

Remedial Natura Impact Statement

Extraction in Lemanaghan
Bog, Co. Offaly





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Table of Contents

1.	INTRODUCTION	3
1.1	Background	3
1.2	Statement of Authority	4
1.3	References to Project	5
1.4	Methodology	5
1.4.1	Appropriate Assessment Process.....	5
1.4.2	Scoping and Consultation	6
1.4.3	Desk Study Methodology.....	7
1.4.4	Field Survey Methodologies.....	8
2.	SUMMARY OF REMEDIAL AASR AND ASSESSMENT OF QUALIFYING FEATURES LIKELY TO BE SIGNIFICANTLY AFFECTED.....	13
2.1	River Shannon Callows SAC	13
2.1.1	Identification of Individual Qualifying Features with the Potential to be Affected	13
2.2	Middle Shannon Callows SPA	15
2.2.1	Identification of Individual Qualifying Features with the Potential to be Affected	16
3.	DESCRIPTION OF THE PROJECT	21
3.1	Site Location	21
3.2	Project Details.....	23
3.3	Overview of Peat Extraction at the Application Site	24
3.3.1	Peat Extraction Volumes July 1994-June 2020.....	24
4.	CHARACTERISTICS OF THE RECEIVING ENVIRONMENT.....	26
4.1	Desk Study Results	26
4.1.1	River Shannon Callows SAC.....	26
4.1.2	Middle Shannon Callows SPA	29
4.1.3	EPA River Catchments and Watercourses	32
4.2	Ecological Survey Results.....	37
4.2.1	Habitat survey	37
4.2.2	Faunal Surveys	44
5.	ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED CONTROL/MITIGATION MEASURES.....	46
5.1	Potential for Direct Effects on the European Sites	46
5.2	Potential for Indirect Effects on the European Sites	46
5.2.1	Deterioration of Water Quality.....	47
5.2.2	Disturbance.....	52
6.	ASSESSMENT OF RESIDUAL ADVERSE EFFECTS	55
6.1	River Shannon Callows SAC.....	55
6.1.1	Otter <i>Lutra lutra</i> [1355]	55
6.1.2	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno- Padion, Alnionincanae, Salicion albae).....	57
6.1.3	Alkaline Fens [7230]	60
6.1.4	Determination of Potential Adverse Effects in the River Shannon Callows SAC.....	64
6.2	Middle Shannon Callows SPA	64
6.2.1	Whooper Swan [A038]	64
6.2.2	Wigeon [A050]	66
6.2.3	Golden Plover [A140]	69
6.2.4	Lapwing [A142].....	71
6.2.5	Black-tailed Godwit [A156]	74

6.2.6	Black-headed Gull [A179].....	76
6.2.7	Wetlands [A999].....	79
6.2.8	Determination on Potential Adverse Effects in the Middle Shannon Callows SPA.....	79
6.3	Conclusion of Impact Assessment.....	80
7.	IN COMBINATION EFFECTS.....	81
7.1	Development Context – Ecological Plans and Policies.....	81
7.2	Projects.....	91
7.3	Assessment of Cumulative Effects	91
7.3.1	Peat Extraction Phase.....	91
7.3.2	Current Phase.....	92
7.3.3	Remedial Phase	92
7.4	Conclusion of In Combination Impact Assessment.....	92
8.	CONCLUDING STATEMENT.....	94
	BIBLIOGRAPHY	95

LIST OF FIGURES

Figure 2-1	European Sites Surrounding the Application Site
Figure 3-1	Application Site Location

APPENDICES

Appendix 1	Remedial Appropriate Assessment Screening Report
Appendix 2	 Bord na Móna Cutaway Bog Rehabilitation Plan
Appendix 3	 IPC Licence
Appendix 4	 Aquatic Report
Appendix 5	 Bird Survey Report
Appendix 6	Chapter 8: Hydrology and Hydrogeology, rEIAR

1. INTRODUCTION

1.1 Background

MKO has been appointed to prepare a remedial Natura Impact Statement (rNIS) to allow the competent authority to conduct an Appropriate Assessment under Part XAB of the Planning and Development Acts 2000 (as amended) as part of an application for substitute consent for peat extraction and ancillary activities that have been carried out within Lemanaghan Bog, hereafter referred to as the 'Application Site', located in County Offaly.

This report also assesses the potential impacts of the implementation of the Draft Cutaway Bog Decommissioning and Rehabilitation Plan for the Application Site (hereafter referred to as 'Rehabilitation Plan'), required under Condition 10 of its EPA Licence P0500-01.

Henceforth, the works as described above will be referred to as the Project, for the purposes of this remedial Natura Impact Statement (rNIS).

Section 177G of the Planning and Development Act 2000 (as amended) sets out that the rNIS shall contain:

- A statement of the significant effects, if any, on the relevant European site which have occurred, or which are occurring or which can reasonably be expected to occur because the subject development of the application for substitute consent was carried out;
- Details of any appropriate remedial or mitigation measures undertaken or proposed to be undertaken by the applicant to remedy or mitigate any significant effects on the environment or on the European site;
- Details of the period of time within which any such proposed remedial or mitigation measures shall be carried out by or on behalf of the applicant.

A remedial Appropriate Assessment Screening Report (rAASR) has been prepared and is provided in Appendix 1. The rAASR identified the European Sites with potential to have been, and to be, significantly affected by peat extraction and ancillary activities from 1994. This is the date when the Habitats Directive came into force, although it was not transposed into Irish law until 1997, through the European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997), and Appropriate Assessment (AA) became a legal requirement, onwards. The European Sites with potential to be significantly affected by the implementation of the proposed Rehabilitation Plan for the Application Site were also identified. The potential for impacts on European Sites was assessed under three separate phases:

- **Peat Extraction Phase** - includes all works undertaken from 1994 to the cessation of peat extraction in June 2020. 1994 is when The Habitats Directive came into force, though it was not transposed into Irish law until 1997 through the European Communities (Natural Habitats) Regulations 1997 and when Appropriate Assessment (AA) became a legal requirement.
- **Current Phase** - includes all activities carried out at the site from the cessation of peat extraction in June 2020 to the present day.
- **Remedial Phase** - implementation of the proposed Rehabilitation Plan for the Application Site, required under Condition 10 of its EPA Licence P0500-01, following the cessation of peat extraction in June 2020.

Peat extraction and ancillary activities undertaken at the Application Site, which comprise the Project for which substitute consent is being sought, and for which this rNIS is prepared, consists of the following:

- i. Industrial scale peat extraction (milled peat) at the Application Site from 1988 to June 2020;*
- ii. Installation, use and maintenance of surface water drainage infrastructure (drains, silt ponds, pumps) at the Application Site to facilitate peat extraction activity from 1988 to present day;*
- iii. Provision of a welfare facility building and associated septic tank, 2 no. storage containers;*
- iv. Use and maintenance of pre-existing railway infrastructure to facilitate peat extraction activity from 1988 to present day;*
- v. Control Measures associated with the above, inclusive of the IPC Licence measures (Ref. P0500-01) which commenced from May 2000 onwards to the present day; and,*
- vi. All associated site development and ancillary works.*

The rAASR identified the European Sites upon which significant effects could not be excluded. Those sites will be assessed in this remedial Natura Impact Statement.

This report has been prepared in compliance with Part XAB of the Planning and Development Act 2000 (as amended), the Planning and Development Regulations 2001 (as amended) and relevant jurisprudence of the European and Irish Courts. It was also prepared in accordance with all relevant guidance including the following:

- 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 (European Commission (EC), 2021);
- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (Department of the Environment, December 2009, amended 11 February 2010); and
- Appropriate Assessment Screening for Development Management (Office of the Planning Regulator (OPR), 2021).

The purpose of the rNIS is to assess the implications of the Project, either alone or in-combination with other projects or plans, on the integrity of European sites in view of the sites' conservation objectives.

1.2 Statement of Authority

This report has been prepared by Sorchá Shanley (B.A., M.Sc.) and has been reviewed by Rachel Walsh (B.Sc. Env., MCIEEM).

Sorchá is a Project Ecologist at MKO and holds a BA (Hons) in Zoology and an M.Sc. in Marine Biology. Sorchá has over three years' experience working in ecological consultancy with experience in undertaking habitat and species surveys and working on Ecological Impact Assessment and Appropriate Assessment for a wide range of projects.

Rachel is a Senior Ecologist at MKO and holds a B.Sc. in Environmental Science. Rachel has 5 years' experience in ecological consultancy and holds full membership with the Chartered Institute of Ecology and Environmental Management (MCIEEM). Rachel has worked on a wide range of ecological impact assessments for projects such as renewable energy infrastructure projects, wastewater infrastructure projects, extractive industry and residential projects.

The baseline ecological surveys were undertaken by Patrick Ellison (B.Sc., M.Sc., ACIEEM), Rachel Walsh (B.Sc. Env. MCIEEM), Neansaí O' Donovan (B.Sc.), Cuan Feely, Adam Scott, David Mesarcik, Valerie Kendall, Kate Greaney, Frederick Mosley, David Culleton, Nathan Finn, Keith Costello and Cathal Bergin of MKO.

All surveyors have relevant academic qualifications and are competent in undertaking the ecological surveys in which they were involved.

1.3

References to Project

For the purposes of this rNIS:

- Lemanaghan Bog is referred to as ‘the Application Site’ as shown in Figure 3-1.
- For the purposes of this rNIS, the Project refers to all ‘Phases’ which are fully detailed in Chapter 4 Description of Development of the remedial EIAR (rEIAR) and in Appendix A of the rAASR in Appendix 1 of this report., and summarised below
 - **‘Peat Extraction Phase’:** peat extraction and ancillary activities at the Application Site from July 1988 to the cessation of peat extraction in June of 2020 (July 1988 – June 2020).
 - **‘Current Phase’:** the management of the Application Site since June 2020 (June 2020 to present).
 - **‘Remedial Phase’:** the activities intended to be carried out at the Application Site into the future.

1.4

Methodology

1.4.1

Appropriate Assessment Process

1.4.1.1

Stage 1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. As per Section 177U of the Planning and Development Act, 2000, as amended ‘*A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site*’. The Competent Authority’s determination as to whether an Appropriate Assessment is required must be made on the basis of objective information and should be recorded. The Competent Authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may provide for the competent authority, the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

As per the European Commission’s *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 (2021)*, a Stage 1 Screening comprises four steps:

1. Ascertain whether the plan or project is directly connected with, or necessary to, the management of a Natura 2000 site;
2. Description of the plan or project and its impact factors (described in Section 2 below);
3. Identify which Natura 2000 sites may be affected by the plan or project (described in Section 3 below); and
4. Assess whether likely significant effects can be ruled out in view of the site’s conservation objectives (described in Section 3 below).

In relation to Step 1 above, the Project is/was not directly connected with, or necessary for, the management of any European Site consequently the Project has been subject to a remedial Appropriate Assessment Screening process.

1.4.1.2 Stage 2 Appropriate Assessment

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required, or in this case a remedial Appropriate Assessment.

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement.

The term Natura Impact Statement (NIS) is defined in legislation¹. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to:

- 1) The implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and
- 2) Whether there will be adverse effects on the integrity of a European site.

The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

Section 177G of the Planning & Development Act 2000 (as amended) sets out that the rNIS shall contain:

- A statement of the significant effects, if any, on the relevant European site which have occurred or which are occurring or which can reasonably be expected to occur because the development the subject of the application for substitute consent was carried out;
- Details of any appropriate remedial or mitigation measures undertaken or proposed to be undertaken by the applicant to remedy or mitigate any significant effects on the environment or on the European site;
- Details of the period of time within which any such proposed remedial or mitigation measures shall be carried out by or on behalf of the applicant.

This Article 6(3) rNIS has been prepared in compliance with the provisions of section 177U of the Planning and Development Act 2000 (as amended).

1.4.2 Scoping and Consultation

MKO undertook a scoping exercise during preparation of this rNIS for the substitute consent application. Scoping responses relevant to European Sites and Appropriate Assessment are summarised in Table 1-1 below.

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

Table 1- 1 Scoping Responses

No.	Consultee	Date of Response	Response
1	An Taisce	None to date	None to date
2	Bat Conservation Ireland	None to date	None to date
3	Bird Watch Ireland	None to date	None to date
4	Butterfly Conservation Ireland (BCI)	None to date	None to date
8	Department of Housing, Local Government and Heritage (includes National Parks and Wildlife Service)	None to date	None to date
12	Eastern and Midland Regional Assembly	None to date	None to date
18	Inland Fisheries Ireland	None to date	None to date
19	Irish Peatland Conservation Council	None to date	None to date
21	Irish Raptor Study Group	None to date	None to date
23	Irish Wildlife Trust	None to date	None to date
25	Offaly County Council - Environment Department	None to date	None to date
28	National Parks and Wildlife Service (DAU)	None to date	None to date

1.4.3 Desk Study Methodology

The desk study undertaken for this assessment included a thorough review of available data pertaining to the Application Site and surrounding area, as well as information pertaining to the Screened-in European Sites identified in Table 3-1 of the rAASR and in Section 2 below. Sources of information included the following:

- Bord na Móna Habitat Mapping for the Application Site
 - The Application Site was subject to detailed habitat surveys by Bord na Móna ecologists between 2011 and 2012 (with follow-up site visits in subsequent years as outlined below) and detailed habitat maps were prepared.
- Draft Bord na Móna Cutaway Bog Decommissioning and Rehabilitation Plan for Lemanaghan Bog (included in Appendix 2 of the rNIS)
 - Lemanaghan Decommissioning and Rehabilitation Plan 2024.
- Aerial imagery for the years 1973, 1988, 1995, 2004 and 2020.
- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of EU Habitats Directive (Article 17) Reports.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA), EPA (Envision) and Water Framework Directive (WFD).
- Review of OS maps and aerial photographs of the site of the Project.
- Review of relevant available plans, including the Offaly County Development Plan 2021–2027, and partial versions of other plans (Offaly County Development Plan 2014-2020, Offaly County Development Plan 2009-2015, Offaly County Development Plan 2003-2009, Offaly County Development Plan 1995, Offaly County Development Plan 1987 and Offaly County Development Plan 1967), where accessible. The National Biodiversity Action Plan 2007-2013 and National Biodiversity Action Plan 2023-2030 were also reviewed. MKO field assessments and surveys carried out between 2020 and 2025 and as provided in full in Section 4 of the rNIS.
- Sharrock, J.T.R. (1976) The atlas of breeding birds in Britain and Ireland.
- Lack, P.C. (1986) The atlas of wintering birds in Britain and Ireland.
- Gibbons, D.W., Reid, J.B. & Chapman, R.A. (1993) The new atlas of breeding birds in Britain and Ireland: 1988-1991.

- Balmer, D., Gillings, S., Caffrey, B., Swann, B., Downie, I., & Fuller, R. (2013). Bird Atlas 2007–11: The Breeding and Wintering Birds of Britain and Ireland.
- Bord na Móna Breeding and Wintering Bird Survey Reports (2014-2020) undertaken by Biosphere Environmental Services (BES).
- Integrated Pollution Control Licence (IPC) Licence Boora Bog Group (Ref. P0500-01) Environmental Protection Agency (Appendix 3 of the rNIS).
- Aquatic Report (2024) for proposed Lemanaghan Wind Farm prepared by Triturus Environmental Ltd (Appendix 4 of the rNIS).

