Projects

A search of planning applications (projects) was conducted within the vicinity of the proposed plan and along hydrological pathways previously identified, using the Kildare County Council planning portal map viewer¹¹, the Meath County Council planning portal map viewer¹² and the Department of Housing, Planning and Local Government EIA portal map viewer¹³. The search was limited to projects with potential to have in-combination impacts on European sites within the ZOI in a five year period preceding the date of issue of this report. Incomplete, withdrawn, and refused project applications were excluded. The projects considered to hold potential for in-combination adverse effects on the integrity of relevant European sites to the proposed works are detailed in **Table 5.2**.

Furthermore, minor projects within the surrounding area with an absence of ecological or environmental documentation within the planning application were also considered not likely to have any in-combination effects with this project as they were not considered, by the relevant Competent Authority, as likely to cause any impact.

Additionally, the turbary rights are considered in relation to the decommissioning and rehabilitation plan. Any ongoing turbary is monitored and will not be above the current baseline and is therefore not considered as likely to cause any impact.

There are no potential effects on European Sites reported, either individually or in-combination with other projects, according to the conclusion of the NIS accompanying the project with application number 18303249 listed in **Table 5.2**. Therefore, it is considered that no likely in-combination or synergistic effects can be anticipated from the proposed works with other plans or projects.

¹¹ Available at [Offaly County Council Planning GIS Viewer \(arcgis.com\)](https://offalycounty.ie/council/council-services/planning-and-building/planning-permission/view-or-search-planning-applications) Accessed in March 2022.

¹² Available at <https://www.meath.ie/council/council-services/planning-and-building/planning-permission/view-or-search-planning-applications> Accessed in May 2022.

¹³ Available at <https://housing.gov.ie/maps/arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1> Accessed in March 2022.

Table 5-2: *Relevant projects with potential for in-combination adverse effects to European sites.*

Planning Application /Case Reference Number	Project/Applicant Name and Proposed Location	Brief Development Description	Approximate Distance from Proposed Works	Date Planning Application Granted
18303249	Bord na Móna Powergen Ltd. & ESB Wind Development Ltd., Timahoe East, Co. Kildare	110kV onsite electrical substation with associated electrical plant, electrical equipment, welfare facilities and waste water holding tank and security fencing. 110kV overhead line grid connection cabling, upgrade of existing tracks and provision of new site access roads with all associated site development and ancillary works.	<i>c.a. 1.4km</i>	29/07/2020
201529	Robert Wilson Wright, Coolcarrigan, Timahoe West, Co. Kildare	Extension of duration of Planning Ref. No 151172. solar PV panel array consisting of up to 66,000m ² of solar panels on ground mounted steel frames, 2 no. electricity control cabins, 10 no. inverter units, underground cable ducts, hardstanding area, boundary security fence site entrance, CCTV	<i>c.a. 0.7km</i>	11/02/2021
TA181225	Lightsource Renewable Energy Ireland Ltd, Castlejordan, Harristown & Clongall, Co. Meath	ten-year planning permission for a solar farm and the construction, operation and decommissioning of a photovoltaic solar farm comprising photovoltaic panels on ground mounted frames, inverter stations, customer substation, switchgear substations, field transformers, monitoring house, communications building, single storey storage shed, battery containers, WC, fencing, temporary construction compounds, internal access tracks, CCTV	<i>c.a. 13km</i>	27/11/2019

Planning Application /Case Reference Number	Project/Applicant Name and Proposed Location	Brief Development Description	Approximate Distance from Proposed Works	Date Planning Application Granted
		cameras, improvements to the existing entrance, cabling, landscaping and all associated ancillary development works		
18303249	Bord na Móna Powergen Ltd. & ESB Wind Development Ltd., Timahoe East, Co. Kildare	110kV onsite electrical substation with associated electrical plant, electrical equipment, welfare facilities and waste water holding tank and security fencing. 110kV overhead line grid connection cabling, upgrade of existing tracks and provision of new site access roads with all associated site development and ancillary works	c.a. 0.5km	29/07/2020
2019011	Bord na Móna Plc., Killinagh Upper, Naas, Co. Kildare. W91 RC82	Proposed development of additional non-hazardous and new hazardous waste capacity at the existing Drehid Waste Management Facility	c.a. 0km	17/01/2019
21291	Edenderry Power Limited., BALLYKILLEEN, EDENDERRY, CO. OFFALY	DEVELOPMENT AT EDENDERRY POWER PLANT. EDENDERRY POWER LIMITED CURRENTLY HAS PLANNING PERMISSION TO OPERATE EDENDERRY POWER PLANT AS A PEAT AND BIOMASS CO-FIRED POWER PLANT UNDER GRANT OF PLANNING PERMISSION (OFFALY COUNTY COUNCIL REGISTER REFERENCE - PL2/15/129, AN BORD PLEANÁLA REGISTER REFERENCE - PL 19.245295). THE PROPOSED DEVELOPMENT WILL CONSIST OF THE CONTINUED OPERATION OF EDENDERRY POWER PLANT FROM THE BEGINNING OF 2024 TO THE	c.a. 13km	25/03/2022

Planning Application /Case Reference Number	Project/Applicant Name and Proposed Location	Brief Development Description	Approximate Distance from Proposed Works	Date Planning Application Granted
		<p>END OF 2030 EXCLUSIVELY USING SUSTAINABLE BIOMASS FUEL. THE APPLICANT PROPOSES TO INCREASE THE VOLUME OF BIOMASS CONSUMED AT THE FACILITY FROM A CURRENT MAXIMUM OF 300,000 TO 530,000 TONNES PER ANNUM. IT IS PROPOSED TO UTILISE THE EXISTING PERMITTED ELECTRICITY GENERATION STATION AND INFRASTRUCTURE, INCLUDING FUEL HANDLING SYSTEMS, UTILITIES, PROCESSING SYSTEMS AND ANCILLARY STRUCTURES AS PART OF THE PROPOSED DEVELOPMENT. THERE WILL BE NO CHANGE TO EXISTING INFRASTRUCTURE PRESENT ON-SITE. SITE ACCESS AND EGRESS WILL USE THE EXISTING PERMITTED SITE ENTRANCES TO THE R401 PUBLIC ROAD. THERE WILL BE NO CHANGE TO THE PERMITTED BOUNDARY OF THE FACILITY. EDENDERRY POWER PLANT IS LICENCED BY THE ENVIRONMENTAL PROTECTION AGENCY UNDER AN INDUSTRIAL EMISSIONS (IE) LICENCE [REF. P0482-04]. ACTIVITIES AT THE FACILITY AND ASSOCIATED ENVIRONMENTAL ASPECTS AND EMISSIONS WILL CONTINUE TO BE REGULATED AND CONTROLLED BY THE EPA. THE PLANNING APPLICATION IS</p>		

Planning Application /Case Reference Number	Project/Applicant Name and Proposed Location	Brief Development Description	Approximate Distance from Proposed Works	Date Planning Application Granted
		ACCOMPANIED BY AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR). THE PLANNING APPLICATION IS ALSO ACCOMPANIED BY A NATURA IMPACT STATEMENT (NIS)		

5.5.3. Other Bord na Móna PCAS Plans/Projects

There are a number of other Bord na Móna bogs with rehabilitation plans in the surrounding area, that are dedicated PCAS sites, as presented in **Table 5.3**. However, there will be no in-combination or synergistic effects on European sites, or their Conservation Objectives, with any of the bogs listed.

Table 5-3 Other Bord na Móna PCAS site for rehabilitation in the surrounding area.

Project/Applicant Name and Proposed Location	Brief Plan Description	Approximate Distance from Proposed Works
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Cloncreen, Co. Offaly	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the successful rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	ca 12.6km
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Ummeras Bog, Co. Offaly and Co. Kildare	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the successful rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	ca 8.6km
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Eskers Bog, Co. Offaly	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the successful rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	ca 1.3km

Project/Applicant Name and Proposed Location	Brief Plan Description	Approximate Distance from Proposed Works
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Ballycon Bog, Co. Offaly	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the enhanced rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	<i>0km</i>
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Lodge Bog, Co. Kildare	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the enhanced rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	<i>ca 10km</i>
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Cavemount Bog, Co. Offaly	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the enhanced rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	<i>ca 3.5km</i>
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Clonad Bog, Co. Offaly	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the enhanced rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	<i>ca 8.5km</i>
Cutaway Bog Decommissioning and Rehabilitation Plan, Bord na Mona, Mountlucas Bog, Co. Offaly	Meeting conditions of IPC Licence, the main goal and outcome of this plan is the enhanced rehabilitation (environmental stabilisation) of peatlands used for industrial peat extraction at the bog in a manner that is acceptable to both external stakeholders and to Bord na Móna and which optimise climate action and other ecosystem service benefits.	<i>ca 2.9km</i>

5.6. Stage One Screening Conclusion

The Stage One: Screening for Appropriate Assessment provided herein has examined potential effects via source pathway linkages on designated SACs and SPAs within 15km and beyond of the proposed Plan, either alone or in-combination with other plans or projects.

There are a total of nine European sites within the considered ZOI for the proposed Plan:

- Ballynafagh Lake SAC [001387]
- Ballynafagh Bog SAC [000391]
- The Long Derries, Edenderry SAC [000925]
- Mouds Bog SAC [002331]
- Pollardstown Fen SAC [000396]
- River Boyne and River Blackwater SAC [002299]
- River Boyne and River Blackwater SPA [004232]
- River Barrow and River Nore SAC [002162]
- Slieve Bloom Mountains SPA [004160]

Following the screening process, it has been determined that adverse effects on the integrity of a Natura 2000 site(s), within the considered Zone of Influence, cannot be excluded. By virtue of the requirement for protection or mitigation measures required for the proposed Plan, **the recommendation of the screening process is, therefore, to proceed to Stage Two: Appropriate Assessment** for the following five European sites:

- Ballynafagh Lake SAC [001387]
- River Boyne and River Blackwater SAC [002299]
- River Boyne and River Blackwater SPA [004232]
- River Barrow and River Nore SAC [002162]
- Slieve Bloom Mountains SPA [004160]

6. STAGE 2: APPROPRIATE ASSESSMENT REPORT

This Stage 2 Appropriate Assessment Report (Natura Impact Statement) examines the potential for adverse effects of the proposed Decommissioning and Rehabilitation Plan on European sites, based on the source-pathway-receptor model, evaluated in **Section 5.3** and further scoped in **Section 5.4**.

Sources for likely significant impacts associated with the proposed Plan have been appraised and associated with different potential zones of influence. This report will specifically appraise the significance of any adverse effects on the QIs and SCIs of European sites within each of these zones of influence and their associated Conservation Objectives.