1.4.4

Field Survey Methodologies

In addition to the desk study described above, a comprehensive survey of the biodiversity of the Application Site was undertaken on various dates between 2020 and 2025, set out below in Table 1-2.

Detailed habitat maps of the Application Site provided by Bord na Móna were used to set the baseline and inform the surveys. Whilst a number of the surveys described below were undertaken to inform the EIAR and NIS for the proposed Lemanaghan Wind Farm, the study area for both the proposed Lemanaghan Wind Farm and the Application Site boundary for this rNIS overlap. These surveys provide the information necessary to undertake a robust assessment of the potential impacts of the Project on European Sites.

Table 1- 2 Summary of surveys undertaken to inform the rNIS

Survey	Dates
Multidisciplinary walkover survey	21 st April 2021 30 th July 2021 3 rd August 2022 25 th July 2023 10 th August 2023 14 th September 2023 29 th July 2025
Detailed habitat and vegetation composition surveys	29 th June 2023 25 th July 2023 17 th July 2024 18 th July 2024 19 th August 2024 29 th August 2024 10 th September 2024 3 rd October 2024 9 th October 2024

Survey	Dates
Otter surveys	17 th August 2021 18 th August 2021 18 th August 2024 19 th August 2024 10 th September 2024
Aquatic surveys	17 th August 2021 18 th August 2021 18 th August 2024 19 th August 2024
Bird surveys	Various dates between October 2020– March 2024

The results of the surveys were used to inform this rNIS. The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies, dates of survey and guidance followed.

1.4.4.1 Ecological Multidisciplinary Walkover Surveys

Multidisciplinary walkover surveys of the Application Site were undertaken in order to ground-truth the habitat mapping provided by Bord na Móna, based on their ecological surveys of the Application Site in 2011.

Habitats recorded within the Application Site by MKO during the walkover surveys were classified according to the guidelines set out in ‘*A Guide to Habitats in Ireland*’ (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. The survey timings fall within the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith *et al.*, 2011).

The walkover surveys were also designed to detect the presence, or likely presence, of a range of protected habitats and species.

The multidisciplinary walkover surveys comprehensively covered the Application Site with further detailed targeted surveys carried out for features and locations of ecological significance. These surveys were carried out in accordance with NRA *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (NRA, 2009). Peatland surveys were carried out in accordance with methods outlined in Smith *et al.* (2020).

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) was conducted.

Other targeted survey methodologies undertaken at the Application Site are described in the following subsections.

1.4.4.2 Dedicated Habitat and Vegetation Composition

Detailed habitat classification and assessment was undertaken by MKO at targeted locations within the Application Site boundary for the proposed Lemanaghan Wind Farm, with relevés undertaken within representative habitats recorded within the Application Site. Relevés were 4x4 metres for all habitats. The extent of each habitat on site was mapped using aerial photography, handheld GPS and smartphone technology. A representative photograph was also taken for each of the habitats recorded on site, including all relevés.

The habitat surveys have been undertaken with reference to the following guidelines and interpretation documents:

- Cross, J. & Lynn, D. (2013) Results of a monitoring survey of bog woodland. Irish Wildlife Manuals, No. 69. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Fernandez, F., Connolly K., Crowley W., Denyer J., Duff K. & Smith G. (2014) Raised Bog Monitoring and Assessment Survey 2013. Irish Wildlife Manuals, No. 81. National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht, Dublin, Ireland.
- Commission of the European Communities (2007) Interpretation manual of European Union habitats. Eur 27. European Commission DG Environment.
- Foss, P.J. & Crushell, P. (2008) Guidelines for a National Fen Survey of Ireland, Survey Manual. Report for the National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Ireland.
- NPWS (2013) The Status of EU Protected Habitats and Species in Ireland. Habitat Assessments Volume 2. Version 1.1. Unpublished Report, National Parks and Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- 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.
- Smith, G. F., & Crowley, W. (2020) The Habitats of Cutover Raised Bog. Irish Wildlife Manuals 128. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Habitats were identified and classified, with emphasis on those of ecological significance, particularly those with the potential to correspond to Annex I of the EU Habitats Directive (92/43/EEC).

Plant nomenclature for vascular plants follows '*New Flora of the British Isles*' (Stace, 2010), while mosses and liverworts nomenclature follows '*Mosses and Liverworts of Britain and Ireland - a field guide*' (British Bryological Society, 2010).

1.4.4.3 Otter Surveys

Otter is a Qualifying Interest (QI) for the River Shannon Callows SAC. Therefore, dedicated otter surveys of the watercourses within the Application Site were conducted. Additional otter surveys were undertaken by Triturus Environmental Ltd. during aquatic surveying of the watercourses both within and downstream of the targeted otter study area on the 17th and 18th August 2021 and the 18th and 19th August 2024.

The otter survey was conducted as per NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes). This involved a search for all otter signs e.g. spraints, scat, prints, slides, trails, couches and holts. In addition to the width of the rivers/watercourses, a 10m riparian buffer (both banks) was considered to comprise part of the otter habitat (NPWS, 2009). The dedicated otter survey also followed the guidance as set out in NRA (2008)

'Guidelines for the Treatment of Otters Prior to the Construction of National Roads Schemes' and following CIEEM best practice competencies for species surveys (CIEEM, 2013).

1.4.4.4 Aquatic surveys

Aquatic surveys of the watercourses draining the Application Site were conducted by Triturus Environmental Ltd. on the 17th and 18th August 2021 and the 18th and 19th August 2024. The surveys assessed watercourses and ponds within and downstream of the Application Site to evaluate fisheries potential, biological water quality, and the presence of aquatic species and habitats of conservation interest. A total of 13 sites were surveyed. The site locations are shown in Figure 2-1 of the Aquatic Report in Appendix 4. While the surveys were undertaken to inform the rEIAR and rNIS for the proposed Lemanaghan Wind Farm, the survey covered all watercourses draining the Application Site and the survey effort was considered sufficient to provide comprehensive information on the nature of the watercourses within and draining the Application Site.

The surveys included Biological Water Quality (Q sampling) which was assessed through kick sampling, electrofishing and a broad aquatic habitat assessment at each location which assessed watercourses in terms of:

- Physical watercourse/waterbody characteristics (i.e., width, depth etc.).
- Substrate type, listing substrate fractions in order of dominance (i.e., bedrock, boulder, cobble, gravel, sand, silt etc.).
- River profile in the sampling area.
- An appraisal of the macrophyte and aquatic bryophyte community at each site.
- Riparian vegetation composition.

The methodologies for the aquatic surveys are described within the Aquatic Report included as Appendix 4.

1.4.4.5 Bird Surveys

Bird surveys were undertaken by MKO at the Application Site between October 2020 and March 2025 consisting of four breeding seasons (April – September) and five non-breeding seasons (October – March). While the surveys were undertaken to inform the EIAR for the proposed Lemanaghan Wind Farm, the study area for the bird surveys covered the entire Application Site. These surveys provide the information necessary to undertake a robust assessment of the likely impacts of the Project as set out in Section 1.3. These field surveys were undertaken in compliance with SNH guidance (SNH 2017). The relevant survey methodologies and effort are described in full detail in the Bird Survey Report included as Appendix 5 and relevant information summarised below.

Vantage Point Surveys

Vantage point surveys were undertaken at the Application Site from October 2020 to March 2025. Surveys were conducted monthly throughout the survey period from six fixed point vantage points to allow as comprehensive as possible coverage of the Application Site.

Data Recording and Digitisation

Data on bird observations and flight activity was collected from a scanning arc of 180° and a 2km radius by an observer at each fixed location for six hours per month. Surveys were scheduled to provide a spread over the full daylight period including dawn and dusk watches to coincide with the highest periods of bird activity.

Each flight observation was assigned a unique identifier when mapped in the field and subsequently digitised using GIS software.

Winter Walkover Surveys

Winter transect surveys were undertaken to record the presence of bird species of high conservation concern within areas of potentially suitable habitat in the study area.

Transect routes were devised to ensure coverage of different habitat complexes throughout the Application Site, during the winter months. The methodology was broadly based on methods described in Bibby *et al.* (2000) and adapted Brown and Shepherd surveys. Target species were raptors, waterbirds, gulls and ground birds of conservation interest. Along with target species, all additional species observed were recorded to inform the evaluation of supporting habitat.

Breeding Walkover

Breeding walkover surveys were undertaken to determine the presence of bird species of high conservation concern and identify areas of possible, probable, or confirmed breeding territories for bird species observed within the bird survey study area. The methodology was based on O'Brien and Smith (1992) and Gilbert *et al.* (1998), combined with Common Bird Census methods (British Trust for Ornithology, 2021) for dense habitat.

Transect routes were devised to ensure the required coverage of different habitat was achieved within the bird survey study area. Transects were selected to ensure all areas of suitable breeding/foraging habitat were approached to within 100m. Target species included waders, raptors, waterbirds, gulls and other birds of conservation concern. Along with target species, all additional species observed were recorded to inform the evaluation of supporting habitat.

Walkover surveys were carried out between daylight hours during the core breeding season months of April, May, June and July 2021-2025, with the Application Site being visited three days per month on each occasion. The timing of visits followed the recommendations of Brown and Shepherd (1993). Following all survey visits, the field maps were analysed to determine the number and location of breeding territories. All non-breeding individuals and species encountered were also recorded.

Waterbird Distribution and Abundance Surveys

Waterbirds include: swans, geese and ducks; cormorant, shag, divers and grebes; auks and seabirds; gulls, terns and skuas; herons, egrets and crane; rails and crakes; waders; and kingfisher. Significant wetlands and waterbodies within 8km of the Application Site were surveyed for waterbirds during the 2020/2021, 2021/2022, 2022/2023, 2023/2024 and 2024/2025 winter and passage seasons (August to May inclusive) to provide information on their distribution in relation to the Application Site. The area surveyed exceeds the 500m for foraging waterbirds and 1km for roosting waterbirds requirements of SNH (2017) and follows the recommendations of SNH (2016).

Survey methodology follows Gilbert *et al.* (1998) and the Irish Wetland Bird Survey (BirdWatch Ireland, 2021). Surveys were undertaken during daylight hours from suitable vantage points at wetlands and waterbodies. All target waterbird species were recorded and mapped. Survey effort, including details of survey duration and weather conditions, is presented in Appendix 5.

1.4.4.6 Invasive Species Survey

- During the multidisciplinary walkover surveys and botanical surveys, a search for non-native invasive species was also undertaken. The survey focused on the identification of invasive species listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (As Amended) (S.I. 477 of 2015).

2.

SUMMARY OF REMEDIAL AASR AND ASSESSMENT OF QUALIFYING FEATURES LIKELY TO BE SIGNIFICANTLY AFFECTED

The remedial Appropriate Assessment Screening report (rAASR) that is provided as Appendix 1 to this remedial Natura Impact Statement (rNIS), concluded that there was potential for the following European Sites to have been, and to be, significantly affected by peat extraction and ancillary activities:

- River Shannon Callows Special Area of Conservation (SAC); and
- Middle Shannon Callows Special Protection Area (SPA).

The Qualifying Interests (QIs) and Special Conservation Interests (SCIs) with the potential to be affected and the pathways by which any such effects may have occurred are set out below for each site. The location of the Application Site and connectivity with these EU designated sites is provided as Figure 2-1.

2.1

River Shannon Callows SAC

The River Shannon Callows SAC is located approximately 8.7km to the west of the Application Site at its closest point.

There is hydrological connectivity between the Application Site and this SAC via watercourses within the Application Site which discharge to the Brosna River and the River Shannon, both of which are designated as part of the SAC.

Potential indirect effects on the aquatic QIs of this SAC as a result of peat extraction and ancillary activities during both the Peat Extraction Phase and Current Phase was identified. During these phases there would have been and currently is potential for deterioration in surface and ground water quality due to runoff of pollutants, including silts and hydrocarbons, to watercourses within and downstream of the site.

During the implementation of the proposed Rehabilitation Plan for the Application Site (Remedial Phase) there will be a requirement for small volumes of machinery and personnel on site for drain blocking works. Taking a precautionary approach, a potential pathway for indirect effects on the SAC during the Remedial Phase as a result of deterioration of water quality due to runoff of pollutants during such works was identified.

Following application of the precautionary principle, a potential pathway for indirect effects on otter where they occur outside the SAC was identified. Disturbance could potentially occur or have occurred during drain maintenance works where any otter resting or breeding sites were present on the Application Site.

2.1.1

Identification of Individual Qualifying Features with the Potential to be Affected

The potential for impacts on this SAC as identified in the rAASR are outlined above in Section 2.1. Table 2-1 below lists the qualifying features of this European Site and determines, in the light of their conservation objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

Table 2- 1 Assessment of Individual QIs with the Potential to be Affected

Qualifying Interest	Conservation Objective (NPWS, Version 1, September 2022 ²),	Rationale	Potential for Adverse Effects
[1355] Otter (<i>Lutra lutra</i>)	To restore the favourable conservation condition of Otter in River Shannon Callows SAC	This is an aquatic QI of the River Shannon Callows SAC. A hydrological connection has been established between the Application Site and the SAC via downstream watercourses. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects on otter as a result of deterioration in water quality cannot be ruled out. On a precautionary basis, it is also considered that otters potentially using watercourses within or downstream of the Application Site may be functionally linked to the SAC and could be subject to disturbance impacts. As such, this QI is assessed further in this rNIS.	Yes
[6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>)	To restore the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) in River Shannon Callows SAC	This is a terrestrial habitat and no hydrological or other functional connectivity exists between the Application Site and areas where this habitat occurs within the River Shannon Callows SAC. As such, a complete source-pathway-receptor chain is not present, and there is no potential for significant effects. No further assessment is required.	No
[6510] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)	To restore the favourable conservation condition of Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) in River Shannon Callows SAC	This is a terrestrial habitat and no hydrological or other functional connectivity exists between the Application Site and areas where this habitat occurs within the River Shannon Callows SAC. As such, a complete source-pathway-receptor chain is not present, and there is no potential for significant effects. No further assessment is required.	No
[7230] Alkaline fens	To restore the favourable conservation condition of Alkaline Fens in River Shannon Callows SAC	This is a groundwater-dependent wetland habitat and is sensitive to changes in hydrology and water quality. While the mapped areas of this habitat lie within a different groundwater body than the Application Site, the NPWS conservation objectives indicate that not all areas of alkaline fen within the SAC have been fully mapped. Given this and the presence of a hydrological connection via surface water between the Application Site and the SAC, a complete source-pathway-receptor	Yes

² NPWS (2022) Conservation Objectives: River Shannon Callows SAC 000216. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

Qualifying Interest	Conservation Objective (NPWS, Version 1, September 2022 ²),	Rationale	Potential for Adverse Effects
		chain exists. Therefore, the potential for significant effects on alkaline fen cannot be ruled out, and this QI is assessed further in this rNIS.	
[8240] Limestone pavements	To restore the favourable conservation condition of Limestone Pavements in River Shannon Callows SAC	This is a terrestrial habitat and no hydrological or other functional connectivity exists between the Application Site and areas where this habitat occurs within the River Shannon Callows SAC. As such, a complete source-pathway-receptor chain is not present, and there is no potential for significant effects. No further assessment is required.	No
[91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	To maintain the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) in River Shannon Callows SAC	This is a riparian habitat associated with riverine systems and may be sensitive to changes in water quality or hydrology. A direct hydrological connection via surface water has been established between the Application Site and the River Shannon Callows SAC. Mapped areas of this QI occur on river islands downstream of the site. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects on alluvial forests as a result of deterioration in water quality cannot be ruled out. As such, this QI is assessed further in this rNIS.	Yes

2.2

Middle Shannon Callows SPA

The Middle Shannon Callows SPA is located approximately 8.7km to the west of the Application Site at its closest point.

There is hydrological connectivity between the Application Site and this SAC via watercourses within the Application Site which discharge to the Brosna River and the River Shannon, both of which are designated as part of the SPA.

A potential pathway for indirect effects on SCI bird species and wetlands as a result of peat extraction and ancillary activities during both the Peat Extraction Phase and Current Phase was identified. During these phases there would have been and currently is potential for deterioration in surface water quality due to run-off of pollutants, including silts and hydrocarbons, to watercourses within and downstream of the site. This has potential to negatively affect availability of food resources for the SCI species associated with this SPA and wetland habitats that support them.

During the implementation of the proposed Rehabilitation Plan for the Application Site (Remedial Phase) there will likely be a requirement for small volumes of machinery and personnel on site for drain blocking works. Taking a precautionary approach a potential pathway for indirect effects on SCI bird species and wetlands as a result of deterioration of water quality due to runoff of pollutants during such works was identified.

On a precautionary basis, there is also potential for disturbance and displacement of SCI species potentially using the Application Site, arising from the presence and movement of machinery and personnel, noise, and general activity during the Peat Extraction Phase, Current Phase and Remedial Phase.

2.2.1

Identification of Individual Qualifying Features with the Potential to be Affected

The potential for impacts on this SPA as identified in the rAASR are outlined above in Section 2.2. Table 2-2 below lists the qualifying features of this European Site and determines, in the light of their conservation objectives, whether there is any complete source-pathway-receptor chain, by which adverse effects may occur.

Table 2-2 Assessment of Individual SCIs with the Potential to be Affected

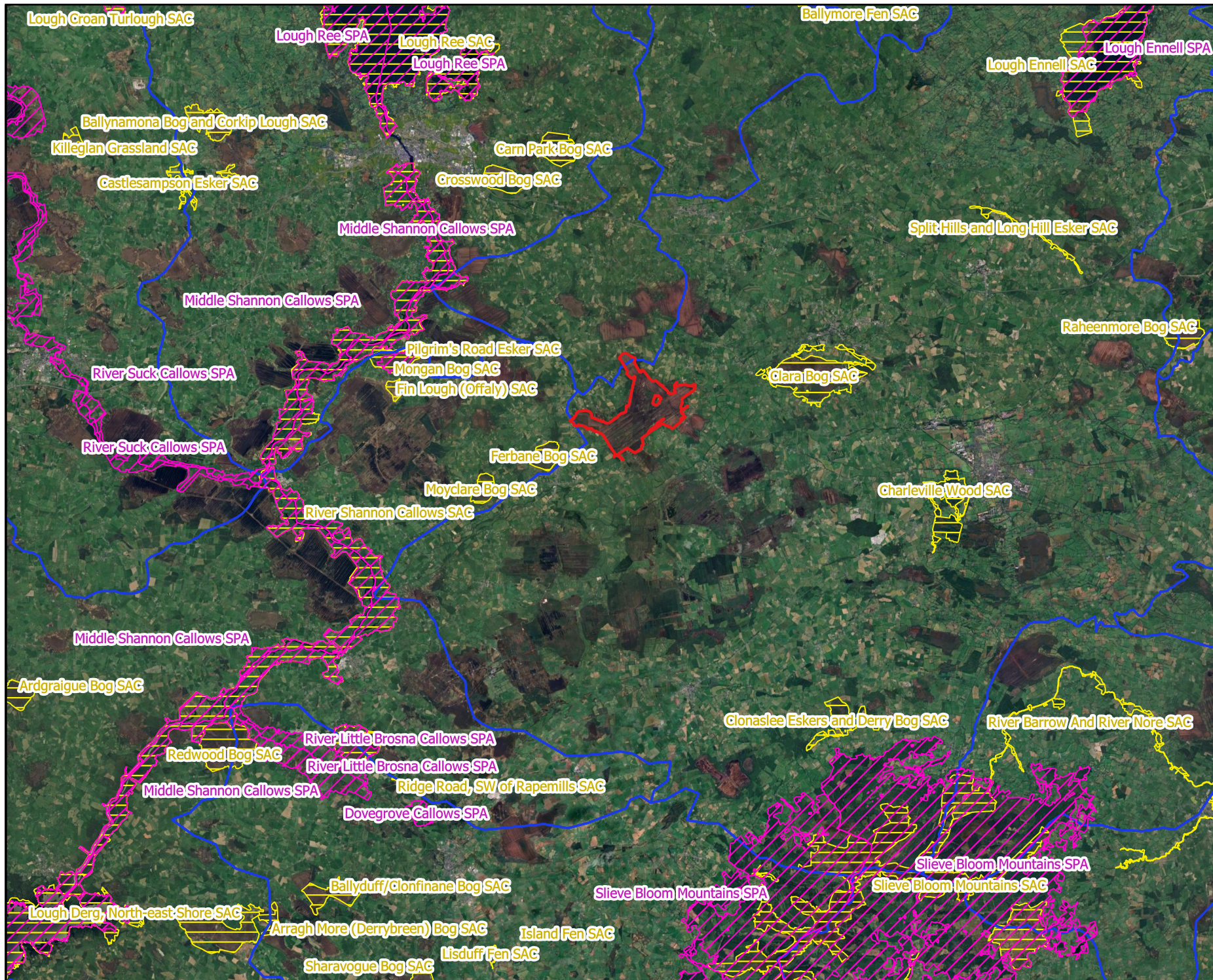
Qualifying feature	Conservation Objective (NPWS, Version 1, November 2022 ³),	Rationale	Potential for Adverse Effects Y/N
[A038] Whooper Swan (<i>Cygnus cygnus</i>)	To maintain the favourable conservation condition of whooper swan in Middle Shannon Callows SPA	The distance between the SPA and the Application Site is greater than the core foraging range of whooper swan (<5km) (SNH, 2016), and no regular or patterned flight activity of this species was recorded during surveys such as would suggest connectivity between the Application Site and the SPA (see Appendix 5). Furthermore, regularly used closely located roost sites were identified within the Application Site. Flock sizes recorded in the vicinity of the Application Site were broadly in line with numbers observed at the roost sites, and therefore the birds recorded in the vicinity of the Application Site are considered to be associated with these roost sites, and not the SPA. Therefore, based on published core foraging ranges and recorded flight activity, there is no evidence to suggest connectivity between the SPA and the Application Site for whooper swan. Therefore, there is no potential for significant effects arising from disturbance or loss of ex situ habitat for this species A direct hydrological connection has been established between the Application Site and this SPA. Potential changes in water quality could affect the condition of supporting habitats and food resources for this species. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects as a result of deterioration in water quality cannot be ruled out. As such, this SCI is assessed further in this rNIS.	Yes

³ NPWS (2022) Conservation Objectives: Middle Shannon Callows SPA 004096. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage

Qualifying feature	Conservation Objective (NPWS, Version 1, November 2022 ³),	Rationale	Potential for Adverse Effects Y/N
[A050] Wigeon (<i>Anas penelope</i>)	To restore the favourable conservation condition of wigeon in Middle Shannon Callows SPA species	The Application Site lies beyond the core foraging range of this species (2.5-2.8km; Johnston <i>et al.</i>, 2013). Therefore, there is no potential for significant effects arising from disturbance or loss of ex situ habitat for this species A direct hydrological connection has been established between the Application Site and this SPA. Potential changes in water quality could affect the condition of supporting habitats and food resources for this species. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects as a result of deterioration in water quality cannot be ruled out. As such, this SCI is assessed further in this rNIS.	Yes
[A122] Corncrake (<i>Crex crex</i>)	The status of corncrake as a Species of Conservation Interest for the Middle Shannon Callows SPA is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species	There were no observations of corncrake within 500m of the Application Site during ornithological surveys undertaken between October 2020 and March 2025. This is a ground-nesting species that relies on tall, undisturbed grassland habitat during the breeding season. Suitable habitat for this species is not present within the Application Site, and the site lies beyond its core foraging range (<1km; Green <i>et al.</i>, 1997, Parisi <i>et al.</i>, 2024). Therefore, there is no potential for significant effects arising from disturbance or loss of ex situ habitat for this species. Whilst a direct hydrological connection has been established between the Application Site and the SPA, corncrake is not dependent on aquatic food resources or wetland habitats, and potential changes in water quality are not expected to affect the terrestrial habitats used by this species. Therefore, there is no complete source-pathway-receptor chain, and no further assessment is required.	No
[A140] Golden Plover (<i>Pluvialis apricaria</i>)	To maintain the favourable conservation condition of golden plover in Middle Shannon Callows SPA	Golden plover were recorded landing in and utilising the habitats within the Application Site. There is no widely recognised foraging range for wintering golden plover. As such, there is potential connectivity between the Application Site and the SPA population. While habitats within the Application Site are used by SCI species, no significant habitat loss has occurred since the 1988 baseline, and the habitats present are not considered important resources for SPA populations. Therefore, there is no potential for significant effects due to habitat loss. However, the potential for significant effects on this SCI species in the form of disturbance and displacement cannot be excluded and is assessed further in this rNIS.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, November 2022 ³),	Rationale	Potential for Adverse Effects Y/N
		A direct hydrological connection has been established between the Application Site and this SPA. Potential changes in water quality could affect the condition of supporting habitats and food resources for this species. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects as a result of deterioration in water quality cannot be ruled out. As such, this SCI is assessed further in this rNIS.	
[A142] Lapwing (<i>Vanellus vanellus</i>)	To restore the favourable conservation condition of lapwing in Middle Shannon Callows SPA	Lapwing were recorded within the Application site during ornithological surveys. There is no widely recognised foraging range for wintering lapwing. As such, there is potential connectivity between the Application Site and the SPA population. While habitats within the Application Site are used by SCI species, no significant habitat loss has occurred since the 1988 baseline, and the habitats present are not considered important resources for SPA populations. Therefore, there is no potential for significant effects due to habitat loss. However, the potential for significant effects on this SCI species in the form of disturbance and displacement cannot be excluded and is further assessed in this rNIS. A direct hydrological connection has been established between the Application Site and this SPA. Potential changes in water quality could affect the condition of supporting habitats and food resources for this species. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects as a result of deterioration in water quality cannot be ruled out. As such, this SCI is assessed further in this rNIS.	Yes
[A156] Black-tailed Godwit (<i>Limosa limosa</i>)	To restore the favourable conservation condition of Black-tailed godwit in Middle Shannon Callows SPA	There were no observations of black-tailed godwit within 500m of the Application Site during ornithological surveys undertaken between October 2020 and March 2025. There is no significant suitable habitat for this species within the Application Site. As such, the potential for habitat loss and disturbance/displacement is highly limited.. Therefore, there is no potential for significant effects arising from disturbance or loss of ex situ habitat for this species A direct hydrological connection has been established between the Application Site and this SPA. Potential changes in water quality could affect the condition of supporting habitats and food resources for this species. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects as a result of deterioration in water quality cannot be ruled out. As such, this SCI is assessed further in this rNIS.	Yes

Qualifying feature	Conservation Objective (NPWS, Version 1, November 2022 ³),	Rationale	Potential for Adverse Effects Y/N
[A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	To restore the favourable conservation condition of black-headed gull in Middle Shannon Callows SPA	Although the Application Site lies within the core foraging range of black-headed gull (11.4 km; Thaxter <i>et al.</i>, 2012), the site lacks significant optimal habitat for roosting, nesting, or regular foraging. No population of ecological significance was recorded utilising the Application Site during the extensive suite of surveys conducted. Any observations related to 1-3 birds travelling over the site with no observations of birds utilising habitats within the Application Site. As such, the potential for habitat loss and disturbance/displacement is highly limited.. Therefore, there is no potential for significant effects arising from disturbance or loss of ex situ habitat for this species. A direct hydrological connection has been established between the Application Site and this SPA. Potential changes in water quality could affect the condition of supporting habitats and food resources for this species. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects as a result of deterioration in water quality cannot be ruled out. As such, this SCI is assessed further in this rNIS.	Yes
[A999] Wetlands	To maintain the favourable conservation condition of wetlands in Middle Shannon Callows SPA	A direct hydrological connection has been established between the Application Site and this SPA. Potential changes in water quality could affect the condition of wetlands. Therefore, a complete source-pathway-receptor chain exists, and the potential for significant effects as a result of deterioration in water quality cannot be ruled out. As such, this SCI is assessed further in this rNIS.	Yes



- Map Legend**
- Application Site Boundary
 - Special Protection Area (SPA)
 - Special Area of Conservation (SAC)
 - WFD Sub-catchments



Drawing Title

European Sites

Project Title

Extraction in Lemanaghan Bog,
Co. Offaly

Drawn By

SS

Checked By

RW

Project No.

200804-e

Drawing No.

Figure 2-1

Scale

1:254,400

Date

26.08.2025



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3. DESCRIPTION OF THE PROJECT

3.1 Site Location

The Application Site comprises Lemanaghan Bog, which is part of the Boora Bog Group. The Application Site comprises an area of 1,111 hectares (ha) within which bog drainage works began in 1950 followed by the commencement of peat extraction from 1960. The Application Site is located approximately 3km to the northeast of Ferbane, 7.8km southwest of Clara, and 8.7km south of Moate. The Application Site location is shown on Figure 3-1. The Application Site extends across several townlands which are listed below in Table 3-1. The Application Site measures approximately 5.5km in length from north to south, and approximately 6.4km from east to west, at its widest point. Grid Reference co-ordinates for the approximate site centre are E216096, N228101.

The Application Site is connected by rail link to the Bellair South Bog to the north and to the Blackwater Bog Group to the west. The R436 Regional Road passes along much of the southern boundary. Derrynagun and Curraghalassa bogs are both located south of the road R436. The N62 National Road skirts the extreme western tip of the site. A local road passes through the northern part of the site and cuts off the northernmost sector. The current main access points to the Application Site includes an existing entrance off the N62 National Road and along the R46 into the Lemanaghan Works site, adjacent to the south of the Application Site.

Table 3-1 Townlands within which the Application Site is located.

Bog Reference	County	Townlands
Lemanaghan	Offaly	Cooldorragh, Kilnagarnagh, Cappanalosset, Tumbeagh, Killaghintoher, Castlearmstrong, Leabeg, Cornafurish and Corrabeg, Lemanaghan, Kilnagoolny, Straduff, Lisdermot, Derrica More, Rosfaraghan, Ballydaly, Derrynagun, Curraghalassa, Rashinagh, Cor Mor and Cor Beg, and Corbane
Total Spatial Footprint		1,111ha



Map Legend

Application Site Boundary

County Boundaries



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Drawing Title

Site Location Context (Aerial)

Project Title

Extraction in Lemanaghan Bog, Co. Offaly

Drawn By

SD

Checked By

EC

Project No.

200804-e

Drawing No.