6.1. Sources for Adverse Effects on Integrity

The Stage 1 Screening for LSE process, following the Source-Pathway-Receptor model conceptualized for the proposed Decommissioning and Rehabilitation Plan (**Section 5.4.1**) identified four types of sources for adverse effects on European sites:

1. Spillage of contaminants (e.g. hydrocarbons) and/or sediment/silt/suspended solids.
2. Spread of Invasive Alien Species via hydrological pathways.
3. Ex-situ habitat loss
4. Ex-situ Disturbance

6.2. Pathways for Adverse Effects on Integrity

Potential pathways/connectivity have also been identified between the proposed Decommissioning and Rehabilitation Plan and European sites (**Table 4.3**). As mentioned in **Section 3.3.1**, hydrological connectivity was considered unlikely if established beyond the first lentic water body in the hydrological pathway.

The nature, limited extent and scale of the proposed Decommissioning and Rehabilitation Plan, allow for the definition of limits for two pathways associated with the sources for adverse effects:

1. Terrestrial.

Potential adverse effects associated with terrestrial pathways include ex-situ disturbance and ex-situ habitat loss. The protected sites within which Qualifying Interests and Special Conservation Interests are at risk of terrestrial adverse effects include the Ballynafagh Lake SAC [001387] and Slieve Bloom Mountains SPA [004160]. Potential adverse effects on these protected sites are assessed in **Table 6-2**.

2. Surface water run-off.

Potential adverse effects associated with surface water run-off include contamination of surface waters and the spread of IAS. The protected sites which are at risk of adverse effects due to their hydrological connection with the proposed Plan include the River Boyne and River Blackwater SAC [002299]; River Boyne and River Blackwater SPA [004232]; and River Barrow and River Nore SAC [002162]. Potential adverse effects on these protected sites are assessed in **Table 6.1**.

6.3. European sites' QIs/SCIs Potentially Affected by the Proposed Rehabilitation

For the appraisal of the likelihood of significant effects on the Conservation Objectives (CO) of the European sites described in **Section 5**, through the pathways identified in **Section 6.2**, from the sources listed in **Section 6.1**, the CO attributes of each European site with hydrological connectivity with the proposed Decommissioning and Rehabilitation Plan have been considered (**Table 4.4**).

It is considered that, without the incorporation of mitigation measures, the proposed rehabilitation could potentially result in adverse effects on the integrity of European sites identified view of their CO attributes highlighted in **Table 6.1** and **Table 6-2**.

Table 6-1 Relevant European sites and respective Conservation Objectives attributes for which a hydrological pathway with the proposed Plan have been identified (likely adverse effects from the proposed Plan are anticipated to highlighted CO/attributes).

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
Ballynafagh Lake SAC [001387]	Marsh Fritillary (<i>Euphydryas aurinia</i>) [1065]	Distribution: occupied 1km grid squares	No. As decommissioning and rehabilitation works are restricted to the Timahoe Bog Site and as there is no hydrological connection between the Site and the SAC, potentially adverse effects on these attributes are not considered likely.	No. As decommissioning and rehabilitation works are restricted to the Timahoe Bog Site and as there is no hydrological connection between the Site and the SAC, potentially adverse effects on the distribution: occupied 1km grid squares are not considered likely.
		Proof of breeding: larval webs		
		Potential habitat: area	No. It is not considered likely that surface water contamination will result in adverse effects on the attribute.	Yes. The spread of IAS may result in competition for the essential Devil's-bit Scabious plant, thereby reducing suitable habitat for the QI species. It is considered likely that adverse effects on this attribute may occur.
River Boyne and River Blackwater SAC [002299]	Alkaline fens [7230]	Habitat Area	Yes. As the alkaline fens are a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the habitat area.	Yes. As the alkaline fens are a mosaic of habitats with tall sedge beds, reedbeds, wet grasslands, springs and open water co-occurring, the potential spread of IAS may result in the dominance of IAS which may result in a reduction in habitat area.
		Habitat Distribution	Yes. As the alkaline fens is a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the habitat distribution.	Yes. As the alkaline fens are a mosaic of habitats with tall sedge beds, reedbeds, wet grasslands, springs and open water co-occurring, the potential spread of IAS may result in the dominance of IAS which may result in a reduction in habitat area.
		Ecosystem function: soil	Yes.	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		nutrients	Nitrogen deposition is noted as being relevant to this habitat (NPWS, 2021c). As the contamination of water via spillages or sedimentation may alter the levels of nitrogen deposition it is possible that there will be potentially adverse effects on ecosystem function: soil nutrients.	As plant decomposition contributes to soil nutrient composition, changes in plant species as a result in the spread of IAS may lead to alterations to the natural soil nutrient level and cause potentially adverse effects on this attribute.
		Ecosystem function: peat formation	Yes. As peat formation is dependent on optimum water levels, changes to the water levels as a result of sedimentation through contamination of surface water may result in potentially adverse effects on this attribute.	Yes. As plant decomposition contributes to peat formation, changes in plant species as a result in the spread of IAS may lead to alterations in the plant species community and therefore to the peat formation process and cause potentially adverse effects on this attribute. .
		Ecosystem function: hydrology - groundwater levels	No. As the proposed rehabilitation will not result in changes to groundwater, hydraulic gradients and water supply, potentially adverse effects on this attribute as a result of contamination of surface water are considered unlikely.	No. As the proposed decommissioning and rehabilitation plan will not result in changes to groundwater, hydraulic gradients and water supply, potentially adverse effects on this attribute as a result of the spread of IAS are considered unlikely.
		Ecosystem function: hydrology - surface water flow	No. As the proposed rehabilitation does not involve changes to drainage conditions in this waterbody, potentially adverse effects on this attribute arising from contamination of surface water are considered unlikely.	No. As the proposed decommissioning and rehabilitation plan does not involve changes to drainage conditions in this waterbody, potentially adverse effects on this attribute arising from the spread of IAS are considered unlikely.
		Ecosystem function: water quality	Yes. As contamination of surface waters will disrupt the maintenance of appropriate water quality	No.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			via changes in PH and nutrient levels, potentially adverse effects on this attribute are likely.	As the spread of IAS will not result in changes to PH and nutrient levels in the water, potentially adverse effects on this attribute are considered unlikely.
		Vegetation composition: community diversity	Yes. As a reduction in water quality via surface water contamination and sedimentation may reduce optimum conditions for plant species currently found in the QI habitat, potentially adverse effects on vegetation composition: community diversity are considered likely.	Yes. As the spread of IAS may cause competition between IAS species and plant species naturally found in the QI habitat, and due to possible domination of IAS species in the QI habitat, potentially adverse effects on this attribute are likely.
		Vegetation composition: typical brown mosses	Yes. As a reduction in water quality via surface water contamination and sedimentation may reduce optimum conditions for typical brown mosses currently found in the QI habitat, potentially adverse effects on this attribute are considered likely.	Yes. As the spread of IAS may cause competition between IAS species and typical brown mosses found in the QI habitat, and due to possible domination of IAS species in the QI habitat, potentially adverse effects on this attribute are likely.
		Vegetation composition: typical vascular plants	Yes. As a reduction in water quality via surface water contamination and sedimentation may reduce optimum conditions for typical vascular plant species currently found in the QI habitat, potentially adverse effects on this attribute are considered likely.	Yes. As the spread of IAS may cause competition between IAS species and typical vascular plant species found in the QI habitat, and due to possible domination of IAS species in the QI habitat, potentially adverse effects on this attribute are likely.
		Vegetation composition: native negative indicator species	Yes. As changes to water quality via contamination of surface water may promote increased presence of native negative indicator species through changes in nutrient levels in the water,	Yes. As the spread of IAS may cause competition between IAS species and typical plant species found in the QI habitat thereby increasing the possibility of the presence of native negative indicator species, and due

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			potentially adverse effects are considered likely.	to possible domination of IAS species in the QI habitat, potentially adverse effects on this attribute are likely.
		Vegetation composition: non-native species	Yes. As changes to water quality via contamination of surface water may promote increased presence of non-native species through changes in nutrient levels in the water, potentially adverse effects are considered likely.	Yes. The spread of IAS will lead to increased presence of non-native species in the QI habitat and potentially adverse effects on this attribute are likely.
		Vegetation composition: native trees and shrubs	Yes. As contamination of surface water may change the baseline conditions in the QI habitat, potentially adverse effects on native trees and shrubs is likely.	Yes. The spread of IAS will lead to increased presence of non-native species in the QI habitat and potentially adverse effects on this attribute are likely.
		Vegetation composition: algal cover	Yes. As contamination of surface water may lead to increased nutrients in the waterbody, potentially adverse effects on algal cover is likely.	No. As the spread of IAS will not result in changes to nutrient levels in the water, potentially adverse effects on this attribute are considered unlikely.
		Vegetation structure: vegetation height	No. As the contamination of surface water will not lead to a reduction in the height of flowering shoots, potentially adverse effects on this attribute are considered unlikely.	Yes. As the spread of IAS may cause competition between IAS species and typical plant species found in the QI habitat, and due to possible domination of IAS species in the QI habitat, potentially adverse effects on this attribute are likely.
		Physical structure: disturbed bare ground	No. As the contamination of surface water will not cause increases to the level of disturbed bare	No. As the spread of IAS will not cause increases to the level of disturbed bare ground, potentially adverse effects on this attribute are considered unlikely.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			ground, potentially adverse effects on this attribute are considered unlikely.	
		Physical structure: tufa formations	Yes. As the contamination of surface water may lead to alterations in the water's chemistry, potentially adverse effects on this attribute are possible.	No. As the spread of IAS will not cause alterations to the chemistry in the waterbody, potentially adverse effects on this attribute are considered unlikely.
		Indicators of local distinctiveness	Yes. Surface water contamination may alter the baseline environment (nutrification, sedimentation) and thereby adversely affect indicators of local distinctiveness.	Yes. The spread of IAS may alter the baseline environment (causing competition and may even become dominant) and thereby adversely affect indicators of local distinctiveness.
		Transitional areas between fen and adjacent habitats	Yes. Surface water contamination may alter the baseline environment (nutrification, sedimentation) and thereby adversely affect this attribute.	Yes. The spread of IAS may alter the baseline environment (causing competition and may even become dominant) and thereby adversely affect this attribute.
	*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]	Habitat Area	Yes. There is a hydrological separation distance of ca 84.5km between the Site and the QI habitat. However, it is not guaranteed that this is the full extent of this habitat in the SAC (NPWS, 2021). As this QI habitat is a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the habitat area.	Yes. There is a hydrological separation distance of ca 84.5km between the Site and the QI habitat. However, it is not guaranteed that this is the full extent of this habitat in the SAC (NPWS, 2021). As the alluvial forests habitat contains vegetation communities which have an affinity to the Annex I habitat (including gallery forests) (NPWS, 2019), the spread of IAS may result in the dominance of IAS which may result in a reduction in habitat area.
		Habitat Distribution	Yes.	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			As this QI habitat is a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the habitat distribution.	As the alluvial forests habitat contains vegetation communities which have an affinity to the Annex I habitat (including gallery forests) (NPWS, 2019), the spread of IAS may result in the dominance of IAS which may result in a reduction in habitat distribution.
		Woodland Size	Yes. As this QI habitat is a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the woodland size.	Yes. As the spread of IAS may result in competition between the IAS and plants within the QI habitat, potentially adverse effects on woodland size are likely.
		Woodland structure: cover and height	Yes. As the contamination of surface waters may cause eutrophication and/or sedimentation, thereby reducing optimum growing conditions for trees within the QI habitat, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may result in competition between the IAS and plants within the QI habitat, potentially adverse effects on this attribute are likely.
		Woodland structure: community diversity and extent	Yes. As forests of willows in this QI habitat are located adjacent to river channels and their tree roots are almost continuously submerged (NPWS, 20XX), surface water contamination may have potential adverse effects on woodland structure: community diversity and extent.	Yes. As the spread of IAS may result in competition between the IAS and the woodland trees within the QI habitat, potentially adverse effects on this attribute are likely.
		Woodland structure: natural	Yes. As the forests in this QI habitat are located adjacent to river channels and their tree roots	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		regeneration	are almost continuously submerged (NPWS, 2021c), surface water contamination may have potential adverse effects on woodland structure: natural regeneration via a change in baseline conditions.	As the spread of IAS may result in competition between the IAS and the woodland trees within the QI habitat, potentially adverse effects on this attribute are likely.
		Hydrological regime: flooding depth/height of water table	No. The proposed decommissioning and rehabilitation plan does not involve changes to the hydrological flow or drainage of waterbodies and it is unlikely that surface water contamination will result in adverse effects on this attribute.	No. The proposed decommissioning and rehabilitation plan does not involve changes to the hydrological flow or drainage of waterbodies and it is unlikely that the spread of IAS will result in adverse effects on this attribute.
		Woodland structure: dead wood	Yes. As surface water contamination may lead to a change in the baseline growth conditions for trees within the woodland, this may further decrease levels of deadwood occurring within the QI habitat. Therefore, potentially adverse effects on this attribute are likely.	Yes. The spread of IAS may result in competition and even dominance of IAS over naturally occurring trees, thereby altering the current levels of deadwood within the QI habitat. Therefore, potentially adverse effects on this attribute are likely.
		Woodland structure: veteran trees	Yes. As the forests in this QI habitat are located adjacent to river channels and their tree roots are almost continuously submerged (NPWS, 20XX), surface water contamination may have potential adverse effects on woodland structure: veteran trees via a change in baseline conditions.	Yes. The spread of IAS may cause competition between IAS and veteran trees, potentially reducing the health and number of veteran trees within the habitat. Therefore, potentially adverse effects on this attribute are likely.
		Woodland	Yes.	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		structure: indicators of local distinctiveness	Surface water contamination may alter the baseline environment (nutrification, sedimentation) and thereby adversely affect indicators of local distinctiveness.	The spread of IAS may alter the baseline environment (causing competition and may even become dominant) and thereby adversely affect indicators of local distinctiveness.
		Woodland structure: indicators of overgrazing	No. The proposed decommissioning and rehabilitation plan does not involve grazing of livestock and surface water contamination will not lead to adverse effects on this attribute.	No. The proposed decommissioning and rehabilitation plan does not involve grazing of livestock and the spread of IAS will not lead to adverse effects on this attribute.
		Vegetation composition: native tree cover	Yes. The contamination of surface water may alter the baseline conditions in the waterbody via nutrification and/or sedimentation and thereby reduce native tree cover. Therefore potential adverse effects on this attribute are likely.	Yes. The spread of IAS may result in competition between native trees and the IAS which is likely to lead to adverse effects on native tree cover.
		Vegetation composition: typical species	Yes. The contamination of surface water may alter the baseline conditions in the waterbody via nutrification and/or sedimentation and thereby alter the presence of typical species. Therefore potential adverse effects on this attribute are likely.	Yes. The spread of IAS may result in competition between native trees and the IAS which is likely to lead to adverse effects on this attribute.
		Vegetation composition: negative indicator species	Yes. The contamination of surface water may alter the baseline conditions of the waterbody via nutrification and/or sedimentation. It is possible that a changed baseline environment may favour negative indicator species over	Yes. The spread of IAS is likely to result in potentially adverse effects on vegetation composition: negative indicator species.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			native species found in the QI habitat, thereby increasing the number of negative indicator species present. Therefore potential adverse effects on this attribute are likely.	
		Vegetation composition: problematic native species	Yes. The contamination of surface water may alter the baseline conditions of the waterbody via eutrophication and/or sedimentation. It is possible that a changed baseline environment may increase the presence of problematic native species found in the QI habitat, such as the common nettle which can become excessively dominant where there is nutrient enrichment (NPWS, 2021c). Therefore potential adverse effects on this attribute are likely.	Yes. The spread of IAS is likely to result in potentially adverse effects on vegetation composition: problematic native species.
	<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Distribution	Yes. As surface water contamination may reduce the availability of suitable habitat for River Lamprey and thereby reduce the distribution of the QI species, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for River Lamprey and thereby reduce the distribution of the QI species, potentially adverse effects on this attribute are likely.
		Distribution of larvae	Yes. As surface water contamination may reduce the availability of suitable habitat for River Lamprey larvae spawning areas and thereby reduce the distribution of the larvae, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for River Lamprey larvae spawning areas and thereby reduce the distribution of the larvae, potentially adverse effects on this attribute are likely.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		Population structure of larvae	Yes. As surface water contamination may reduce the availability of suitable habitat for River Lamprey larvae and thereby alter the population structure of larvae, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for River Lamprey and thereby alter the population structure of the larvae, potentially adverse effects on this attribute are likely.
		Larval lamprey density in fine sediment	Yes. As surface water contamination may reduce the availability of suitable habitat for River Lamprey larvae in fine sediment and thereby alter the density of larvae in fine sediment, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for River Lamprey larvae in fine sediment and thereby alter the density of the larvae in fine sediment, potentially adverse effects on this attribute are likely.
		Extent and distribution of spawning nursery habitat	Yes. As surface water contamination may reduce the availability of suitable habitat for River Lamprey spawning nurseries and thereby reduce the extent and distribution of spawning nursery habitat, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for River Lamprey spawning nurseries and thereby reduce the extent and distribution of spawning nursery habitat, potentially adverse effects on this attribute are likely.
	<i>Salmo salar</i> (Salmon) [1106]	Distribution: extent of anadromy	Yes. As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the distribution: extent of anadromy habitat, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the distribution: extent of anadromy habitat, potentially adverse effects on this attribute are likely.
		Adult spawning fish	Yes.	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of adult spawning fish, potentially adverse effects on this attribute are likely.	As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of adult spawning fish, potentially adverse effects on this attribute are likely.
		Salmon fry abundance	Yes. As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of Salmon fry, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of salmon fry, potentially adverse effects on this attribute are likely.
		Out-migrating smolt abundance	Yes. As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the out-migrating smolt, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the out-migrating smolt, potentially adverse effects on this attribute are likely.
		Number and distribution of redds	Yes. As surface water contamination may reduce the availability of suitable habitat for redds and thereby reduce the number and distribution of redds, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for redds and thereby reduce the number and distribution of redds, potentially adverse effects on this attribute are likely.
		Water quality	Yes. Surface water contamination may lead to potentially adverse effects on water quality.	No. The spread of IAS is not likely to lead to potentially adverse effects on water quality.
		Distribution	Yes.	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
	<i>Lutra lutra</i> (Otter) [1355]		Surface water contamination may lead to a reduction in the abundance of prey item species such as Salmon, thereby reducing the range of suitable foraging habitat for Otter. Therefore, potentially adverse effects on the distribution of otter are likely.	The spread of IAS may lead to a reduction in the abundance of prey item species such as Salmon via a reduction in habitat suitability, thereby reducing the range of suitable foraging habitat for Otter. Therefore, potentially adverse effects on the distribution of Otter are likely.
		Extent of terrestrial habitat	No. The proposed decommissioning and rehabilitation plan does not involve alterations to riverbank habitat and surface water contamination is not likely to result in potential adverse effects on the extent of terrestrial habitat.	Yes. The spread of IAS may result in the domination of IAS species on riverbank habitats in suitable Otter terrestrial habitat, thereby reducing the extent of terrestrial habitat for Otter. Therefore, potentially adverse effects on this attribute are likely.
		Extent of freshwater (river) habitat	Yes. Surface water contamination may reduce water quality, thereby reducing the extent of freshwater (river) habitat suitable for use by Otter. As such, potentially adverse effects on this attribute are likely.	Yes. The presence of IAS may reduce the availability of suitable habitat for use by Otters, thereby reducing the extent of freshwater (river) habitat. Therefore, potentially adverse effects on this attribute are likely.
		Extent of freshwater (lake) habitat	No. The proposed decommissioning and rehabilitation plan is not hydrologically connected to freshwater (lake) habitat and therefore no pathway exists for the contamination of surface waters in this habitat.	No. The proposed decommissioning and rehabilitation plan is not hydrologically connected to freshwater (lake) habitat and therefore no pathway exists for the spread of IAS to this habitat type.
		Couching sites and holts	No. The proposed decommissioning and rehabilitation plan does not involve alterations to riverbank habitat and surface water	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			contamination is not likely to result in potential adverse effects on couching sites and holts.	The spread of IAS may result in the domination of IAS species on riverbank habitats in area which are suitable for couching sites and holts. Therefore, potentially adverse effects on this attribute are likely.
		Fish biomass available	Yes. Surface water contamination may lead to a reduction in the abundance of prey item species, such as Salmon, via declining water quality and a reduction in habitat suitability for fish. Therefore, potentially adverse effects on the availability of fish biomass are likely.	Yes. The spread of IAS may lead to a reduction in the abundance of prey item species, such as Salmon, via a reduction in habitat suitability for fish. Therefore, potentially adverse effects on the availability of fish biomass are likely.
		Barriers to connectivity	No. Surface water contamination is not likely to result in potentially adverse effects on this attribute.	Yes. The spread of IAS may result in the obstruction of commuting routes for Otters. Therefore, potentially adverse effect on barriers to connectivity are considered likely.
River Boyne and River Blackwater SPA [004232]	Kingfisher (<i>Alcedo atthis</i>) [A229]	Population dynamics	Yes. As surface water contamination may lead to a reduction in prey item species and a reduction in suitable foraging habitat via reduced water quality, it is likely that this will result in potentially adverse effects on the population dynamics of Kingfisher.	Yes. The spread of IAS may lead to a change in the baseline environment (obstruction of riverbank habitat or river habitat) of habitat used by Kingfisher, resulting in a reduction in suitable foraging and nesting habitat which may lead to a declining population. Therefore, potentially adverse effects on the population dynamics of Kingfisher are considered likely.
		Natural range	Yes. As surface water contamination may lead to a reduction in prey item species and a reduction in suitable foraging habitat via reduced water quality, it is likely that this will result in potentially adverse effects on the natural range of Kingfisher.	Yes. The spread of IAS may lead to a change in the baseline environment (obstruction of riverbank habitat or river habitat) of habitat used by Kingfisher, resulting in a reduction in suitable foraging and nesting habitat. Therefore, potentially adverse effects on the natural range of Kingfisher are considered likely.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		Sufficiently large habitat	Yes. As surface water contamination may lead to a reduction in prey item species and a reduction in suitable foraging habitat via reduced water quality, it is likely that this will result in potentially adverse effects on the availability of sufficiently large habitat for use by Kingfisher.	Yes. The spread of IAS may lead to a change in the baseline environment (obstruction of riverbank habitat or river habitat) of habitat used by Kingfisher, resulting in a reduction in suitable foraging and nesting habitat. Therefore, potentially adverse effects on the availability of sufficiently large habitat for use by Kingfisher are considered likely.
River Barrow and River Nore SAC [002162]	Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) [1016]	Distribution: occupied sites	Yes. The QI species is found in a water-dependent habitat such as lowland wetland, swamps, fens and marshes (NPWS, 2019). The contamination of surface waters may result in changes to these habitat types, reducing the availability of suitable habitat. It is likely that this will result in potentially adverse effects on these attributes.	Yes. The spread of IAS may result in changes to the species of vegetation that is already present in the SAC (which vegetation currently provides suitable habitat for the QI species), thereby resulting in potentially adverse effects on this attribute.
		Population size: adults		
		Population density		
		Area of occupancy		
		Habitat quality: vegetation		
		Habitat quality: soil moisture levels		
	Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1029]	Distribution	Yes. The location of the QI species is not mapped (NPWS, 2011). Surface water contamination via fuel spill and/or sedimentation is likely to result in potentially adverse effects on this QI species.	No. The spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Population size: adult mussels		
		Population structure: recruitment		
		Population structure: adult		
			Yes. The spread of IAS may reduce the availability of suitable habitat for the QI species and is therefore likely to result in potentially adverse effects on Freshwater Pearl Mussel.	