Figure 3-1

Scale

1:70,000

Date

2025-09-01



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3.2 Project Details

Chapter 4: Description of the Development in the rEIAR, which is included as Appendix A of the rAASR in Appendix 1 of this rNIS, provides a description of the activities at the Application Site from 1950. It details activities at the onset of site preparation up to July 1988, a description of the rEIAR baseline as of July 1988, a description of activities from 1988 to the cessation of peat extraction in June of 2020, the management of the Application Site since June 2020 and the activities intended to be carried out at the Application Site into the future.

Peat extraction and all ancillary activities undertaken at the Application Site, which comprise the Project for which substitute consent is being sought, and for which this rNIS is prepared, consists of the following:

- vii. Industrial scale peat extraction (milled peat) at the Application Site from 1988 to June 2020;
- viii. Installation, use and maintenance of surface water drainage infrastructure (drains, silt ponds, pumps) at the Application Site to facilitate peat extraction activity from 1988 to present day;
- ix. Provision of a welfare facility building and associated septic tank, 2 no. storage containers;
- x. Use and maintenance of pre-existing railway infrastructure to facilitate peat extraction activity from 1988 to present day;
- xi. Control Measures associated with the above, inclusive of the IPC Licence measures (Ref. P0500-01) which commenced from May 2000 onwards to the present day; and,
- xii. All associated site development and ancillary works.

Whilst Chapter 4: Description of Development includes extensive information on activities within the Application Site from 1950 onwards, this rNIS assesses activities within the Application Site detailed in Appendix A of the rAASR from 1994 onwards. As previously mentioned, 1994 is when The Habitats Directive came into force, though it was not transposed into Irish law until 1997 through the European Communities (Natural Habitats) Regulations 1997 and when Appropriate Assessment (AA) became a legal requirement.

Description of the Application Site in 1988 and 1994

The paragraphs below are taken from Appendix A of the rAASR and describe the bogs within the Application Site at the rEIAR 1988 baseline. Whilst the rAASR only assesses activity within the Application Site from 1994, the information provided below would still have been applicable at this time as peat extraction continued until June 2020.

By 1988, land use at the Application Site was well established as industrial peat extraction. The Application Site was drained, milled peat extraction was underway, and railway infrastructure was in place. The main access point to the Application Site was off the Regional Road R436 to the south of the Application Site, into the Works area. The Lemanaghan Works, which comprised a canteen, storage sheds, and maintenance buildings, was located to the south, adjacent to the Application Site, where it is still located in present day. The following ancillary infrastructure was established at the site by July 1988:

- > Railway infrastructure;
- > Internal machine passes/tracks;
- > Silt ponds and drains'

Aerial imagery indicates that by July 1988, approximately 968.7ha of the Application Site was subject to milled peat extraction. Thus, the main landcover type at this time was cutover peat. Drainage was already installed, predominantly in a northeast-southwest orientation. Railway infrastructure was laid in the bog (since the 1950s), terminating at the Works building located to the south, adjacent to the Application Site, just off the R436 Ballycumber road. The Works area housed a canteen and welfare facilities, waste storage areas, carparking facilities, Harvester Repair Bay (Planning Ref 81375), and a refuelling area. The Application Site included 9 no. artificial silt ponds, 9 no. surface water discharge points and 8 gravity flow surface water outflows which remain *in situ* today. These surface water outfall locations discharge directly into the Lemanaghan Stream and Brosna. The topography of the Application Site is estimated to have been approximately 54m-66mOD by 1988.

3.3 Overview of Peat Extraction at the Application Site

Peat extraction and ancillary activities, as detailed in Section 4.2.2 of Appendix A of the rAASR, continued at the Application Site until June 2020 when peat extraction ceased across the Application Site. Section 4.5 of Appendix A of the rAASR details the continued peat extraction and ancillary activities within the Application Site from the rEIAR baseline of 1988 until June 2020, which includes the period of assessment for this rNIS (1994 -2020). Section 3.3.1 below is a modified version of Section 4.5.1.1 of Appendix A of the AASR to cover the peat extraction assessment period of this rNIS only.

3.3.1 Peat Extraction Volumes July 1994-June 2020

The volumes of peat removed from the Application Site varied from year to year and were mainly weather dependent. The tonnages of peat extracted are outlined in Plate 3-1 and in Table 3-2 below.

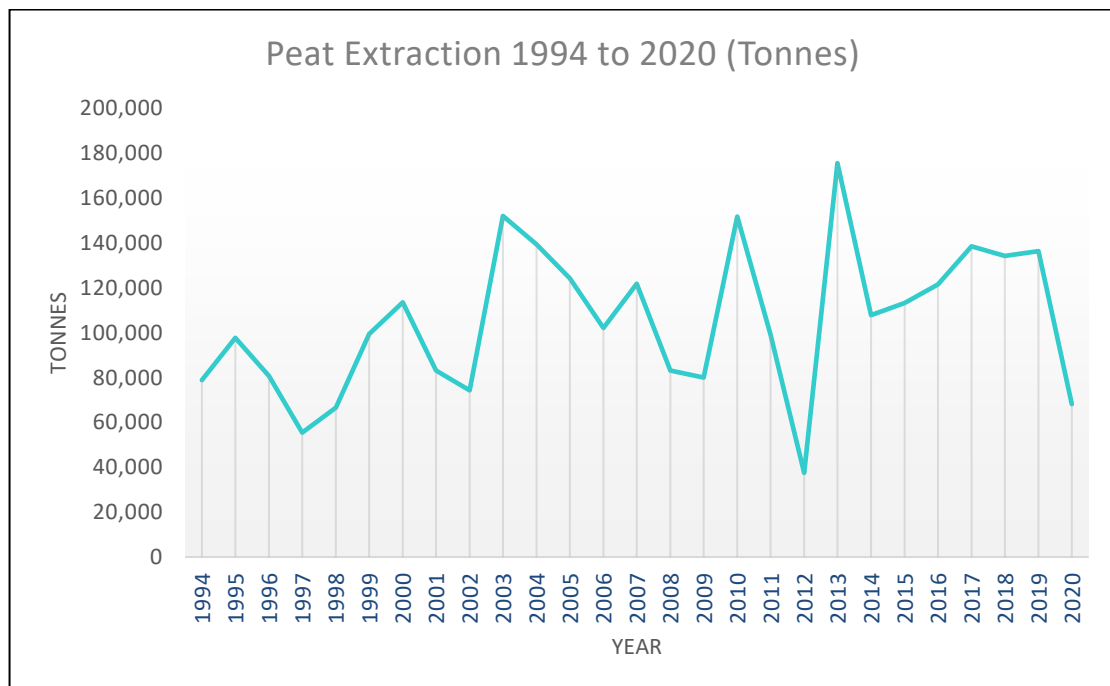


Plate 3-1 Annual Peat Extraction Volumes 1994-2020

Table 3-2 Peat Extraction 1994-2020 (Tonnes)

Year	Tonnes	Year	Tonnes
1994	78,850	2008	83,177

1995	97,736	2009	80,054
1996	80,801	2010	151,754
1997	55,508	2011	99,101
1998	66,628	2012	37,516
1999	99,444	2013	175,628
2000	113,605	2014	107,879
2001	83,188	2015	113,289
2002	74,265	2016	121,528
2003	152,077	2017	138,551
2004	139,429	2018	134,271
2005	124,324	2019	136,411*
2006	102,138	January- June 2020	68,205**
2007	121,895		
Total Volume Extracted (tonnes)	2,837,252		

** Denotes that data is not available for this year and average annual peat extraction volume is assumed in its place.*

*68,205** is for the period January – June 2020*

Bord na Móna records indicate that from 1994 and until 2018 inclusive, on average 105,083 tonnes of milled peat were extracted from the Application Site per annum. An average of the 2017 to 2018 peat extraction volumes was used to estimate the peat extraction volumes for the 2019 season (i.e., 136,411 tonnes). A volume of 68,205 tonnes was estimated to have been extracted for the period of January to June inclusive 2020. This has been extrapolated by halving (i.e due to the 6-month period) the total tonnes of peat extracted for 2019. The total volume of peat extracted at the Application Site from 1994 to June 2020 is estimated to be 2,837,252 tonnes.

Full details of peat extraction and ancillary activities within the Application Site during the assessment period are detailed in Section 4.6 of Appendix A of the rAASR.

4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

4.1 Desk Study Results

The results of a review of the NPWS site-specific conservation objectives documents, site synopsis documents and Natura 2000 standard data forms for the Screened-in European Sites identified in Section 2 above are presented below.

4.1.1 River Shannon Callows SAC

The River Shannon Callows was adopted as a Site of Community Importance (SCI) in 2002 under the EU Habitats Directive. It was subsequently designated as a Special Area of Conservation (SAC) in Irish law in 2021 through S.I. No. 473/2021.

The QIs for which the site is designated, and their associated conservation objectives (NPWS, 2022a) are presented in Table 4-1.

Table 4-1 River Shannon Callows SAC QIs and Conservation Objectives

Qualifying Interest	Conservation Objective
[1355] Otter (<i>Lutra lutra</i>)	To restore the favourable conservation condition of Otter in River Shannon Callows SAC
[6410] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>)	To restore the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) in River Shannon Callows SAC
[6510] Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)	To restore the favourable conservation condition of Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>) in River Shannon Callows SAC
[7230] Alkaline fens	To restore the favourable conservation condition of Alkaline Fens in River Shannon Callows SAC
[8240] Limestone pavements	To restore the favourable conservation condition of Limestone Pavements in River Shannon Callows SAC
[91E0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	To maintain the favourable conservation condition of Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) in River Shannon Callows SAC

4.1.1.1 Main pressures and threats to the SAC

The NPWS Natura 2000 – Standard Data Form for the SAC (available on www.natura2000.eea.europa.eu) was viewed on the 18th of July 2025. The data form contains a description of the SAC as well as ecological information on the SAC and identifies the main threats and pressures to the SAC. None of the threats or pressures identified in the data form relate to the Project as they were not carried out inside the boundary of the SAC.

The threats, pressures and activities identified in the Natura 2000 standard data form for the River Shannon Callows SAC are listed in Table 4-2.

Table 4-2 River Shannon Callows SAC site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
High	A03.03	Abandonment/lack of mowing	Inside
High	A04.03	Abandonment of pastoral systems, lack of grazing	Inside
High	A07	Use of biocides, hormones and chemicals	Inside
High	J02.04.01	Flooding	Inside
Low	A04.02.05	Non-intensive mixed animal grazing	Inside
Low	A10.01	Removal of hedges and copses or scrub	Inside
Low	B06	Grazing in forests/woodland	Inside
Low	C01.03.02	Mechanical removal of peat	Inside
Low	D01.01	Paths, tracks, cycling tracks	Inside
Low	F03.01	Hunting	Both
Low	G01	Outdoor sports and leisure activities, recreational activities	Inside
Low	G05.01	Trampling, overuse	Inside
Low	J02.01	Landfill, land reclamation and drying out, general	Inside
Low	J02.05	Modification of hydrographic functioning, general	Inside
Medium	A04.01	Intensive grazing	Inside
Medium	A08	Fertilisation	Inside
Medium	B02.02	Forestry clearance	Inside
Medium	J02.05.02	Modifying structures of inland water courses	Inside
Medium	J02.11	Siltation rate changes, dumping, depositing of dredged deposits	Inside
Medium	K03.04	Predation	Both

4.1.1.2 Qualifying Interests

Information on the QIs for which the site is designated are provided below.

4.1.1.2.1 *Lutra lutra* (Otter) [1355]

According to the site-specific conservation objectives document for the SAC the current range for this species within the SAC is estimated at 93.6%. The extent of terrestrial habitat is calculated as 282.1ha.

The extent of freshwater habitat is calculated as 146.7km. According to the site-specific conservation objectives otters need lying up areas throughout their territory where they are secure from disturbance.

4.1.1.2.2 ***Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]***

According to the site-specific conservation objectives document for the SAC, River Shannon Callows SAC encompasses a large area of seasonally flooded, semi-natural, lowland wet grassland habitats, including the habitat *Molinia meadows* which occurs in association with Lowland hay meadows (Annex I habitat code 6510) and other grassland habitats. The total area mapped in the SAC is 116.7ha. It should be noted that the habitat's area and distribution in the continuum/mosaic of grassland habitats in River Shannon Callows SAC can depend on such factors as the annual fluctuation of the water levels in the River Shannon and duration of flooding, and also on management practices such as grazing and mowing. The habitat is widely distributed all along this large SAC, and at both sides of the river channel. Further unsurveyed areas of the habitat may be present within the SAC.

4.1.1.2.3 ***Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]***

According to the site-specific conservation objectives document for the SAC, this SAC encompasses a large area of seasonally flooded, semi-natural, lowland grassland habitats, including Lowland hay meadows (6510) which can occur in association with *Molinia meadows* (6410) and other grassland habitats. The total area mapped in the SAC is 38.7ha. It is important to note that further unsurveyed areas of the habitat may be present within the SAC.

4.1.1.2.4 ***Alkaline fens [7230]***

According to the site-specific conservation objectives document for the SAC, alkaline fen in River Shannon Callows SAC occurs south of Portumna Bridge and south-east of the town of Portumna in an area of low-lying terrestrial land west of the river. The fen area corresponds largely to a former small bay at the northern end of Lough Derg that was cut off from the lake when the embankment was originally constructed as part of the Shannon Hydroelectric Scheme in the late 1920s. The area of alkaline fen in the SAC has been mapped as c.15ha based on Heery and Mayes (2012). It is important to note that further unsurveyed areas of the habitat may be present within the SAC.

4.1.1.2.5 ***Limestone pavements [8240]***

According to the site-specific conservation objectives document for the SAC, limestone pavements in River Shannon Callows SAC occur at Clorhane, which represents the only area of limestone pavement in Co. Offaly and one of relatively few located east of the Shannon. The limestone pavement is predominantly wooded with mature hazel (*Corylus avellana*), interspersed with some exposed pavement and calcareous grassland and scrub. Wilson and Fernandez (2013) mapped the indicative area of limestone pavement, including mosaics with grassland, scrub and woodland, as 38.7ha. This habitat can be split into exposed pavement and wooded pavement. In River Shannon Callows SAC, the majority of the habitat present is wooded pavement.

4.1.1.2.6 ***Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicetum albae) [91E0]***

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicetum albae) is present in River Shannon Callows SAC. Alluvial woodland has been identified at numerous locations along the Shannon from the islands below the ESB weir at Meelick to Madden's Island upstream. A small area of Alluvial woodland (1.1ha) has been mapped on two river islands at Madden's Island (Martin and Brophy, 2017). However, with the exception of Madden's Island, the habitat has not been mapped in detail and thus the current total habitat area within the SAC is

unknown. The habitat is found on riverbanks and alluvial islands which are prone to periodic flooding. It is important to note that further areas of the habitat may be present elsewhere within the SAC and other documented areas of wet woodland, e.g. around Bishop's Island, Banagher and Clonburren, may also correspond to this priority Annex I woodland type.

4.1.2 Middle Shannon Callows SPA

The Middle Shannon Callows SPA was classified as a Special Protection Area (SPA) under the EU Birds Directive (2009/147/EC) in 1996. It was subsequently designated as an SPA in Irish law in 2021 through S.I. No. 473/2021.

The SCIs for which the site is designated, and the associated conservation objectives (NPWS, 2022b) are presented in Table 4-3.