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		mortality		
		Habitat extent		
		Water quality: Macroinvertebrates and phytobenthos (diatoms)		
		Substratum quality: Filamentous algae (macroalgae), macrophytes (rooted higher plants)		
		Substratum quality: sediment		
		Substratum quality: oxygen availability		
		Hydrological regime: flow variability		
		Host fish		
	White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092]	Distribution	Yes. The QI species is located hydrologically downstream from the proposed plan (NPWS, 2011). As surface water contamination may reduce water quality, it is likely that this will	Yes. While the proposed plan will not result in the spread of the non-native crayfish, the spread of other IAS may reduce the availability of suitable

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			result in potentially adverse effects on the distribution of the QI species.	habitat for the QI species and is therefore likely to lead to potentially adverse effects on the distribution of the QI species.
		Population structure: recruitment	Yes. The QI species is located hydrologically downstream from the proposed plan (NPWS, 2011). As surface water contamination may reduce water quality, it is likely that this will result in potentially adverse effects on the distribution of the QI species.	Yes. While the proposed plan will not result in the spread of the non-native crayfish, the spread of other IAS may reduce the availability of suitable habitat for the QI species and is therefore likely to lead to potentially adverse effects on the distribution of the QI species.
		Negative indicator species	No. Surface water contamination will is not likely to result in potentially adverse effects on this attribute.	No. The proposed plan will not result in the spread of alien crayfish and the spread of other IAS is not likely to result in potentially adverse effects on this attribute.
		Disease	No. Surface water contamination will is not likely to result in potentially adverse effects on this attribute.	No. The proposed plan will not result in the spread of alien crayfish and the spread of other IAS is not likely to result in potentially adverse effects on this attribute.
		Water quality	Yes. Surface water contamination is likely to result in potentially adverse effects on water quality.	No. The spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Habitat quality: heterogeneity	Yes. Surface water contamination caused by sedimentation may result in changes to the baseline conditions (debris and gravel availability). Therefore, potentially adverse effects on this attribute are considered likely.	Yes. The spread of IAS may result in changes to the baseline conditions of the riverbed (alterations to level of debris). Therefore, potentially adverse effects on this attribute are considered likely.
		Distribution: extent of anadromy	No.	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
	Sea Lamprey (<i>Petromyzon marinus</i>) [1095]		Due to a hydrological separation distance of over 80km between the Site and the habitat within which the QI species is located, the assimilative effects of the intervening waters nullifies the effects of contamination of surface waters. Potentially adverse effects on these attributes are considered unlikely.	The spread of IAS may result in a reduction in the availability of suitable habitat for the QI species, Therefore, potentially adverse effects on this attribute are considered likely.
		Population structure of juveniles		Yes. The spread of IAS may result in a reduction in the availability of suitable habitat for the QI species, Therefore, potentially adverse effects on this attribute are considered likely.
		Juvenile density in fine sediment		Yes. As the spread of IAS may reduce the availability of suitable habitat for Sea Lamprey larvae in fine sediment and thereby alter the density of larvae in fine sediment, potentially adverse effects on this attribute are likely.
		Extent and distribution of spawning habitat		Yes. As the spread of IAS may reduce the availability of suitable habitat for sea lamprey spawning habitat and thereby reduce the extent and distribution of spawning habitat, potentially adverse effects on this attribute are likely.
		Availability of juvenile habitat		Yes. As the spread of IAS may reduce the availability of suitable habitat for juvenile sea lamprey, potentially adverse effects on this attribute are likely.
	Brook Lamprey (<i>Lampetra planeri</i>) [1096]	Distribution	No. Due to a hydrological separation distance of over 80km between the Site and the habitat within which the QI species is located, the assimilative effects of the intervening waters nullifies the effects of contamination of surface	Yes. The spread of IAS may result in a reduction in the availability of suitable habitat for the QI species, Therefore, potentially adverse effects on this attribute are considered likely.
		Population structure of		Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		juveniles	waters. Potentially adverse effects on these attributes are considered unlikely.	The spread of IAS may result in a reduction in the availability of suitable habitat for the QI species, Therefore, potentially adverse effects on this attribute are considered likely.
		Juvenile density in fine sediment		Yes. As the spread of IAS may reduce the availability of suitable habitat for Brook Lamprey larvae in fine sediment and thereby alter the density of larvae in fine sediment, potentially adverse effects on this attribute are likely.
		Extent and distribution of spawning habitat		Yes. As the spread of IAS may reduce the availability of suitable habitat for Brook Lamprey spawning habitat and thereby reduce the extent and distribution of spawning habitat, potentially adverse effects on this attribute are likely.
		Availability of juvenile habitat		Yes. As the spread of IAS may reduce the availability of suitable habitat for juvenile Brook Lamprey, potentially adverse effects on this attribute are likely.
	River Lamprey (<i>Lampetra fluviatilis</i>) [1099]	Distribution: extent of anadromy	No. Due to a hydrological separation distance of over 80km between the Site and the habitat within which the QI species is located, the assimilative effects of the intervening waters nullifies the effects of contamination of surface waters. Potentially adverse effects on these attributes are considered unlikely.	Yes. The spread of IAS may result in a reduction in the availability of suitable habitat for the QI species, Therefore, potentially adverse effects on this attribute are considered likely.
		Population structure of juveniles		Yes. The spread of IAS may result in a reduction in the availability of suitable habitat for the QI species, Therefore, potentially adverse effects on this attribute are considered likely.
		Juvenile density in fine sediment		Yes. As the spread of IAS may reduce the availability of suitable habitat for River Lamprey larvae in fine sediment and thereby alter the density of

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
				larvae in fine sediment, potentially adverse effects on this attribute are likely.
		Extent and distribution of spawning habitat		Yes. As the spread of IAS may reduce the availability of suitable habitat for River Lamprey spawning habitat and thereby reduce the extent and distribution of spawning habitat, potentially adverse effects on this attribute are likely.
		Availability of juvenile habitat		Yes. As the spread of IAS may reduce the availability of suitable habitat for juvenile River Lamprey, potentially adverse effects on this attribute are likely.
	Twaite Shad (<i>Alosa fallax</i>) [1103]	Distribution: extent of anadromy	Yes. The contamination of surface water may lead to reductions in water quality, thereby reducing the amount of habitat suitable for use by the Twaite Shad. Therefore, surface water contamination is likely to have potentially adverse effects on this attribute.	Yes. The spread of IAS may reduce the availability of suitable habitat for use by the Twaite Shad and potentially adverse effects on their distribution: extent of anadromy are likely.
		Population structure: age classes	Yes. The contamination of surface water may lead to reductions in water quality, thereby reducing the amount of habitat suitable for use by the Twaite Shad. Therefore, surface water contamination is likely to have potentially adverse effects on this attribute.	Yes. The spread of IAS may reduce the availability of suitable habitat for use by the Twaite Shad and potentially adverse effects on their population structure: age classes are likely.
		Extent and distribution of spawning habitat	Yes. The contamination of surface water may lead to reductions in water quality, thereby	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			reducing the amount of spawning habitat suitable for use by the Twaite Shad. Therefore, surface water contamination is likely to have potentially adverse effects on this attribute.	The spread of IAS may reduce the availability of suitable habitat for use by the Twaite Shad and potentially adverse effects on this attribute are likely.
		Water quality: oxygen levels	Yes. The contamination of surface water may lead to reductions in water quality, thereby altering the levels of oxygen levels in the water. Therefore, surface water contamination is likely to have potentially adverse effects on this attribute.	No. The spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Spawning habitat quality: Filamentous algae; macrophytes; sediment	Yes. Surface water contamination via sedimentation may result in changes to the baseline conditions of the riverbed and spawning habitat. Therefore, it is likely the potentially adverse effects on this attribute will occur.	Yes. The spread of IAS may lead to changes in macrophytes baseline conditions in the waterbody. Therefore, potentially adverse effects on this attribute are likely to occur.
	Atlantic Salmon (<i>Salmo salar</i>) (only in fresh water) [1106]	Distribution: extent of anadromy	Yes. As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the distribution: extent of anadromy habitat, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the distribution: extent of anadromy habitat, potentially adverse effects on this attribute are likely.
		Adult spawning fish	Yes. As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of adult	Yes. As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of adult spawning fish, potentially adverse effects on this attribute are likely.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			spawning fish, potentially adverse effects on this attribute are likely.	
		Salmon fry abundance	Yes. As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of Salmon fry, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the abundance of Salmon fry, potentially adverse effects on this attribute are likely.
		Out-migrating smolt abundance	Yes. As surface water contamination may reduce the availability of suitable habitat for Salmon and thereby reduce the out-migrating smolt, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for Salmon and thereby reduce the out-migrating smolt, potentially adverse effects on this attribute are likely.
		Number and distribution of redds	Yes. As surface water contamination may reduce the availability of suitable habitat for redds and thereby reduce the number and distribution of redds, potentially adverse effects on this attribute are likely.	Yes. As the spread of IAS may reduce the availability of suitable habitat for redds and thereby reduce the number and distribution of redds, potentially adverse effects on this attribute are likely.
		Water quality	Yes. Surface water contamination may lead to potentially adverse effects on water quality.	No. The spread of IAS is not likely to lead to potentially adverse effects on water quality.
	1130 Estuaries	Habitat area	Yes. Surface water contamination and sedimentation may result in changes to the baseline conditions of the estuary (sediment communities), thereby reducing habitat area.	Yes. The spread of IAS may result in changes to the baseline conditions of the estuary, thereby reducing habitat area. Therefore, it is possible that potentially adverse effects will occur.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			Therefore, it is possible that potentially adverse effects will occur.	
		Community distribution	Yes. Surface water contamination and sedimentation may result in changes to the baseline conditions of the estuary, thereby altering sediment community distribution. Therefore, it is possible that potentially adverse effects will occur.	No. It is unlikely that the spread of IAS will result in potentially adverse effects on community distribution.
		Community extent	Yes. Surface water contamination and sedimentation may result in changes to the baseline conditions of the estuary, thereby altering the fine sand with <i>Fabulina fabula</i> community (NPWS, 2011). Therefore, it is possible that potentially adverse effects will occur.	No. It is unlikely that the spread of IAS will result in potentially adverse effects on community extent.
	1140 Mudflats and sandflats not covered by seawater at low tide	Habitat area	No. Due to a hydrological separation distance of over 80km between the Site and this habitat, it is unlikely that surface water contamination will result in potentially adverse effects on these attributes.	No. It is unlikely that the spread of IAS will result in potentially adverse effects on the habitat area of this QI.
		Community distribution		No. It is unlikely that the spread of IAS will result in potentially adverse effects on the community distribution of this QI.
	1310 <i>Salicornia</i> and other annuals colonizing mud and sand	Habitat area	No. Due to a hydrological separation distance of over 80km between the Site and this habitat, it is unlikely that surface water contamination	No. Due to a hydrological separation distance of over 80km between the Site and this habitat, it is unlikely that the spread of IAS will result in potentially adverse effects on these attributes.
		Habitat distribution		
		Physical structure: sediment supply		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		Physical structure: flooding regime	will result in potentially adverse effects on these attributes.	
		Physical structure: creeks and pans		
		Vegetation structure: zonation		
		Vegetation structure: vegetation height		
		Vegetation structure: vegetation cover		
		Vegetation composition: typical species and sub-communities		
		Vegetation structure: negative indicator species: <i>Spartina anglica</i>		
	1330 Atlantic salt meadows (<i>Glauco- Puccinellietalia maritimae</i>)	Habitat area	No. There is a hydrological separation distance of ~137km between the proposed plan and the QI habitat. Due to the assimilative capacity of the intervening waters the occurrence of	No. Due to a hydrological separation distance of over 80km between the Site and this habitat, it is unlikely that the spread of IAS will result in potentially adverse effects on these attributes.
		Habitat distribution		
		Physical structure: sediment supply		
		Physical structure:		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		flooding regime	potentially adverse effects on these attributes is not considered likely.	
		Physical structure: creeks and pans		
		Vegetation structure: zonation		
		Vegetation structure: vegetation height		
		Vegetation structure: vegetation cover		
		Vegetation composition: typical species and sub-communities		
		Vegetation structure: negative indicator species: <i>Spartina anglica</i>		
	1355 Otter (<i>Lutra lutra</i>)	Distribution	Yes. Surface water contamination may lead to a reduction in the abundance of prey item species such as Salmon, thereby reducing the range of suitable foraging habitat for otter. Therefore, potentially adverse effects on the distribution of Otter are likely.	Yes. The spread of IAS may lead to a reduction in the abundance of prey item species such as Salmon via a reduction in habitat suitability, thereby reducing the range of suitable foraging habitat for Otter. Therefore, potentially adverse effects on the distribution of Otter are likely.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		Extent of terrestrial habitat	No. The proposed decommissioning and rehabilitation plan does not involve alterations to riverbank habitat and surface water contamination is not likely to result in potential adverse effects on the extent of terrestrial habitat.	Yes. The spread of IAS may result in the domination of IAS species on riverbank habitats in suitable otter terrestrial habitat, thereby reducing the extent of terrestrial habitat for Otter. Therefore, potentially adverse effects on this attribute are likely.
		Extent of marine habitat	No. Due to the assimilative capacity of the intervening waters, potentially adverse effects on this attribute are considered unlikely.	Yes. The presence of IAS may reduce the availability of suitable habitat for use by Otters, thereby reducing the extent of marine habitat. Therefore, potentially adverse effects on this attribute are likely.
		Extent of freshwater (river) habitat	Yes. Surface water contamination may reduce water quality, thereby reducing the extent of freshwater (river) habitat suitable for use by otter. As such, potentially adverse effects on this attribute are likely.	Yes. The presence of IAS may reduce the availability of suitable habitat for use by Otters, thereby reducing the extent of freshwater (river) habitat. Therefore, potentially adverse effects on this attribute are likely.
		Extent of freshwater (lake) habitat	No. The proposed decommissioning and rehabilitation plan is not hydrologically connected to freshwater (lake) habitat and therefore no pathway exists for the contamination of surface waters in this habitat.	No. The proposed decommissioning and rehabilitation plan is not hydrologically connected to freshwater (lake) habitat and therefore no pathway exists for the spread of IAS to this habitat type.
		Couching sites and holts	No. The proposed decommissioning and rehabilitation plan does not involve alterations to riverbank habitat and surface water	Yes. The spread of IAS may result in the domination of IAS species on riverbank habitats in area which are suitable for couching sites and holts. Therefore, potentially adverse effects on this attribute are likely.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			contamination is not likely to result in potential adverse effects on couching sites and holts.	
		Fish biomass available	Yes. Surface water contamination may lead to a reduction in the abundance of prey item species, such as Salmon, via declining water quality and a reduction in habitat suitability for fish. Therefore, potentially adverse effects on the availability of fish biomass are likely.	Yes. The spread of IAS may lead to a reduction in the abundance of prey item species, such as Salmon, via a reduction in habitat suitability for fish. Therefore, potentially adverse effects on the availability of fish biomass are likely.
	1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	Habitat area	No. There is a hydrological separation distance of ~137km between the proposed plan and the QI habitat. Due to the assimilative capacity of the intervening waters the occurrence of potentially adverse effects on these attributes is not considered likely.	No. Due to a hydrological separation distance of over 80km between the Site and this habitat, it is unlikely that the spread of IAS will result in potentially adverse effects on these attributes.
		Habitat distribution		
		Physical structure: sediment supply		
		Physical structure: flooding regime		
		Physical structure: creeks and pans		
		Vegetation structure: zonation		
		Vegetation structure: vegetation height		
		Vegetation structure: vegetation cover		
		Vegetation		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		composition: typical species and sub-communities		
		Vegetation structure: negative indicator species: <i>Spartina anglica</i>		
	1421 Killarney Fern (<i>Trichomanes speciosum</i>)	Distribution	No. Surface water contamination is not likely to result in potentially adverse effects on this attribute.	Yes. The spread of IAS may cause competition for naturally occurring plants and may result in the domination of IAS, thereby reducing the distribution and population size of the Killarney Fern. Therefore, potentially adverse effects on these attributes are considered likely.
		Population size		
		Population structure: juvenile fronds		Yes. The spread of IAS may cause competition for naturally occurring plants and may result in the domination of IAS. Therefore, potentially adverse effects on these attributes are considered likely.
		Habitat extent		
		Hydrological conditions: visible water		
		Hydrological conditions: humidity		
		Light levels: shading		
		Invasive species		
		Distribution	No.	No.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
	1990 Nore Freshwater Pearl Mussel (<i>Margaritifera durrovensis</i>)		As the QI population is located upstream from the section of the river waterbody that is hydrologically connected to the proposed plan, there is no pathway for potentially adverse effects on this attribute.	As the QI population is located upstream from the section of the river waterbody that is hydrologically connected to the proposed plan, there is no pathway for potentially adverse effects on this attribute.
		Population size: adult mussels	Yes. Surface water contamination may result in a reduction in suitable habitat for Salmon and further reduce the Salmon population (see Salmon (<i>Salmo salar</i>) [1106] significant effects), thereby lowering juvenile mussel recruitment rate. As such, potentially adverse effects on this attribute are considered likely.	Yes. The spread of IAS may result in a reduction in suitable habitat for Salmon and further reduce the Salmon population (see Salmon (<i>Salmo salar</i>) [1106] significant effects), thereby lowering juvenile mussel recruitment rate. As such, potentially adverse effects on this attribute are considered likely.
		Population structure: recruitment		
		Population structure: adult mortality	No. As the QI population is located upstream from the section of the river waterbody that is hydrologically connected to the proposed plan, there is no pathway for potentially adverse effects on this attribute.	No. As the QI population is located upstream from the section of the river waterbody that is hydrologically connected to the proposed plan, there is no pathway for potentially adverse effects on this attribute.
		Habitat extent		
		Water quality: Macroinvertebrate s and phytobenthos (diatoms)		
		Substratum quality: Filamentous algae (macroalgae), macrophytes		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		(rooted higher plants)		
		Substratum quality: sediment		
		Substratum quality: oxygen availability		
		Hydrological regime: flow variability		
	3260 Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	Host fish	Yes. As surface water contamination may result in a reduction in suitable habitat for Salmon (see Salmon (<i>Salmo salar</i>) [1106] significant effects), potentially adverse effects on this attribute are considered likely.	Yes. The spread of IAS may result in a reduction in suitable habitat for Salmon and further reduce the Salmon population (see Salmon (<i>Salmo salar</i>) [1106] significant effects), thereby lowering juvenile mussel recruitment rate. As such, potentially adverse effects on this attribute are considered likely.
		Habitat distribution	Yes. As the QI is a water dependent habitat that is sensitive to water pollution and changes to the sediment regime, surface water contamination and sedimentation are likely to result in potentially adverse effects on this attribute.	Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the habitat area and distribution. Therefore, potentially adverse effects on these attributes are considered likely.
		Habitat area		
		Hydrological regime: river flow	No. The proposed plan does not involve alterations to the hydrological regime and surface water contamination is not likely to result in potentially adverse effects on this attribute.	No. The proposed plan does not involve alterations to the hydrological regime and the spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Hydrological regime: groundwater		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		discharge		
		Substratum composition: particle size range	Yes. As the QI is a water dependent habitat that is sensitive to changes to the sediment regime, surface water contamination and sedimentation are likely to result in potentially adverse effects on this attribute.	
		Water chemistry: minerals	Yes. As the QI is a water dependent habitat that is sensitive to water pollution and changes to the water chemistry, surface water contamination is likely to result in potentially adverse effects on this attribute.	
		Water quality: suspended sediment	Yes. As the QI is a water dependent habitat that is sensitive to changes to the sediment regime, surface water contamination and sedimentation are likely to result in potentially adverse effects on this attribute.	
		Water quality: nutrients	Yes. As the QI is a water dependent habitat that is sensitive to water pollution and changes to the water quality, surface water contamination is likely to result in potentially adverse effects on this attribute.	
		Vegetation composition: typical species		Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
		Floodplain connectivity	No.	No.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
	4030 European dry heaths		The proposed plan does not involve alterations to floodplain connectivity and surface water contamination is not likely to result in potentially adverse effects on this attribute.	The proposed plan does not involve alterations to the hydrological regime and the spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Habitat distribution	No. There is a terrestrial separation distance of 19.8km between the proposed plan and the protected site and surface water contamination is not likely to result in potentially adverse effects on these attributes.	Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
		Habitat area		Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby altering baseline nutrient conditions in the soil. Therefore, potentially adverse effects on these attributes are considered likely.
		Physical structure: free-draining, acid, low nutrient soil; rock outcrops		Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
		Vegetation structure: sub-shrub indicator species		Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
		Vegetation structure: senescent gorse		
		Vegetation structure: browsing		
		Vegetation structure: native trees and shrubs		
		Vegetation		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		composition: positive indicator species		
		Vegetation structure: positive indicator species		
		Vegetation composition: bryophyte and non-crustose lichen species		
		Vegetation composition: bracken (<i>Pteridium aquilinum</i>)		
		Vegetation structure: weedy negative indicator species		
		Vegetation composition: non- native species		
		Vegetation composition: rare/scarce heath species		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		Vegetation structure: disturbed bare ground		
		Vegetation structure: burning		No. The spread of IAS is not likely to result in potentially adverse effects on this attribute.
	6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Habitat distribution	Yes. As this habitat type is dependent on winter inundation and the deposition of nutrient rich sediment, alterations to the regime via surface water contamination and sedimentation may result in potentially adverse effects on this attribute.	Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
		Habitat area		
		Hydrological regime: Flooding depth/height of water table	No. The proposed plan does not involve alterations to the hydrological regime and surface water contamination is not likely to result in potentially adverse effects on this attribute.	No. The proposed plan does not involve alterations to the hydrological regime and the spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Vegetation structure: sward height	Yes. As this habitat type is dependent on winter inundation and the deposition of nutrient rich sediment, alterations to the regime via surface water contamination and sedimentation may result in potentially adverse effects on this attribute.	Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
		Vegetation composition: broadleaf herb: grass ratio		
		Vegetation		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		composition: typical species		
		Vegetation composition: negative indicator species		
	Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]*	Habitat area	Yes.	Yes.
		Habitat distribution	As the QI habitat is sensitive to alterations in the water chemistry (NPWS 2011), surface water contamination is likely to result in potentially adverse effects on this attribute.	The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
		Hydrological regime: height of water table; water flow	No. The proposed plan does not involve alterations to the hydrological regime and surface water contamination is not likely to result in potentially adverse effects on this attribute.	No. The proposed plan does not involve alterations to the hydrological regime and the spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Water quality	Yes. Surface water contamination is likely to result in potentially adverse effects on this attribute.	No. The spread of IAS is not likely to result in potentially adverse effects on this attribute.
		Vegetation composition: typical species	Yes. As the QI habitat is sensitive to alterations in the water chemistry (NPWS 2011), surface water contamination is likely to result in potentially adverse effects on this attribute.	Yes. The spread of IAS may cause competition for the naturally occurring plants and may result in the domination of IAS, thereby reducing the presence of typical species. Therefore, potentially adverse effects on these attributes are considered likely.
	91A0 Old sessile oak woods with	Habitat area	No.	Yes. It is likely that the spread of IAS will result in competition between IAS and the naturally occurring plants in the QI habitat, possibly leading to
		Habitat distribution		
		Woodland size		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
	<i>Ilex</i> and <i>Blechnum</i> in the British Isles	Woodland structure: cover and height	Surface water contamination is not likely to result in potentially adverse effects on this attribute.	the domination of IAS and reducing the presence of typical species and reducing the overall habitat area. Therefore, potentially adverse effects on this attribute are considered likely.
		Woodland structure: community diversity and extent		
		Woodland structure: natural regeneration		
		Woodland structure: dead wood		
		Woodland structure: veteran trees		
		Woodland structure: indicators of local distinctiveness		
		Vegetation composition: native tree cover		
		Vegetation		