Table 4-3 Middle Shannon Callows SPA SCIs and Conservation Objectives

Special Conservation Interest	Conservation Objective
[A038] Whooper Swan (<i>Cygnus cygnus</i>)	To maintain the favourable conservation condition of whooper swan in Middle Shannon Callows SPA
[A050] Wigeon (<i>Anas penelope</i>)	To restore the favourable conservation condition of wigeon in Middle Shannon Callows SPA species
[A122] Corncrake (<i>Crex crex</i>)	The status of corncrake as a Species of Conservation Interest for the Middle Shannon Callows SPA is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species
[A140] Golden Plover (<i>Pluvialis apricaria</i>)	To maintain the favourable conservation condition of golden plover in Middle Shannon Callows SPA
[A142] Lapwing (<i>Vanellus vanellus</i>)	To restore the favourable conservation condition of lapwing in Middle Shannon Callows SPA
[A156] Black-tailed Godwit (<i>Limosa limosa</i>)	To restore the favourable conservation condition of Black-tailed godwit in Middle Shannon Callows SPA
[A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	To restore the favourable conservation condition of black-headed gull in Middle Shannon Callows SPA
[A999] Wetlands	To maintain the favourable conservation condition of wetlands in Middle Shannon Callows SPA

4.1.2.1 Main pressures and threats to the SPA

The NPWS Natura 2000 – Standard Data Form for the SPA (available on www.natura2000.eea.europa.eu) was viewed on the 18th of July 2025. The data form contains a description of the SPA as well as ecological information on the SPA and identifies the main threats and pressures to the SPA. None of the threats or pressures identified in the data form relate to the peat extraction and ancillary activities being assessed as part of this Project.

The threats, pressures and activities identified in the Natura 2000 standard data form for the Middle Shannon Callows SPA are listed in Table 4-4.

Table 4-4 Middle Shannon Callows SPA site-specific threats, pressures and activities

Negative Impacts			
Rank	Threats and Pressures		Inside/Outside
Low	A04.03	Abandonment of pastoral systems, lack of grazing	Inside
High	A04	Grazing	Inside
High	E01	Urbanised areas, human habitation	Outside
Low	D01.01	Paths, tracks, cycling tracks	Inside
High	D01.05	Bridge, viaduct	Inside
High	G01.01	Nautical sports	Inside
Medium	A08	Fertilisation	Outside
Low	A08	Fertilisation	Inside
Medium	G01.02	Walking, horse-riding and non-motorised vehicles	Inside
Low	F03.01	Hunting	Inside
Medium	F02.03	Leisure fishing	Inside

4.1.2.2 Special Conservation Interests

Information on the SCIs for which the site is designated are provided below.

4.1.2.2.1 Whooper Swan [A038]

According to the site-specific conservation objectives document for this SPA, the national population of whooper swan overwintering in Ireland has increased in the long term, with a 40% population increase from 1991 to 2015. During the baseline assessments to inform SPA designation, 305 whooper swans were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground-based surveys for baseline period 1995/96 to 1999/2000; note no data for the winter of 1997/98 was available). A population of 728 whooper swans was estimated to be using the Middle Shannon Callows SPA in recent years (3 year mean of peak counts from aerial- and ground-based surveys during winters 2018/19 to 2020/21). This represents an estimated population increase of 139% since the baseline period.

According to the site synopsis document the SPA supports an internationally important wintering population of whooper swan.

4.1.2.2.2 Wigeon [A050]

According to the site-specific conservation objectives document for this SPA, the national population of over-wintering wigeon in Ireland has declined by 18% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey (Kennedy *et al.*, 2022). During the baseline assessments to inform SPA designation, 3,059 wigeon were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground-based surveys for baseline period 1995/96 to 1999/2000; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21. A population of 2,759

wigeon was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 10% since the baseline period.

According to the site synopsis document the SPA supports a nationally important wintering population of wigeon.

4.1.2.2.3 **Corncrake [A122]**

According to the site-specific conservation objectives document for this SPA, the status of corncrake as a Species of Conservation Interest for the Middle Shannon Callows SPA is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species.

According to the site synopsis document the SPA supports a nationally important breeding population of corncrake.

4.1.2.2.4 **Golden Plover [A140]**

According to the site-specific conservation objectives document for this SPA, the national population of over-wintering golden plover in Ireland has declined by 54% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey ((Kennedy *et al.*, 2022)). During the baseline assessments to inform SPA designation, 4,133 golden plover were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground-based surveys for baseline period 1995/96 to 1999/2000; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21. A population of 5,130 golden plover was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population increase of 24% since the baseline period.

According to the site synopsis document the SPA supports a nationally important wintering population of golden plover.

4.1.2.2.5 **Lapwing [A142]**

According to the site-specific conservation objectives document for this SPA, the national population of over-wintering lapwing in Ireland has declined by 64% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey (Kennedy *et al.*, 2022). During the baseline assessments to inform SPA designation, 13,240 were estimated to be using this SPA (4 year mean of peak counts from aerial surveys for baseline period 1995/96 to 1999/2000; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21. A population of 2,159 was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 84% since the baseline period.

According to the site synopsis document the SPA supports a nationally important wintering population of lapwing.

4.1.2.2.6 **Black-tailed Godwit [A156]**

According to the site-specific conservation objectives document for this SPA, the national population of over-wintering black-tailed godwit in Ireland has increased by 92% from 1994/95 to 2019/20, as monitored via the Irish Wetland Bird Survey (Kennedy *et al.*, 2022). During the baseline assessments to inform SPA designation, 485 black-tailed godwit were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground-based surveys for the baseline period 1995/96 to 1999/2000; note no data for the winter of 1997/98 was available). The most recent available data to

assess the population trend is from two aerial surveys completed during the winters of 2018/19 and 2020/21. A population of 300 black-tailed godwit was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 38% since the baseline period.

4.1.2.2.7 **Black-headed Gull [A179]**

According to the site-specific conservation objectives document for this SPA, the national waterbird monitoring scheme (Irish Wetland Bird Survey) does not comprehensively monitor this population and therefore robust national population estimates and trends cannot be generated. During the baseline assessments to inform SPA designation, 1,209 individuals were estimated to be using this SPA (4 year mean of peak counts from a combination of aerial and ground-based surveys for the baseline period 1995/96 to 1999/2000; note no data for the winter of 1997/98 was available). The most recent available data to assess the population trend comes from aerial surveys completed during the winters of 2018/19 and 2020/21. A population of 1,055 individuals was estimated to be using the Middle Shannon Callows SPA during this period (2 year mean of peak counts). This represents an estimated population decline of 13% since the baseline period.

According to the site synopsis document the SPA supports a nationally important wintering population of black-headed gull.

4.1.2.2.8 **Wetlands [A999]**

According to the site-specific conservation objectives document for this SPA, the EU Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest. Any significant loss to the wetland habitat within the SPA would likely significantly negatively impact the regularly occurring migratory waterbirds that utilise this wetland habitat. Such loss of wetland habitat would likely reduce the diversity and abundance of waterbird species that the wetland can support. In addition, any significant impact on the quality, functioning and accessibility of the wetland habitat within the SPA would likely significantly negatively impact the regularly occurring migratory waterbirds that utilise this wetland habitat.

4.1.3 **EPA River Catchments and Watercourses**

A full hydrological assessment of the Application Site was undertaken for the accompanying rEIR (Chapter 8: Hydrology and Hydrogeology) and is included in Appendix 6 of this rNIS. Information from this chapter was used to inform the assessment presented in this rNIS.

The majority of the Application Site (c. 1,043 ha) lies within the Lower Shannon (25A) regional surface water catchment, specifically the Brosna sub-catchment. This area is drained by several streams including the Lemanaghan Stream, Fortified House Castlearmstrong Stream, and Kilcolgan Beg Stream, all of which flow to the Brosna River. The Brosna River discharges into the River Shannon approximately 14.5 km southwest of the site. Smaller portions of the site (c. 25.7 ha and 40.6 ha) are located in the Upper Shannon (26G) and Lower Shannon (25B) catchments, respectively. These areas are drained by the Ballynahown Stream (into the Boor River, which joins the River Shannon c. 11 km downstream) and the Holy Well of Clongawny Stream (into the Blackwater River, reaching the Shannon c. 13.5 km southwest of the site). The Brosna River and River Shannon are part of River Shannon Callows SAC and Middle Shannon Callows SPA.

A summary of the Water Framework Directive (WFD) status and risk result of Surface Water Bodies (SWBs) in the vicinity and downstream of the Application Site is presented in Table 4-5 below.

Within the Shannon Lower_SC_010 sub-catchment, SW22D discharges to the EPA named Ballynahown Stream. This stream forms part of the Boor_020 SWB which achieved 'Good' status in the latest WFD cycle (2016-2021). This was an improvement on the 'Moderate' status which this SWB

achieved previously. Further downstream, the Boor_020 SWB discharges into the Shannon (Upper)_120 SWB. The Shannon (Upper)_120 and _130 SWBs achieved “Poor” and “Moderate” status respectively in the latest WFD cycle. Meanwhile, upstream of the Application Site, the Boor_010 SWB experienced a deterioration in WFD status from ‘Good’ status in the 1st cycle to ‘Moderate’ status in the subsequent cycles. Within this sub-catchment, the Boor_020 SWB is considered to be ‘not at risk’ of failing to meet its WFD objectives. No significant pressures have been identified to be impacting on this SWB. Further downstream, the Shannon (Upper)_120 SWB is deemed to be ‘at risk’ with hydromorphology listed as the significant pressure.

Within the Shannon Lower_SC_030 sub-catchment, the Blackwater(Shannonbridge)_010 and _020 SWBs downstream of the Application Site achieved “Poor” and “Moderate” status respectively in the latest WFD cycle. Both of these SWBs experienced a deterioration in WFD status from the ‘Good’ status which they were assigned in the 2nd WFD cycle (2013-2018). These SWBs are deemed to be ‘at risk’ of failing to meet their WFD objectives. Extractive industry (peat) has been listed as being the significant pressure on these SWBs. Note that there is no surface water discharge from the Application Site within this sub-catchment.

Meanwhile, within the Brosna_SC_060 sub-catchment, SW22, SW22A, SW22B and SW22C discharge to the EPA named Fortified House Castlearmstrong Stream which forms part of the Brosna_100 SWB. SW19 and SW19A discharge to the Lemanaghan Stream_010 SWB whilst SW19B discharges to the EPA named Kilcolgan Beg Stream which forms part of the Brosna_110 SWB. These receiving SWBs all achieved ‘Moderate’ status in the latest WFD cycle. The Brosna_100 SWB achieved ‘Moderate’ status in all 3 no. WFD cycles, whilst the Lemanaghan Stream_010 SWB and the Brosna_110 SWBs experienced a deterioration in WFD status from the ‘Good’ status which they achieved in the 2nd WFD cycle (2013-2018). Further downstream the Brosna River (Brosna_120, 130 and 140 SWBs), the River Shannon (Shannon(Lower)_010, _020 and _030 SWBs) and Lough Derg all achieved ‘Moderate’ status in the latest WFD cycle. Meanwhile, upstream of the Application Site, the Brosna_090 SWB achieved ‘Good’ status in all 3 no. WFD cycles.

With respect to risk status, the Brosna River in the vicinity and downstream of the Application Site is ‘deemed to be at risk’. The risk status of the Lemanaghan Stream_010 SWB is currently ‘under review’. Agriculture is listed as a significant pressure on the Brosna_100 and _110 SWBs in the vicinity of the Application Site. Hydromorphology is also listed as a significant pressure on the Brosna_110 SWB.

Table 4-5 Summary WFD Information for Surface Water Bodies

River Waterbody	Status 2010-2015	Status 2013-2018	Status 2016-2021	3 rd Cycle Risk Status	WFD Pressures
Shannon Lower_SC_010 sub-catchment					
Boor_010	Good	Moderate	Moderate	At risk	Anthropogenic
Boor_020	Moderate	Moderate	Good	Not at risk	None
Shannon(Upper)_120	Poor	Poor	Poor	At risk	Hydromorphology
Shannon(Upper)_130	Unassigned	Poor	Moderate	Under Review	None
Shannon Lower_SC_030 sub-catchment					
Blackwater(Shannonbridge)_010	Moderate	Good	Poor	At Risk	Extractive Industry
Blackwater(Shannonbridge)_020	Good	Good	Moderate	At Risk	Extractive Industry
Brosna_SC_060 sub-catchment					
Brosna_090	Good	Good	Good	Not at risk	None
Brosna_100	Moderate	Moderate	Moderate	At risk	Agriculture

Lemanaghan Stream_010	Unassigned	Good	Moderate	Under Review	None
Brosna_110	Good	Good	Moderate	At Risk	Agriculture & Hydromorphology
Brosna_120	High	Good	Moderate	At risk	Agriculture
Brosna_130	Good	Moderate	Moderate	At risk	Anthropogenic
Brosna_140	Moderate	Moderate	Moderate	At risk	Hydromorphology
Shannon(Lower)_010	Unassigned	Unassigned	Moderate	Under Review	None
Shannon(Lower)_020	Good	Moderate	Moderate	At risk	Anthropogenic
Shannon(Lower)_030	Unassigned	Moderate	Moderate	Under Review	None
Lough Derg	Poor	Moderate	Moderate	At risk	Agriculture, Hydromorphology & Invasive Species

4.1.3.1 Water Framework Directive Groundwater Body Status

Local Groundwater Body (GWB) status and risk results are available from (www.catchments.ie). This status is defined based on the quantitative status and chemical status of each GWB.

All GWBs underlying the Application Site achieved ‘Good’ status in all 3 no. WFD cycles (2010-2015, 2013-2018 and 2016-2021). These GWBs have been deemed to be “not at risk” of failing to meet their respective WFD objectives. No significant pressures have been identified to be impacting upon these GWBs.

4.1.3.2 EPA Biological Q-Rating Monitoring

EPA Q-rating monitoring has been completed at several dates and at multiple locations on the Brosna, Boor, Shannon (Lower), Shannon (Upper) and Blackwater (Shannonbridge) rivers in the vicinity and downstream of the Application Site between 1988 and June 2020. The Q-values over this period are summarised in Table 4-6.

Within the Shannon Lower_SC_010 sub-catchment, Q-ratings upstream and downstream of the Application Site portray a similar pattern. The Q-ratings on the Boor River upstream of the Application Site (Station Code: RS26B071100) were predominantly of ‘Good’ status (Q4). There was a slight deterioration to ‘Moderate’ status (Q3-4) in 2008, but the water quality recovered to ‘Good’ status in subsequent monitoring rounds completed in 2014, 2017 and 2020. A similar pattern was recorded downstream of the Application Site (i.e. downstream of the Ballynahown Stream) which was of ‘Good’ status from the earliest available Q-rating in 2002 to 2011. ‘Moderate’ status was achieved in 2014 and 2017 before a recovery to ‘Good’ status in 2020.

Within the Shannon Lower_SC_030 sub-catchment, the Q-ratings on the Blackwater River downstream of the Application Site at a bridge northeast of Derryharry (Station Code: RS25B270110) fluctuated between Q3-4 and Q4. High status (Q4-5/Q5) was not achieved during the Peat Extraction Phase but was the 1988 baseline. However, note that there are no surface water discharges within this sub-catchment.