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
	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]*	composition: typical species		
		Vegetation composition: negative indicator species		
		Habitat area	Yes. As this QI habitat is a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the habitat area.	Yes. As the alluvial forests habitat contains vegetation communities which have an affinity to the Annex I habitat (including gallery forests) (NPWS, 2019), the spread of IAS may result in the dominance of IAS which may result in a reduction in habitat area.
		Habitat distribution	Yes. As this QI habitat is a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the habitat distribution.	Yes. As the alluvial forests habitat contains vegetation communities which have an affinity to the Annex I habitat (including gallery forests) (NPWS, 2019), the spread of IAS may result in the dominance of IAS which may result in a reduction in habitat distribution.
		Woodland size	Yes. As this QI habitat is a water dependent habitat, the toxicity of the potential spillages in addition to sedimentation caused by the release of silt/earth into adjacent river waterbodies could affect the woodland size.	Yes. As the spread of IAS may result in competition between the IAS and plants within the QI habitat, potentially adverse effects on woodland size are likely.
		Woodland structure: cover	Yes. As the contamination of surface waters may cause eutrophication and/or sedimentation,	Yes.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		and height	thereby reducing optimum growing conditions for trees within the QI habitat, potentially adverse effects on this attribute are likely.	As the spread of IAS may result in competition between the IAS and plants within the QI habitat, potentially adverse effects on this attribute are likely.
		Woodland structure: community diversity and extent	Yes. As forests of willows in this QI habitat are located adjacent to river channels and their tree roots are almost continuously submerged (NPWS, 20XX), surface water contamination may have potential adverse effects on woodland structure: community diversity and extent.	Yes. As the spread of IAS may result in competition between the IAS and the woodland trees within the QI habitat, potentially adverse effects on this attribute are likely.
		Woodland structure: natural regeneration	Yes. As the forests in this QI habitat are located adjacent to river channels and their tree roots are almost continuously submerged (NPWS, 2021c), surface water contamination may have potential adverse effects on woodland structure: natural regeneration via a change in baseline conditions.	Yes. As the spread of IAS may result in competition between the IAS and the woodland trees within the QI habitat, potentially adverse effects on this attribute are likely.
		Hydrological regime: Flooding depth/height of water table	No. The proposed decommissioning and rehabilitation plan does not involve changes to the hydrological flow or drainage of waterbodies and it is unlikely that surface water contamination will result in adverse effects on this attribute.	No. The proposed decommissioning and rehabilitation plan does not involve changes to the hydrological flow or drainage of waterbodies and it is unlikely that the spread of IAS will result in adverse effects on this attribute.
		Woodland structure: dead	Yes. As surface water contamination may lead to a change in the baseline growth conditions for	Yes. The spread of IAS may result in competition and even dominance of IAS over naturally occurring trees, thereby altering the current levels of

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
		wood	trees within the woodland, this may further decrease levels of deadwood occurring within the QI habitat. Therefore, potentially adverse effects on this attribute are likely.	deadwood within the QI habitat. Therefore, potentially adverse effects on this attribute are likely.
		Woodland structure: veteran trees	Yes. As the forests in this QI habitat are located adjacent to river channels and their tree roots are almost continuously submerged (NPWS, 2019), surface water contamination may have potential adverse effects on woodland structure: veteran trees via a change in baseline conditions.	Yes. The spread of IAS may cause competition between IAS and veteran trees, potentially reducing the health and number of veteran trees within the habitat. Therefore, potentially adverse effects on this attribute are likely.
		Woodland structure: indicators of local distinctiveness	Yes. Surface water contamination may alter the baseline environment (nutrification, sedimentation) and thereby adversely affect indicators of local distinctiveness.	Yes. The spread of IAS may alter the baseline environment (causing competition and may even become dominant) and thereby adversely affect indicators of local distinctiveness.
		Vegetation composition: native tree cover	Yes. The contamination of surface water may alter the baseline conditions in the waterbody via nutrification and/or sedimentation and thereby reduce native tree cover. Therefore potential adverse effects on this attribute are likely.	Yes. The spread of IAS may result in competition between native trees and the IAS which is likely to lead to adverse effects on native tree cover.
		Vegetation composition: typical species	Yes. The contamination of surface water may alter the baseline conditions in the waterbody via nutrification and/or sedimentation and thereby alter the presence of typical species.	Yes. The spread of IAS may result in competition between native trees and the IAS which is likely to lead to adverse effects on this attribute.

European site [Code] (CO)	Qualifying Interests [code]/Special Conservation Interests [code]	Attribute	Adverse Effects	
			Contamination of surface water	Spread of Invasive Alien Species
			Therefore potential adverse effects on this attribute are likely.	
		Vegetation composition: negative indicator species	Yes. The contamination of surface water may alter the baseline conditions in the waterbody via nutrification and/or sedimentation and thereby alter the presence of typical species. Therefore potential adverse effects on this attribute are likely.	Yes. The spread of IAS is likely to lead to adverse effects on this attribute.

Table 6-2 Relevant European sites and respective Conservation Objectives attributes for which a terrestrial pathway with the proposed Plan have been identified (likely adverse effects from the proposed Plan are anticipated to highlighted CO/attributes).

European Site [Code] (CO)	Qualifying Interest [Code]/Special Conservation Interest [Code]	Attribute	Adverse Effects	
			Ex-situ Disturbance	Ex-situ Habitat Loss
Ballynafagh Lake SAC [001387]	Marsh Fritillary (<i>Euphydryas aurinia</i>) [1065]	Distribution: occupied 1km grid squares	No. Due to a terrestrial separation distance of ca 1.7km and as the proposed works will be restricted to the Timahoe South Bog Site, potentially adverse effects on these attributes are not likely.	No. Due to a terrestrial separation distance of ca 1.7km and as the proposed works will be restricted to the Timahoe South Bog Site, potentially adverse effects on these attributes are not likely.
		Proof of breeding: larval webs		
		Potential habitat: area	No. As the Devil's-bit Scabius plant is constrained to areas within which the decommissioning and rehabilitation works will not be taking place and as there are no records for Marsh Fritillary in Timahoe South, potentially adverse effects on these attributes are not likely.	No. As the Devil's-bit Scabius plant is constrained to areas within which the decommissioning and rehabilitation works will not be taking place and as there are no records for Marsh Fritillary in Timahoe South, potentially adverse effects on these attributes are not likely.
Slieve Bloom Mountains SPA [004160]	Hen Harrier (<i>Circus cyaneus</i>) [A082]	Population dynamics	No. While there is potential roosting and foraging habitat located within the Timahoe South Bog Site, there is no suitable habitat currently within the PCAS footprint. Potential adverse effects on this attribute are not considered likely.	No. It is the aim of the proposed works to rehabilitate the Timahoe South Bog. The creation of more suitable habitat for use by the SCI species may occur as a result of the proposed works. Potentially adverse effects on this attribute are not considered likely.
		Natural range		
		Sufficiently large habitat		

7. MITIGATION

The proposed mitigation measures are aimed at preventing the potential for the proposed Plan to cause likely adverse effects to the European sites and their CO, and avoiding the sources identified in **Section 6.1**.

The rehabilitation Plan will fully comply with Best Practice/Industry Standards. The mitigation measures include:

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

- Potential impacts caused by spillages etc. during rehabilitation will be reduced by keeping spill kits and other appropriate equipment on-site.
- Site activities will be carried out in accordance with 'best practice'. In order to ensure compliance and implementation of 'best practice', these measures will be communicated to relevant Bord na Móna staff and updated as required.

Biosecurity measures are in line with best practice guidelines issued by the National Roads Authority (NRA, 2010). The mitigation measures aimed at reducing the risk related to the spread of IAS include the following:

- Records of problematic invasive species within the various bog units will be marked out with signs to highlight areas of infestation to personnel.
- All plant machinery will be restricted from disturbing known colonies of invasive species.
- All plant machinery will avoid unnecessary crossings to adjoining lands.
- Good site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species by thoroughly washing vehicles prior to entering the area.

A suite of Standard Operating Procedures (SOPs) has also been prepared by Bord na Móna that are specific to the proposed rehabilitation being undertaken as part of the Peatland Climate Action Scheme (PCAS) that are relevant to the proposed rehabilitation being undertaken at Timahoe South Bog:

- Dust Mitigation Procedure;
- Emergency Response Clean-up Procedure;
- Peat Loading Procedure;
- Stockpile Decommissioning Procedure;
- Protection of Otter Procedure; and
- Vegetation Clearance Procedure;

Considering the distance between the proposed rehabilitation and the nearest European sites, an Environmental Management Plan (see **Appendix C**), separate and in addition to the rehabilitation plan, will be updated prior to the commencement of decommissioning and rehabilitation activities. This document will address all the potential environmental risks and the proposed environmental decommissioning and rehabilitation strategies that are to be carried out before and during the decommissioning and rehabilitation phase of the proposed development. It will include best practice measures in relation to preventing environmental impacts and management.

7.1.1. Mitigation against contaminant spillages

- Silt retention measures are included on each of the drains prior (upstream) to exiting at the outfalls as part of the Timahoe South drainage layout. There will be a pipe located on each silt retention measure which will raise the water level within the site and provide attenuation for the suspended solids.
- Maintenance of boundary drains will be completed during periods of low flow and will

follow the following measures.

- Prior to commencement of channel works, at least 2 no. check dams will be placed at the downstream end of the drainage channel to control the flow of suspended sediment downstream to receiving watercourses.
- The most downstream check dam will comprise locally sourced turves and double bagged sand bags to initially secure and check downstream flow within the channel. At least 10m upstream of this check dam, a peat dam will be created and keyed into the adjoining drainage channel banks.
- The build-up of silt material upstream of the constructed check dams will be monitored during upgrade works and the silt material will be removed from the drainage channel during works as it builds up. The material will be removed from the channel, spread and levelled into the adjacent field, a minimum of 10m from the nearest drain.
- The constructed check dams will be inspected during periods of dry weather to ensure no 'cracking' of peat has occurred which might allow for discharge.
- Upon completion of the upgrade works, all silt will be removed from the drainage channel immediately upstream of the 2 standard drain blocks prior their removal. The 2 standard drain blocks will only be removed once all upgrade works are completed and once all water within the channel is suitably settled with no evidence of suspended solids within the water column.
- Where a new drain is required, it will be formed and established prior to connecting the drainage channel to wider drainage network. Only once it has formed and become established, with the bed and banks stabilised will it be connected to the wider drainage network. This approach will minimise to a negligible level the potential for suspended solids to be generated in waters within the new drainage channel and conveyed downstream to receiving watercourses and European Sites.
- An Emergency Response Plan will be available in the event of any inadvertent release of a large volume of sediment.
- The setup of these features will be overseen by a suitably qualified Ecologist/Ecological Clerk of Works and ongoing monitoring undertaken by the project ecologist.
- In order to provide silt control measures to each catchment the existing deep drains are to be modified. This will include cleaning a section of drain and placing an exit pipe at the end to the required level. The previous operations of the bog included a grid of pumps, which lifted water from the deep drains to a longitudinal pipe running at the headlands. This pipe then transferred the water to an outfall. In reality each deep drain provided effective silt control measures due to the raised inverts of the pipes. These pumps had not been in operation for a number of years and were eventually removed. Currently the drains are required to fill almost to ground level before exiting to a pipe by gravity as there is no pump. This method will remain following the completion of the rehabilitation and decommissioning works, in addition to the modification of existing drains previously described in order to provide silt control measures.

- No fertiliser will be spread on within or in proximity to European Sites. Fertiliser will not be spread within 25m of a hydraulic break (where slope indicates runoff potential); 25m of an area subject to annual winter inundation, 25m of a natural watercourse, or 25m of any drains where conveyance is to be retained through the proposed rehabilitation extent.
- Fertiliser will be applied to headlands and bare fields where the surface slope indicates runoff is directed away from the above areas, and to within 2m of internal drainage channels within the cutover high field areas. These drainage channels will be blocked in advance of fertiliser application, restricting potential run-off to downstream drainage channels.
- Following works and the fertilization process, water outlets will be treated and all silt and peats will be cleared out.
- If re-fuelling of vehicles and/or machinery takes place on-site, all will be refilled in a bunded or hardstand area using a drip tray or mobile bund.
- Any spillage of fuels will be immediately contained and properly disposed of. Drip trays and spill kits will be kept available on site.
- In the event of accidental hydrocarbon or contaminant spillages, grounds will be cleared immediately and disposed of at an appropriately to a licensed facility. The necessary licences, permits and permissions will be required for this activity.

8. CONCLUSION

This Natura Impact Statement has been prepared to provide sufficient objective scientific information to assess the proposed Plan, in order to allow an Appropriate Assessment determination in the context of Article 6(3) of the Habitats Directive, in view of existing case law. The report has been prepared in order to evaluate the significance of potential adverse effects on European sites from the proposed Plan, alone and/or in-combination with other plans or works.

Appropriate Assessment Stage One Screening of all European sites identified within the Zone of Influence of the proposed Decommissioning and Rehabilitation Plan evaluated that potentially adverse effects on the Qualifying Interests and Special Conservation Interests of the River Boyne and River Blackwater SAC [002299], the River Boyne and River Blackwater SPA [004232] and the River Barrow and River Nore SAC [002162] could not be excluded.

In particular, the potential for effects via surface water contamination and the spread of IAS have been appraised. Thus, the above elements were brought forward for further critical examination in the Natura Impact Statement Report to inform the Appropriate Assessment process.

Accounting for the mitigation measures, as outlined in **Section 7**, proposed for the avoidance of adverse effects on the QIs and SCIs of relevant European sites mentioned above, it is concluded that the proposed Plan, as described, will not result in direct, indirect or cumulative effects, individually or in combination with other plans or projects.

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC defines integrity as the '*coherence of the sites ecological structure and function, across its whole area, or the habitats, complex of habitats and/or population of species for which the site is classified*'. It is clear that, given the application of prescribed protective measures for the avoidance of impacts and the implementation of the required mitigation measures, the proposed Plan will not give rise to adverse effects on the integrity of a Natura 2000 site or sites evaluated herein.