Meanwhile, within the Brosna_SC_060 sub-catchment, the Q-ratings in the Brosna River upstream of the Application Site experienced a deterioration in comparison with the baseline rating of Q4-5 at Ballycumber Bridge (Station Code: RS25B090700). The Brosna River at this monitoring location fluctuated, achieving a Q3-rating (‘Poor’ status) in 1996 and a Q3-4 rating (‘Moderate’ status) in 1993, 1999 and 2002. The status improved to Q4 (‘Good’ status) for 4 no. monitoring rounds completed

between 2005 and 2017. The Q-ratings of the Brosna River in the vicinity of the Application Site portray a similar pattern. At a bridge near Kilcolgan (Station Code: RS25B090800), the location experienced an initial deterioration in comparison with the baseline rating of Q5 which was assigned based on the 1987 monitoring round. The Brosna River at this location was found to be of 'Poor' status in 1993 and 1999 and 'Moderate' status in 1996 and 2002. The status improved to 'High' status in 2005 and remained at 'Good' status from 2011 to 2017.

Table 4-1 Summary of Q-Ratings during the Peat Extraction Phase (1988 – 2020)

River	Station ID	Location	EPA Q-Rating (Years)	Q-Value Status Range	
Brosna_SC_060 sub-catchment					
Brosna River	RS25B090700	Ballycumber Bridge	3 – 4 (1993 – 2017)	Poor	Good
Brosna River	RS25B090760	0.5km NW of Pollagh	3.5 – 4 (1993 – 2017)	Moderate	Good
Brosna River	RS25B090800	Brosna - Bridge near Kilcolgan	3 – 4.5 (1989 – 2017)	Poor	High
Brosna River	RS25B090950	Ferbane Bridge	4 – 4.5 (1989 – 2017)	Good	High
Brosna River	RS25B091000	Bellmount d/s Ferbane	3 – 4.5 (1989 – 2017)	Poor	High
Shannon Lower_SC_010 sub-catchment					
Boor River	RS26B071100	Bridge N.W. of Kilbillaghan	3.5 – 4 (1988 – 2020)	Moderate	Good
Boor River	RS26B071200	Boor - Bridge NW of Ballynahownwood	3.5 – 4 (2002 – 2020)	Moderate	Good
River Shannon	RS26S021800	Clonmacnoise: at Jetty	3 – 4 (1996 – 2020)	Poor	Good
Shannon Lower_SC_030 sub-catchment					
Blackwater River	RS25B270110	Br ENE of Derryharry	3.5 – 4.5 (1988 – 2017)	Moderate	High
Blackwater River	RS25B270200	Blackwater Br	3 – 4 (1988 – 2017)	Poor	Good

The most recent Q-rating data for EPA monitoring points on the Brosna, Blackwater and Boor rivers are shown in Table 4-7 below.

Within the Shannon Lower_SC_010 sub-catchment, the Boor River achieved a Q3-4 rating upstream (Station Code: RS26B071100) and downstream (Station Code: RS26B071200) of the Application Site in 2023.

Within the Shannon Lower_SC_030 sub-catchment, the Blackwater River achieved a Q3 rating downstream of the Application Site at a bridge northeast of Derryharry (Station Code: RS25B270110) and at Blackwater Bridge (Station Code: RS25B270200).

Within the Brosna_SC_060 sub-catchment, upstream of the Application Site at Ballycumber, the Brosna River achieved 'Good' status in 2021 (RS25B090700). The Brosna River achieved 'Moderate' status in 2023 at Pollagh, upstream of its confluence with the Lemanaghan Stream. Further downstream the Brosna River was assigned a Q4 rating in 2023 near Kilcolgan and Ferbane (RS25B090800 and RS25B090950). Further downstream at Bellmount downstream of Ferbane, the Brosna River has been assigned a Q-rating of Q3-4 in 2023 (RS25B091000).

Table 4-2 Most recent (2020) Q-ratings

River	Station ID	Location	EPA Q-Rating (Year)	Q-Value Status
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Shannon Lower_SC_010 sub-catchment				
Boor River	RS26B071100	Bridge NW of Kilbillaghan	2024	Q3-4 (Moderate)
Boor River	RS26B071200	Bridge NW of Ballynahownwood	2023	Q3-4 (Moderate)
River Shannon	RS26S021800	Clonmacnoise: at Jetty	2024	Q3 (Poor)
Shannon Lower_SC_030 sub-catchment				
Blackwater River	RS25B270110	Bridge ENE of Derryharry	2023	Q3 (Poor)
Blackwater River	RS25B270200	Blackwater Bridge	2023	Q3 (Poor)
Brosna_SC_060 sub-catchment				
Brosna River	RS25B090700	Ballycumber Bridge (upstream of site)	2021	Q4 (Good)
Brosna River	RS25B090760	0.5km NW of Pollagh	2023	Q3-4 (Moderate)
Brosna River	RS25B090800	Bridge near Kilcolgan	2023	Q4 (Good)
Brosna River	RS25B090950	Ferbane Bridge	2023	Q4 (Good)
Brosna River	RS25B091000	Bellmount downstream of Ferbane	2023	Q3-4 (Moderate)

4.2 Ecological Survey Results

4.2.1 Habitat survey

Between 2020 and 2025, MKO ecologists visited the site to ground-truth the results of the Bord na Móna habitat surveys and mapping and to undertake detailed habitat and botanical surveys. The habitat descriptions in this section are based on the walkover surveys and detailed vegetation surveys undertaken by MKO.

The Application Site comprises primarily cutover raised bog. Some areas of the site have been out of commercial peat extraction by Bord na Móna for a significant period of time and thus vegetation, dominated primarily by birch scrub, common cottongrass and marsh arrowgrass, has regenerated over much of these areas. Small areas/remnant of uncut raised bog occur at various locations at edges of the Application Site.

The main habitat types on the site included bare peat communities, cutover bog habitats with a vegetative composition that is similar to degraded dry heath type communities (dominated by Ling heather), woodlands and scrub (dominated by birch), poor fen and small areas of grasslands (occurring alongside railway tracks). These habitats occur in intimate mosaics throughout the Application Site. Areas of open water occur where peat extraction has ceased and the water levels in these areas are no longer managed through the onsite pumping and drainage infrastructure. The largest area of open water and reed swamp occurs within the southern central part of the site, which is a linear standing water feature.

4.2.1.1 Cutover Bog (PB4)

The vast majority of the site, with the exception of small remnant sections of raised bog around the peripheries of the site, comprise of cutover or open cutaway peat. Large areas of the Application Site have ceased to be in active production as recently as 2020. These areas are dominated by bare peat with little growth of vegetation, see Plate 4-1. Where peat extraction has ceased for some time, these areas have begun to revegetate, predominantly by poor fen and birch dominated scrub/woodland. The following subsections provide a description of the secondary habitats that have begun to form on the cutover bog following cessation of milled peat extraction.



Plate 4-1 Open cutaway bog with sparse vegetation

Bog Woodland/Scrub (WN7/WS1)

The habitats on the site have developed as birch dominated scrub and woodland in the areas where the peat extraction has ceased for the longest periods, along unmaintained drainage channels and where the cutaway is relatively dry. A mosaic of these habitats dominates large sections of the western and central area of the site, and provide areas of separation, cover and shelter throughout the site. In general, the woodlands and scrub are relatively recently colonized and have a poorly developed layer structure and ground flora. Typically, they are dominated by birch (*Betula pubescens*) with some willows (*Salix spp.*). Occasional Sitka spruce (*Picea sitchensis*) and Lodgepole pines (*Pinus contorta*) had started to establish as a result of natural seed dispersal. The ground flora was commonly dominated by brambles (*Rubus fruticosus agg.*). In more established areas, ivy (*Hedera hibernica*) dominate the understory with bracken (*Pteridium aquilinum*) and other fern species also a regular component of the ground flora. In some areas where the woodlands and scrub were colonizing the cutover bog, the ground flora was often dominated by ling (*Calluna vulgaris*) heather and in places purple moor grass (*Molinia caerulea*). Both birch scrub and birch dominated woodland occur throughout much of the site where peat extraction has ceased. Where scrub was greater than 4 metres in height, it was classified as Bog Woodland (as per Fossitt, 2000). The Annex I habitat Bog Woodland (91DO) was not recorded on the site during the habitat surveys; the woodlands were predominantly very dry and none of the woodland areas had developed on *Sphagnum* rich substrates. Plate 4-2 shows a typical area of birch dominated bog woodland within the Application Site with small trees and low structural diversity.



Plate 4-2 Typical Bog Woodland found throughout the Application Site

Poor Fen (PF2)

Many sections of the Application Site supported cutaway bog that was dominated by common cottongrass and was wet underfoot (though with little open water except after prolonged wet weather) or dry. Species frequently recorded included purple moor grass, soft rush (*Juncus effusus*), marsh arrowgrass (*Triglochin palustris*) and hummocks of the moss *Polytrichum commune*. This habitat was quite variable but was widespread within the Application Site. It formed mosaics with heath and woodland habitats and was classified as Poor Fen.

There are also small areas with Poor fen vegetation associated with open water pools within the Application Site. These areas are dominated by common cottongrass, although also containing species such as marsh arrowgrass, reedmace (*Typha latifolia*), horsetail (*Equisetum arvense*), water mint (*Mentha aquatica*), soft rush (*Juncus effusus*) and bulbous rush (*Juncus bulbosus*).

Cutover Bog (PB4) (also supporting secondary heath type communities)

Secondary heath type communities were dominated by tall ling heather (*Calluna vulgaris*), some cross-leaved heath (*Erica tetralix*), purple moor grass (*Molinia caerulea*) and common cottongrass (*Eriophorum angustifolium*) on dry peats with no Sphagnum present. It is likely that the dry heath areas would, if left undisturbed, colonize to form bog woodland (Dry Birch Woodland – Non-Annex I). The wetter heath communities supported higher abundance of purple moor grasses and common cottongrass. This habitat type covers a broad range of conditions from bare peat and dry but vegetated to much wetter areas that grade into poor fen. In more vegetated areas, dominated by cotton grasses, orchid species were present including; heath spotted orchid (*Dactylorhiza maculata*), twayblade (*Listera ovata*) and marsh helleborine (*Epipactis palustris*). This was mostly associated with areas of revegetated bare peat occurring within the western portion boundary of the Application Site. The species composition, hydrological and geomorphological characteristics of the heath type habitat on site was

assessed with reference to best practice guidance^{2,4,5} and professional judgement, and was found not to conform to the EU Habitats Directive Annex I listed habitat European Dry Heaths [4030].

The cutover bog habitats on the site do not correspond to either Active Raised Bog (7110) or Degraded Raised Bog still capable of Natural Regeneration (7120). The NPWS Article 17 Report from 2013, states:

The actual definition of the habitat (still capable of regeneration), indicates that the habitat can be restored to Active Raised Bog habitat (7110). In the Irish context, the habitat does not include secondary degraded raised bog which relates to highly drained high bog devoid of vegetation, cutover, and cutover bog.

The NPWS Article 17 Reporting for 2019 has been published and states:

In an Irish context, ARB (which is currently defined as occurring only on the high bog) encompasses active peat --forming ecotopes (central and sub--central) as defined by Kelly (1993) and Kelly & Schouten (2002), and actively peat --forming flushes

In addition, the definition of Degraded Raised Bog has also been changed in the 2019 Article 17 Reporting. Whilst previously (from the 2013 Reporting), the habitat previously pertained to all vegetated areas of uncut Raised Bog that did not meet the criteria to be classified as Active Raised Bog, it is now recognised that the extent is much narrower and dependant on specific hydrological conditions. This habitat still does not occur on cutover bog in the Irish context and is more limited in its extent on uncut bogs.

These habitats do not occur on the cutover habitats in the Application Site.

They do not conform to Annex I heath habitats. They are secondary, cutover raised bog habitats that are located on deep peat and level ground. They do not conform to Annex I Wet Heath habitat as defined by the Irish Wildlife Manual (Perrin et.al. 2014). Neither do they conform to Annex I Raised Bog habitats or any other Annex I habitat.

Grasslands (GA1, GS2 and GS1)

The grasslands that are present within the Application Site are primarily limited to the sides of old trackways and railway lines. Many of the verge areas are classified as Dry Meadows and Grassy Verges with rank grasses including false oat grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*), cocks foot (*Dactylis glomerata*) and encroaching scrub with nettle (*Urtica dioica*), bramble and rosebay (*Epilobium angustifolium*) (Plate 4-3). Other areas are less rank and support more calcareous grasslands with species such as knapweed (*Centaurea nigra*), sweet vernal grass (*Anthoxanthum odoratum*), lady's bedstraw (*Galium verum*), dandelion (*Taraxacum officinalis* agg.), common bird's foot trefoil (*Lotus corniculatus*), common centaury (*Centaurea erythraea*), occasional yellow rattle (*Rhinanthus minor*) and orchids such as common spotted orchid (*Dactylorhiza fuchsii* subsp. *fuchsia*). Areas of improved species-poor pasture within bordering farmland were categorised as Improved agricultural grassland (GA1). Other areas of grassland habitats comprised of a mix of species typical of both calcareous and peatland habitats. This diversity in species recorded has resulted from the importing of stone for the construction of railway tracks throughout the peatland or from the exposure of underlying calcareous subsoil due to the level of peat extraction had taken place.

⁴ Perrin, P.M., Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2014). Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0. Irish Wildlife Manuals, No. 79. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

⁵ Smith, G.F. & Crowley, W. (2020) The habitats of cutover raised bog. Irish Wildlife Manuals, No. 128. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.



Plate 4-3 Example of rank grassland habitat within the Application Site

Open Waterbodies

A number of standing water areas were present within the Application Site. These were classified as Other artificial lakes and ponds (FL8) (Plate 4-4).



Plate 4-4 Standing water on bare peat within the Application Site

Drainage Channels (FW4)

The Application Site is extensively drained with deep channels that run through the site. The majority of the drains within the site, subject to the most recent industrial harvesting, are devoid of vegetation and have a poor structure. In the areas where the drains are surrounded by dense woodland and scrub, the vegetation within them is sparse and the substrate comprises of bare silt. In the areas where there is less cover of trees, many of the drains support dense macrophytes including reedmace, horsetails (*Equisetum spp.*). In other areas, the drains are large and hold deep water with floating vegetation such as Pondweeds (*Potamogeton spp.*) and water mint.

4.2.1.2 Lowland Depositing Streams (FW2)

The site is drained by a number of watercourses that surround the Application Site. As described in Chapter 8: Hydrology and Hydrogeology of the rEIAR (Appendix 6 of this rNIS), the Application Site spans three surface water catchments within the Shannon River Basin District: the Lower Shannon (Hydrometric Areas 25A and 25B) and the Upper Shannon (Hydrometric Area 26G). All surface waters from the site ultimately discharge to the River Shannon, which flows southwest of the site before eventually reaching Lough Derg.

The majority of the site (c. 1,043 ha) lies within the Lower Shannon (25A) catchment, specifically the Brosna sub-catchment. This area is drained by several streams including the Lemanaghan Stream, Fortified House Castlearmstrong Stream, and Kilcolgan Beg Stream, all of which flow to the Brosna River. The Brosna River discharges into the River Shannon approximately 14.5 km southwest of the site.

Smaller portions of the site (c. 25.7 ha and 40.6 ha) are located in the Upper Shannon (26G) and Lower Shannon (25B) catchments, respectively. These areas are drained by the Ballynahown Stream (into the Boor River, which joins the River Shannon c. 11 km downstream) and the Holy Well of Clongawny Stream (into the Blackwater River, reaching the Shannon c. 13.5 km southwest of the site).

The Lemanaghan Stream has been highly modified where it runs through the Application Site. The stream within the Application Site represents a peat drainage channel that had been extensively straightened and deepened historically. The channel has a deep U-shaped profile with 4m high banks. The flow profile was of very slow moving deep glide and pool. The bed comprised of extensive soft peat. The channel supported no macrophytes given deep peat stained water (Plate 4-5).



Plate 4-5 The Lemanaghan Stream within the Application Site Boundary

4.2.1.3 Remnant Uncut Raised Bog

There are some remnant uncut raised bog habitats at the Application Site, see Plate 4-6. The areas of raised bog recorded within the site are typically small in area, have been historically drained, are relatively dry and in some areas, subject to ongoing peat extraction at the facebank. The vegetation comprises predominantly of tall ling heather with some purple moor grass and cottongrasses. Some wetter areas were also found to contain cross-leaved heath (*Erica tetralix*) and bog asphodel (*Narthecium ossifragum*). In general, the bog remnants did not contain significant areas of *Sphagnum* mosses. This is likely due to the historic draining of these small, fragmented remnant areas of raised bog.



Plate 4- 6 Example of intact raised bog recorded within the Application Site.

4.2.1.4 Buildings and Artificial Surfaces

There are some areas of buildings and artificial surfaces (BL3) within the Application Site. The majority of the artificial surfaces are associated with access roads, a works offices and storage buildings within the south-western part of the Site. Other small areas of hardcore occur within the Application Site that are used for informal parking in close proximity to access roads.

4.2.1.5 Invasive Species and Protected Flora Species

No invasive species, listed on the Third Schedule of the S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011, were recorded within the Application Site. The only non-native invasive species recorded on site include butterfly bush (*Buddleja davidii*) and bearberry (*Cotoneaster dammeri*). Although invasive species, these are not listed on the Third Schedule.

No Annex II flora species were recorded in the Application Site during the surveys.

4.2.2 Faunal Surveys

4.2.2.1 Otter

No otter resting or breeding sites were recorded within the Application Site during dedicated otter surveys undertaken by MKO. No otter resting or breeding sites were recorded during the aquatic surveys of the watercourses downstream of the Application Site undertaken by Triturus Environmental Ltd.

Surveys undertaken by Triturus Environmental Ltd. in 2021 and updated in 2024 found no direct evidence of otters (*Lutra lutra*) such as holts, couches, spraint, or tracks at any of the aquatic or pond

sites surveyed within or adjacent to the Application Site. Despite this, otter is known to occur within the wider area, with contemporary records available for several nearby watercourses including the Boor River, Blackwater River, River Shannon, and the Grand Canal.

4.2.2.2 Birds

Several SCI bird species were recorded during surveys at the Application Site. These included whooper swan, observed regularly using a roost site on the bog with flocks of up to 80 individuals recorded during the 2022/23 winter season; golden plover, recorded mainly as individuals or small groups commuting and calling, with two observations of larger flocks landing within the bog (80 birds on one occasion and 275 birds on another occasion); and lapwing, recorded frequently with evidence of breeding in multiple years, including confirmed fledging in 2023. Black-headed gull was also recorded, though records were limited to individual birds or small groups (maximum flock size of three), mainly during the breeding season. These species are all SCIs of the Middle Shannon Callows SPA.

Kingfisher (*Alcedo atthis*) was also recorded on 38 occasions, with evidence of an active nest within the bog in May 2023 and curlew (*Numenius arquata*) was recorded commuting or calling within the bog on several occasions, however these are not SCI species for any SPAs in the zone of influence of the Project.

A comprehensive list of all bird species recorded during bird surveys undertaken at the Application Site from 2020 to 2025 is included in Appendix 5 of this rNIS.

5.

ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED CONTROL/MITIGATION MEASURES

This section provides an assessment of the potential effects of the Project at the Application Site on the Screened-In European Sites identified in Section 4 above, i.e.

- River Shannon Callows SAC; and
- Middle Shannon Callows SPA.

The assessment ascertains whether the peat extraction and ancillary activities at the Application Site have had an effect and/or will have an effect on the integrity of the Screened-In European Sites in light of the sites' conservation objectives. The potential for adverse effects on the integrity of the European Sites is assessed under three phases:

- **Peat Extraction Phase** - includes all works undertaken from 1994 to the cessation of peat extraction in June 2020. 1994 is when The Habitats Directive came into effect, though it was not transposed into Irish law until 1997 through the European Communities (Natural Habitats) Regulations 1997 and when Appropriate Assessment (AA) became a legal requirement.
- **Current Phase** - includes all activities carried out at the Application Site from the cessation of peat extraction in June 2020 to the present day.
- **Remedial Phase** - implementation of the proposed Rehabilitation Plan for the Application Site, required under Condition 10 of its EPA Licence P0500-01, following the cessation of peat extraction in 2020.

5.1

Potential for Direct Effects on the European Sites

The Application Site lies entirely outside the boundaries of any European Site. No part of the Project footprint overlaps with any designated site, and no physical works occurred or will occur within or in direct contact with any European Site.

There is no potential for direct impacts on any European Site arising from the Peat Extraction Phase, the Current Phase, or the Remedial Phase. There is no potential for direct effects on QI or SCI species or habitats within European Sites during any phase.

5.2

Potential for Indirect Effects on the European Sites

There is hydrological connectivity between the Application Site and the River Shannon Callows SAC and the Middle Shannon Callows SPA via drainage ditches and watercourses within the Application Site

The majority of the Application Site lies within the Lower Shannon (25A) catchment, specifically the Brosna sub-catchment. This area is drained by several streams including the Lemanaghan Stream, Fortified House Castlearmstrong Stream, and Kilcolgan Beg Stream, all of which flow to the Brosna River. The Brosna River discharges into the River Shannon approximately 14.5 km southwest of the site. Smaller areas of the site are located in the Upper Shannon (26G) and Lower Shannon (25B) catchments. These areas are drained by the Ballynahown Stream (into the Boor River, which joins the

River Shannon c. 11 km downstream) and the Holy Well of Clongawny Stream (into the Blackwater River, reaching the Shannon c. 13.5 km southwest of the site). All surface waters from the site ultimately discharge to the River Shannon. The Brosna River and River Shannon form part of the River Shannon Callows SAC and Middle Shannon Callows SPA.

A potential pathway for indirect effects on a number of QIs of River Shannon Callows SAC and on the SCIs of Middle Shannon Callows SPA due to deterioration of water quality as a result of peat extraction was identified. During the Peat Extraction Phase and Current Phase at the Application Site there would have been potential for deterioration in surface and ground water quality as a result of run-off of pollutants, including silts and hydrocarbons, during peat extraction and ancillary activities to watercourses within and downstream of the site which have connectivity with the River Shannon Callows SAC and the Middle Shannon Callows SPA. During the implementation of the Rehabilitation Plan in the Remedial Phase, there will also be some small-scale activity at the site involving machinery and plant with which there is a risk of accidental spillage of hydrocarbons.

Potential indirect effects on River Shannon Callows SAC arising from deterioration of water quality during the Peat Extraction Phase, Current Phase and Remedial Phase are confined to aquatic QIs that may occur downstream of the Application Site, where hydrological connectivity exists. These include:

- [1355] Otter (*Lutra lutra*)
- [7230] Alkaline fens
- [91E0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)

Potential indirect effects on Middle Shannon Callows SPA arising from deterioration of water quality during the Peat Extraction Phase, Current Phase and Remedial Phase are limited to SCI species and supporting wetland habitat occurring downstream of the Application Site, where hydrological connectivity is present. These include

- [A038] Whooper Swan (*Cygnus cygnus*)
- [A050] Wigeon (*Anas Penelope*)
- [A140] Golden Plover (*Pluvialis apricaria*)
- [A142] Lapwing (*Vanellus vanellus*)
- [A156] Black-tailed Godwit (*Limosa limosa*)
- [A179] Black-headed Gull (*Chroicocephalus ridibundus*)
- [A999] Wetlands

In addition to water quality, a potential pathway for indirect effects via disturbance was identified. For River Shannon Callows SAC, this relates only to otter, where disturbance could have occurred during drain maintenance works if resting or breeding sites were present within the Application Site. For Middle Shannon Callows SPA, potential disturbance effects are limited to golden plover and lapwing, which have been recorded using the Application Site and may be associated with the SPA population. On a precautionary basis, a pathway for disturbance and displacement of these species from machinery, personnel, noise and general activity has been identified during the Peat Extraction Phase, Current Phase and Remedial Phase.

The potential for adverse effects on the integrity of these European Sites via a) deterioration of water quality and b) disturbance is discussed in the sections below.

5.2.1 Deterioration of Water Quality

Between 1996 (when the Middle Shannon Callows SPA was designated) and 2020, and between 2002 (when the River Shannon Callows SAC was designated) and 2020, the main activities at the Application Site included peat extraction and the creation and removal of stockpiles of peat, peat transportation and maintenance of drains, machinery and pumps. All bogs to be subject to extraction had been drained,

peat extraction was underway and railway infrastructure had been laid within the Application Site by 1996.

Since the cessation of peat extraction at the Application Site in June 2020, the main activities at the Application Site have included removal of stockpiled peat, which was completed by 2024, and continued maintenance of surface water management infrastructure, including drainage outfalls and silt traps.

Taking the dates of designation as the baseline, 1996 for the Middle Shannon Callows SPA and 2002 for the River Shannon Callows SAC, which was during the Peat Extraction Phase, in the absence of control and mitigation measures, peat extractions and ancillary activities which were undertaken at different times and at different levels of intensity throughout the Application Site, until the cessation of peat extraction in June 2020, are likely to have resulted in indirect effects on water quality within and downstream of the site in the form of water pollution.

During this time there would have been potential for indirect effects on the River Shannon Callows SAC and the Middle Shannon Callows SPA in the form of deterioration of water quality (and therefore degradation of aquatic QI habitats and supporting habitat for QI and SCI species) due to the release of pollutants including suspended solids. This potential for release of suspended solids would have been greatest during the construction of drainage channels, removal of surface vegetation and during peat extraction itself. During the Peat Extraction Phase, there was also an ongoing risk of elevated concentrations of suspended solids making their way into downstream surface watercourses from the erosion of peat sediment via the bog drainage network. In addition, the release of dissolved nutrients, principally ammonia, resulting from the rapid breakdown of organic matter within peat once exposed to air, could also have resulted in deterioration of water quality of watercourses within and downstream of the site which had connectivity with the above European Sites. During the above time period there would also have been potential for pollution of surface water bodies and groundwater due to the accidental spillage of hydrocarbons during refuelling of machinery and plant and due to discharges from wastewater systems (septic tanks) at office buildings, and at productions centres and workshops which could potentially also have caused surface and groundwater contamination.

In the absence of control and mitigation measures there is potential for the above peat extraction and ancillary activities at the Application Site to have had an adverse effect on the integrity of the above European Sites in light of their conservation objectives. The primary potential impact on water quality would have been the increase in suspended solids and the greatest risk would have occurred during times of major earthworks such as during the removal of vegetation and the construction of the bog drainage network. Drainage had already been inserted on the bog prior to designation of both sites, however, there would still have remained some potential for run-off of pollutants during peat extraction itself.

With the cessation of peat extraction in June 2020 and during the Current Phase there was less potential for release of suspended sediments and pollution of water quality including watercourses and groundwater due to the nature of the works, i.e. no extraction, removal of stockpiles only. There would also have been much reduced machinery operating on site reducing the potential for hydrocarbon spillages.

The implementation of the Rehabilitation Plan, the Remedial Phase, for the Application Site aims to stabilise the former peat extraction areas. Natural colonisation and targeted re-wetting will encourage revegetation of the former bare peat areas which in turn will stabilise substrates reducing the potential for elevation concentrations of suspended solids in runoff from the site. This will also have benefits for aquatic fauna in terms of improved water quality and therefore habitat quality. Silt ponds will continue to operate during the early stages of the rehabilitation process and will only be decommissioned when the Application Site is deemed to be on a trajectory of environmental stability and/or rehabilitation has been completed. During the implementation of the Rehabilitation Plan, there will be some small-scale activity at the Application Site involving machinery and plant with which there is always a risk of accidental spillage of hydrocarbons.

5.2.1.1 Impact Assessment

In the absence of control and mitigation measures there is potential for the peat extraction and ancillary activities at the Application Site to have had and to have an adverse effect on the integrity of the River Shannon Callows SAC and the Middle Shannon Callows SPA in light of their conservation objectives, as a result of deterioration of water quality during the Peat Extraction Phase, Current Phase and Remedial Phase.

5.2.1.2 Control and Mitigation Measures

5.2.1.2.1 Pre IPC Licence (Pre 2000)

Suspended Solids

Prior to the implementation of the IPC Licence at the Boora Bog Group by the EPA which commenced in 2000, the Applicant was employing several control measures to protect surface water quality in downstream waterbodies. These measures primarily relate to the concentrations of suspended sediments in discharge from the bog and are summarised below:

- Internal drains cleaned on a regular basis in suitable weather. This was completed to remove sludge from the bottom of ditches, allowing them to retain full functionality. The sludge was disposed of by spreading it on the adjacent production fields where it was dried and harvested;
- Drain maintenance was carried out using draglines and excavators, ensuring that these drains were fit for purpose;
- Drain maintenance was carried out mainly prior to and post the harvesting season.
- Silt ponds were utilised to control the amount of sediment being discharged at outfalls. At this time, silt ponds were designed for an upper limit of 100mg/l suspended sediment;
- Silt ponds were upgraded in the 1990s to cater for the settling of sufficient amount of silt. This often included the construction of a second silt pond adjacent to the first, which was used as a backup and to facilitate desludging of the primary pond; and,
- Silt ponds were deslugged twice per annum.

Accidental Leaks and Spillages

Prior to the EPA IPC Licence at the Application Site which commenced in 2000, the Applicant was implementing several control measures to reduce the risk of contamination by spills and leakages. These measures primarily relate to the storage of peat harvesting machinery, refuelling procedures and waste management. These measures are summarised below and outlined in full in Chapter 4 Description of Development, in Section 4.7 of the rEIAR (in Appendix A of the rAASR):

- All machinery were regularly inspected, serviced and cleaned. Cleaning was completed at a wash bay which drained towards an interceptor tank and associated soak pit;
- Where possible all refuelling was completed at the Lemanaghan Works;
- In the event that on-site refuelling was required, it was done with a mobile fuelling unit;
- In the event of an emergency spill, the following procedures were in place:
 - The General Manager (GM) was immediately informed of the incident.
 - The spill was assessed by the GM to assess the potential for environmental and/or health consequences.
 - The spill would have been sourced, isolated and contained with polystyrene booms or dry peat.
 - Every effort would have been made to prevent the spill from entering the nearest drain or outfall.

- Once the spill was contained, a suitable absorbent (typically dry peat) was used to soak the spillage.
- Follow up measures were taken to prevent such a spillage recurring in the future.
- In the event of a spillage the GM notified the local authority.
- All waste oil and break fluids drained from machinery were collected in drums and emptied into a waste oil storage tank which were transported off-site by a licenced disposal contractor;
- All used oil and fuel filters and used batteries were collected by licenced disposal and battery collection contractors respectively; and,
- All washing from the self-contained machine parts washer was collected within a sludge tank at the Lemanaghan Works.