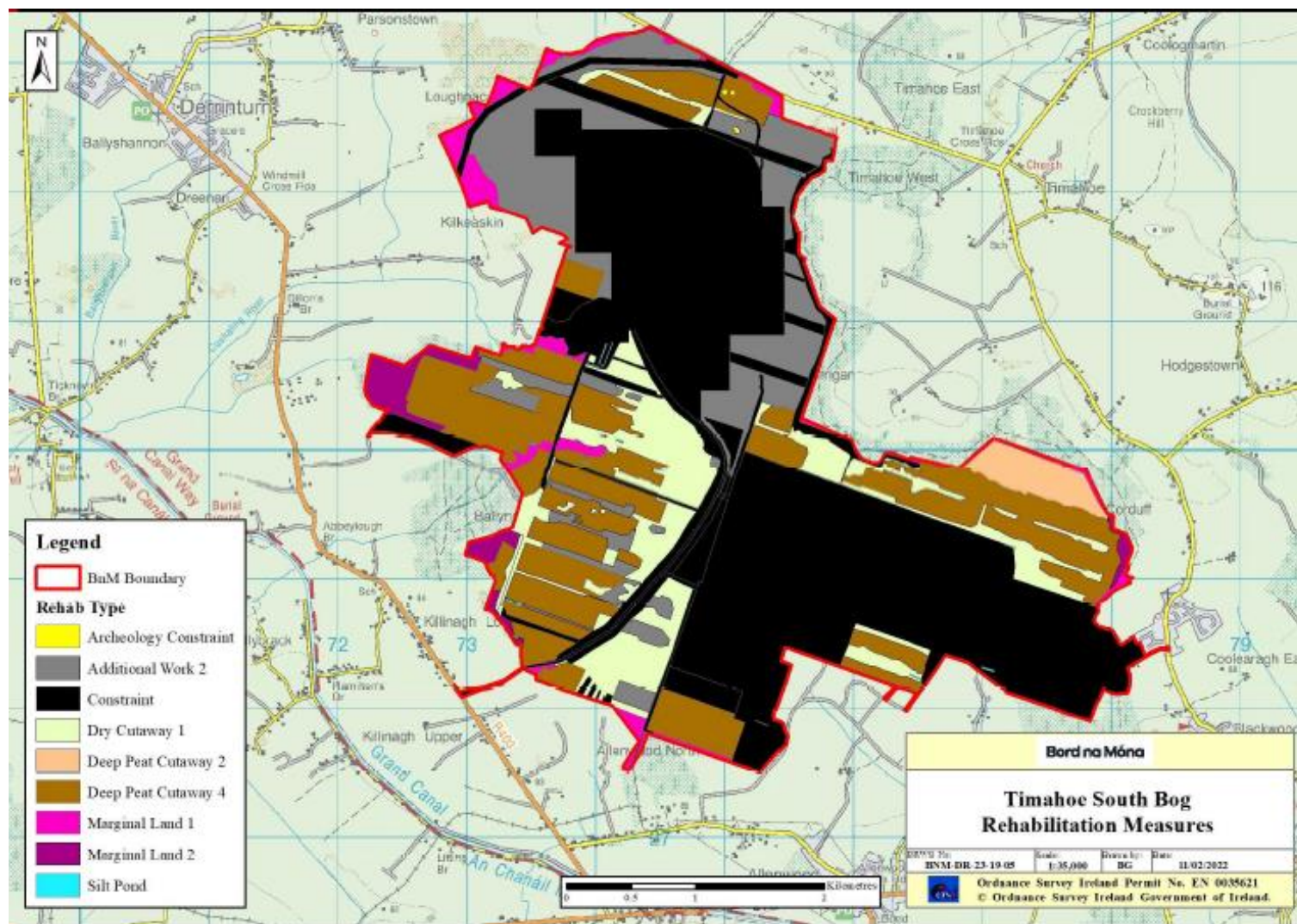
9. REFERENCES

- Bord na Móna (2021) *Timahoe South Cutaway Bog Decommissioning and Rehabilitation Plan 2021*. Available at: <https://www.bnmecas.ie/wp-content/uploads/sites/18/2022/02/Timahoe-South-Draft-Rehab-Plan-v3-2.pdf>. Accessed on 07/04/2022.
- CIEEM (2017a) *Guidelines For Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management.
- CIEEM (2017b) *Guidelines for Preliminary Ecological Appraisal* (2nd Ed). Chartered Institute of Ecology and Environmental Management.
- CIEEM (2019) *Guidelines For Ecological Impact Assessment In The UK and Ireland Terrestrial, Freshwater, Coastal and Marine*.
- Currie, F. and Elliott, G. (1997) *Forests and Birds: A Guide to Managing Forests for Rare Birds*. Forestry Authority, Cambridge and Royal Society for the Protection of Birds, Sandy, UK.
- DoCHG (2017) *National Biodiversity Action Plan 2017-2021*. Department of Culture, Heritage and the Gaeltacht.
- DoEHLG (2010) *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities*. Department of Environment, Heritage and Local Government.
- EPA (2017) *Guidelines on the information to be Contained in Environmental Impact Assessment Reports August 2017 – Draft*. Environmental Protection Agency.
- European Commission (2000) *Communication from the Commission on the Precautionary Principle*. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (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*. Office for Official Publications of the European Communities.
- European Commission (2006) *Nature and biodiversity cases: Ruling of the European Court of Justice*. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (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*. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2013) *Interpretation manual of European Union Habitats – EUR28*. European Commission, DG Environment, Nature ENV B.3.
- European Commission (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. <https://doi.org/10.2779/02245>
- Fossitt, J. (2000) *A guide to habitats in Ireland*. Kilkenny. The Heritage Council.
- Gilbert G., Stanbury A. and Lewis L. (2021) *Birds of Conservation Concern in Ireland 2020 –2026*. Irish Birds 9: 523–544.
- Kildare County Council (2020), *Kildare County Development Plan 2017-2023*. Available at: <https://kildare.ie/CountyCouncil/YourCouncil/Publications/Planning/DevelopmentPlans/KildareCountyDevelopmentPlan2017-2023/Final%20Written%20Statement%20of%20Variation%20No.%201.pdf>. Accessed in February 2022.

- Madsen, J. (1985) *Relations between change in spring habitat selection and daily energetics of Pink-footed Geese Anser brachyrhynchus*. *Ornis Scand.* **16**: 222-228.
- NPWS (2022) Conservation Objectives: Pollardstown Fen SAC 000396. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
- NPWS (2021a) Conservation Objectives: Ballynafagh Lake SAC 001387. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
- NPWS (2021b) Conservation Objectives: The Long Derries, Edenderry SAC 000925. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
- NPWS (2021c) Conservation Objectives: River Boyne and River Blackwater SAC 002299. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
- NPWS (2021d) Conservation objectives for River Boyne and River Blackwater SPA [004232]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
- NPWS (2021e) Conservation objectives for Slieve Bloom Mountains SPA [004160]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
- NPWS (2019). 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 (2015a) Conservation Objectives: Ballynafagh Bog SAC 000391. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2015b) Conservation Objectives: Mouds Bog SAC 002331. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2015c) Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2015d) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2013a) Conservation Objectives: Boyne Estuary SPA 004080. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2013b) Conservation Objectives: South Dublin Bay SAC 000210. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2013c) Conservation Objectives: North Dublin Bay SAC 000206. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2012) Conservation Objectives: Boyne Coast and Estuary SAC 001957. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NPWS (2011) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
- NRA (2006) *Guidelines For The Treatment Of Otters Prior To The Construction Of National Road Schemes*. National Roads Authority.
- NRA (2009) *Guidelines for Assessment of Ecological Impacts of National Roads Schemes*. Revisions 2, 1st June 2009. National Roads Authority.
- NRA (2010). Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads. National Roads Authority. <https://www.tii.ie/technical-services/environment/construction/Management-of-Noxious-Weeds-and-Non-Native-Invasive-Plant-Species-on-National-Road-Schemes.pdf>.

- Rees, E.C., Bruce, J.H. and White, G.T. (2005) *Factors affecting the behavioural responses of whooper swans (Cygnus c. cygnus) to various human activities*. Biological Conservation **121**: 369–382.
- Reid, N., Hayden, B., Lundy, M.G., Pietravallo, S., McDonald, R.A. & Montgomery, W.I. (2013) National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Scottish Natural Heritage (2016) *Assessing Connectivity with Special Protection Areas (SPAs)*. Volume 3.
- Smit, C.J. and Visser, G.J.M. (1993) *Effects of disturbance on shorebirds: a summary of existing knowledge from the Dutch Wadden Sea and Delta area*. Wader Study Group Bulletin **68**: 6-19.
- Sundseth, K., & Roth, P. (2014) *Article 6 of the Habitats Directive - Rulings of the European Court of Justice*. European Commission

APPENDIX A: PROPOSED PLAN LAYOUT

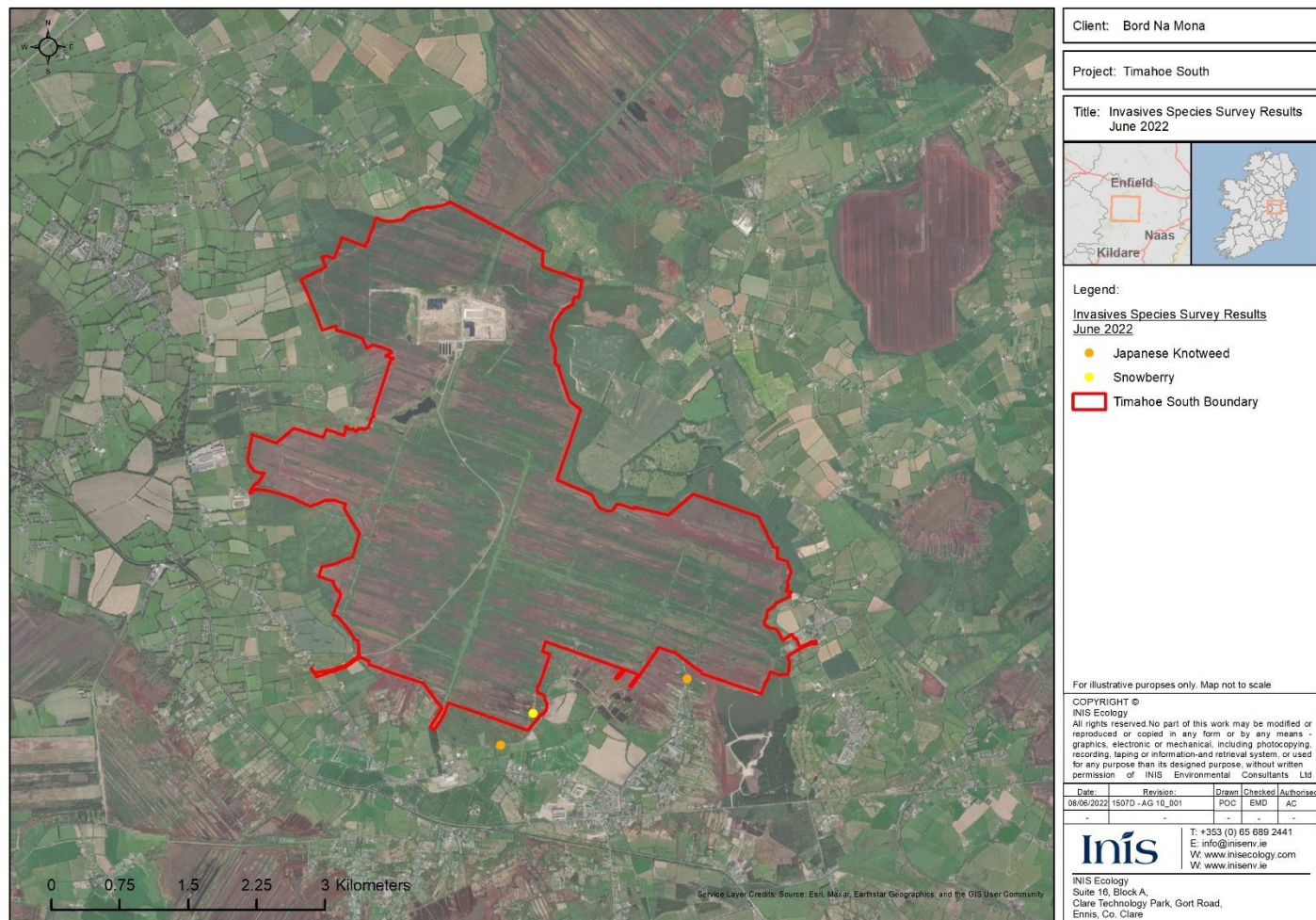


APPENDIX B: REHABILITATION PLAN FOR TIMAHOE SOUTH BOG

APPENDIX C: ENVIRONMENTAL MANAGEMENT PLAN

APPENDIX D: APPLICATION OF FERTILISERS MAP

APPENDIX E: LOCATIONS OF INVASIVE ALIEN SPECIES



APPENDIX F: EMERGENCY RESPONSE CLEAN-UP PROCEDURE

APPENDIX G: DMP MEASURES FOR TIMAHOE SOUTH BOG