5.2.1.2.2 Active IPC Licence (Post 2000)

Since 2000, all activities at the Application Site have been regulated by the EPA under IPC Licence Registration No. P0500-01 and water quality discharge licence limits have been in place for the Application Site since. The regulation of activities at the Application Site predates the designation of the River Shannon Callows SAC.

Suspended Solids

Since 2000, peat extractions and ancillary activities at the Application Site have been under IPC Licence Registration No. P0500-01 and have been subject to the conditions of that Licence which include discharge limits for suspended solids and nutrients including ammonia and phosphorous. The Boora Bog Group also has a Surface Water Management Plan which defines how compliance with the Licences is achieved. The drainage system in place at the bogs comprising field drains, main drains, piped drains, silt ponds upstream of outfall locations, is designed to prevent the release of elevated concentrations of suspended sediments into nearby surface waterbodies. As part of the IPC Licence, there is a limit of 35mg/l for suspended solids.

Existing control measures which were implemented under the IPC Licence are also designed to limit runoff rates from the bog units. These include:

- Silt ponds providing attenuation limited runoff during periods of intense rainfall; and
- Continuous mitigation included maintaining the schedule of cleaning the silt ponds at a minimum of twice per year.
- **Accidental leaks and spillages**
- The refuelling procedures control measures implemented by Bord na Móna prior to regulation under IPC Licence were upgraded and enhanced in order to comply with IPC Licence conditions with the Application Site being regulated by the EPA under IPC Licence Registration No. P0500-01 since 2000. The Boora Bog Group also has a Surface Water Management Plan which defines how compliance with the Licence is achieved. The list below outlines control measures conditioned under the IPC licencing regime, as regulated by the EPA:
- Effective spill/leak management of mobile fuelling units was undertaken;
- Replacement (and remediation where necessary) of all underground fuel tanks was undertaken;
- There was no other emissions to water of environmental significance;
- All tank and drum storage areas were rendered impervious to the materials stored therein. In addition, tank and drum storage areas was bunded;
- Drainage from bunded areas was diverted for collection and safe disposal;

- The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein was tested and demonstrated by the licensee to the satisfaction of the Agency and reported to the Agency within eighteen months from the date of grant of this licence and every two years thereafter;
- The loading and unloading of fuel oils was carried out in designated areas protected against spillage and leachate run-off;
- While awaiting disposal, all materials were collected and stored in designated areas protected against spillage and leachate run-off;
- Except for roof water, all surface water discharges from workshop areas were fitted with oil interceptors;
- An inspection for leaks on all flanges and valves on over-ground pipes used to transport materials other than water was carried out weekly;
- Bord na Móna undertook a programme of testing and inspection of underground fuel pipelines to ensure that all underground fuel lines were tested at least every three years; and,
- Bord na Móna maintained (in storage) an adequate supply of containment booms and/or suitable absorbent material to contain and absorb any spillage.

During the implementation of the proposed Rehabilitation Plan for the Application Site, the existing silt control measures will continue to operate during the early stages of the Rehabilitation Plan when there is potential for the entrainment of suspended solids in surface waters during drain blocking. During this time no remedial works will be completed during periods of prolonged rainfall. Silt ponds will continue to be in use and will be regularly inspected and maintained as per IPC Licence requirements.

Following implementation of the rehabilitation measures a programme of aftercare and maintenance, designed in accord to meet the Conditions of the IPC Licence, will be completed at the Application Site. This will comprise of initial quarterly monitoring, with the number of site visits reducing after 2 years to bi-annually and then after 5 years to annual visits. A water quality monitoring program will be established to monitor the impact of rehabilitation on water quality discharge from the bog. The monitoring results will be reported on each year to the EPA with the parameters to be included as follows: monthly monitoring for pH, Suspended Solids, Total Solids, Total Phosphorus, Total Ammonia, Colour, and COD and DOC.

In addition to the above, a number of standard best-practice site management and pollution prevention measures will be implemented to further minimise risks to water quality. These include:

- During periods of heavy precipitation and run-off, activities will be halted;
- All machines will be regularly checked and maintained prior to arrival at the site to prevent hydrocarbon leakage;
- 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 onsite;
- All plant refuelling will take place using mobile fuel bowers. Only dedicated trained and competent personnel will carry out refuelling operations;
- Mobile storage such as fuel bowers will be banded to 110% capacity to prevent spills. Tanks for bowers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked. All pumps using fuel or containing oil will be locally and securely banded where there is the possibility of discharge to waters; and,
- Potential impacts caused by spillages etc. during rehabilitation will be reduced by keeping spill kits and other appropriate equipment on-site.

5.2.2 Disturbance

Between 1996 (when the Middle Shannon Callows SPA was designated) and 2020, and between 2002 (when the River Shannon Callows SAC was designated) and 2020, peat extraction and ancillary activities at the Application Site, which required the presence of machinery and personnel on site, created potential for disturbance of otter (QI of the SAC) and golden plover and lapwing (SCIs of the SPA). Since the cessation of peat extraction at the Application Site in June 2020, volumes of machinery and personnel on site have been much reduced due to the nature of the ongoing activities, i.e. removal of peat stockpiles. Potential for disturbance of these species during the Current Phase would be of a much-reduced scale. Similarly, the implementation of the Rehabilitation Plan for the Application Site during the Remedial Phase will involve drain blocking and re-wetting, which will involve the presence of small-scale machinery and personnel on site which creates potential for disturbance of otter, golden plover and lapwing utilising the site. While there will be some potential for disturbance of these species during the Current Phase and Remedial Phase, this will be of a much-reduced nature when compared to the Peat Extraction Phase.

The potential for adverse effects on the integrity of the otter, golden plover and lapwing populations associated with these European Sites as a result of disturbance is considered below.

5.2.2.1 Otter

A potential pathway for indirect effects in the form of disturbance of otter populations associated with the River Shannon Callows SAC is considered below on a precautionary basis.

Although a small number of streams and rivers drain the site, the majority of these are located towards the peripheries of the site and the vast majority of watercourses within the site are artificial drainage channels with low suitability for otter, although they may be used on occasion for commuting or foraging. During the walkover surveys and dedicated otter surveys undertaken, no otter resting or breeding sites were identified within or adjacent to the Application Site and the small, modified watercourses and drains within the site were not found to support significant suitable habitat for this species.

Otter are predominantly crepuscular in nature and are unlikely to have been adversely impacted by the peat harvesting activities. The NPWS Threat Response Plan for Otter acknowledges that “*Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure.*” It also identifies that otter are known to travel significant distances from streams and lakes in search of new territory and feeding areas.

Channin P (2003) provides a literary review with regard to anthropogenic disturbance and refers to several reports which have found that disturbance is not detrimental to otters (Jefferies, 1987; Durbin, 1993; Green & Green, 1997). The report also describes successful breeding in towns, under ferry terminals and under the jetties of one of Europe’s largest oil and gas terminals at Sullom Voe in North Scotland.

Irish Wildlife Manual No 23 (National Otter Survey of Ireland 2004/2005) found no significant relationship between disturbance and otter occurrence. In addition, no significant difference in otter presence was found between sites with and without recreational activity. It also states, “*the lowest percentage occurrence was found at the sites with the lowest recorded disturbance*” Irish Wildlife Manual No 76 (National Otter Survey of Ireland 2010/2012) notes that the occurrence of otter was unaffected by perceived levels of disturbance at the survey sites. It also notes that there is little published evidence demonstrating any consistent relationship between otter occurrence and human disturbance (Mason & Macdonald 1986, Delibes *et al.* 1991; Bailey & Rochford, 2006).

Based on the above review of scientific literature and the recorded absence of optimal habitat for this species within the Application Site during the site surveys undertaken between 2021 and 2025, no

potential for adverse effects to have occurred on the integrity of the otter population associated with the River Shannon Callows SAC as a result of disturbance during the Peat Extraction Phase or Current Phase was identified. There is no potential for adverse effects on otter as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.

5.2.2.2 Golden Plover

A potential pathway for indirect effects in the form of disturbance of golden plover associated with Middle Shannon Callows SPA is considered below on a precautionary basis.

Golden plover were recorded on a small number of occasions within the Application Site during surveys between 2020 and 2025. Records ranged from single birds to flocks of up to 275 individuals, with two instances of birds landing within the site. However, these records were dispersed across different areas, with no evidence of repeat or regular usage of any specific part of the Application Site. The Application Site is therefore not considered to represent an important or regularly used foraging or roosting habitat for this species.

Golden plover are known to utilise large expanses of open ground in the wider landscape. Extensive areas of suitable habitat occur outside the Application Site and would have remained available in the event of temporary disturbance.

Based on the limited and irregular use of the Application Site by golden plover, and the availability of alternative habitats in the wider area, no potential for adverse effects on the integrity of the golden plover population associated with the Middle Shannon Callows SPA as a result of disturbance during the Peat Extraction Phase or Current Phase was identified. During the Remedial Phase, activities will be limited to small-scale drain blocking and re-wetting works involving low numbers of personnel and machinery. Given the temporary and localised nature of these works, and the low importance of the site for this species, there is no potential for adverse effects on golden plover during the Remedial Phase.

5.2.2.3 Lapwing

A potential pathway for indirect effects in the form of disturbance of lapwing associated with Middle Shannon Callows SPA is considered below on a precautionary basis.

Lapwing were recorded infrequently within the Application Site during the wintering season, primarily as individual birds travelling over the site. These records indicate some opportunistic use of habitats within the Application Site but do not suggest it is of particular importance at the population level for this species.

Lapwing are known to utilise a variety of open habitats including grassland and agricultural land in the wider landscape. Extensive areas of suitable habitat occur outside the Application Site and would have remained available in the event of temporary disturbance.

Based on the low frequency of wintering records and the availability of alternative habitats, no potential for adverse effects on the integrity of the lapwing population associated with the Middle Shannon Callows SPA as a result of disturbance during the Peat Extraction Phase or Current Phase was identified. During the Remedial Phase, activities will be confined to small-scale machinery and personnel associated with drain blocking and re-wetting. Given the temporary nature of these works, their reduced intensity compared with peat extraction, and the limited importance of the Application Site for lapwing, there is no potential for adverse effects during the Remedial Phase.

5.2.2.4 Impact Assessment

In the absence of mitigation there is no potential for the peat extractions and ancillary activities at the Application Site to have had and to have an adverse effect on the integrity of the River Shannon

Callows SAC or Middle Shannon Callows SPA in light of their conservation objectives, as a result of disturbance.

5.2.2.5 **Control and Mitigation Measures**

No control measures in relation to disturbance of otter, golden plover or lapwing were in place during the Peat Extraction Phase and Current Phase.

Although there is no potential for adverse effects on otter, golden plover or lapwing due to disturbance during the implementation of the Rehabilitation Plan for the Application Site in the Remedial Phase, and therefore no potential for adverse effects on the integrity of the River Shannon Callows SAC or Middle Shannon Callows SPA, the following best practice noise reduction measures will be in place.

- The proposed rehabilitation works 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); and
- The proposed activities will be restricted to daylight hours and there will be no requirement for artificial lighting.

6. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The sections provided below detail the site-specific residual impact assessment in relation to the QIs of the River Shannon Callows SAC and the SCIs of the Middle Shannon Callows SPA in light of their conservation objectives. The assessment takes into consideration measures contained within the IPC Licence to avoid impacts on water quality within and downstream of the Application Site, as well as measures implemented by the Applicant to protect surface water quality in downstream waterbodies prior to the IPC Licence. The River Shannon Callows SAC was designated in 2002 and, as such, peat extractions and ancillary activities at the Application Site were regulated under the IPC Licence prior to its designation. While Middle Shannon Callows SPA was designated in 1996, prior to regulation under the IPC Licence in 2000, it was also subject to control and mitigation measures implemented at the Application Site to protect water quality in receiving waters.

6.1 River Shannon Callows SAC

The potential for residual adverse effects on each of the individual QIs that were identified as being at risk of potential effects in Section 2 above is assessed in this section in view of the Conservation Objectives of those habitats and species.

6.1.1 Otter *Lutra lutra* [1355]

The site-specific conservation objective for this QI is:

*‘To maintain the favourable conservation condition of Otter (*Lutra lutra*) in River Shannon Callows SAC’*

The attributes and targets for this species as per the site-specific conservation objectives (NPWS, 2022a) were reviewed and an assessment of all peat extraction and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-1.

Table 6- 1 Targets and attributes associated with the conservation objectives for otter

Attribute	Target	Assessment
Distribution	No significant decline	Although otter could utilise the watercourses within or adjacent to the Application Site for commuting and foraging, the Application Site does not provide optimal habitat for otter. Since the regulation of peat extractions and ancillary activities works at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, a range of measures have been in place to ensure there is no deterioration of water quality. There is no potential for adverse effects on the distribution of otter to have occurred during the Peat Extraction Phase or Current Phase. There is no potential for adverse effects on otter in respect of water quality as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Extent of terrestrial habitat	No significant decline. Area mapped and calculated as 282.1ha	Although otter likely utilise the watercourses within or adjacent to the Application Site for commuting and foraging, the Application Site does not provide optimal habitat for otter. More suitable habitat occurs in the watercourses outside the site. Since the European site was designated as a SAC, peat extraction and ancillary activities at the site have predominantly comprised of peat extraction, creation and removal of stockpiles and drain maintenance, which would not have resulted in loss of optimal otter habitat. There is therefore no potential for adverse effects on otter populations associated with the SAC to have occurred due to significant declines in terrestrial or freshwater habitat during the Peat Extraction Phase or Current Phase. There is no potential for adverse effects on otter in respect of extent of habitat extent as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Extent of freshwater (river) habitat	No significant decline. Length mapped and calculated as 146.7km	
Couching sites and holts	No significant decline	Although otter could utilise the watercourses within or adjacent to the Application Site for commuting and foraging, the Application Site does not provide optimal habitat and no evidence of couching sites or holts were recorded during surveys. There is no potential for adverse effects on otter populations associated with the SAC due to significant declines in couching sites to have occurred during the Peat Extraction Phase or Current Phase. There is no potential for adverse effects on otter in respect of couching sites and holts as a result of the implementation of the proposed

		Rehabilitation Plan for the Application Site during the Remedial Phase.
Fish biomass available	No significant decline	Since the regulation of peat extraction and ancillary activities at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, a range of measures have been in place to ensure there is no deterioration of water quality. There is no potential for adverse effects on otter, in respect of fish biomass available, to have occurred during the Peat Extraction Phase or Current Phase. There is no potential for adverse effects on otter in respect of fish biomass available as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Barriers to connectivity	No significant decline	Since the regulation of peat extraction and ancillary activities at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, there is no potential for adverse effects on otter, in respect of barriers to connectivity, to have occurred during the Peat Extraction Phase or Current Phase. There is no potential for adverse effects on otter in respect of barriers to connectivity as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.

6.1.1.1 Determination on Potential for Adverse Effects on Otter [1355]

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information, that there is no potential for adverse effects to have occurred on the QI otter associated with the River Shannon Callows SAC, as a result of peat extraction and ancillary activities at the Application Site during the Peat Extraction Phase and Current Phase.

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information, that there is no potential for adverse effects on the QI otter associated with the River Shannon Callows SAC as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.

No potential for adverse effects on the integrity of the SAC in light of its conservation objectives was identified.

6.1.2 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno- Padion, Alnion incanae, Salicion albae)

The site-specific conservation objective for this QI is:

*“To maintain the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) in River Shannon Callows SAC”*

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022a) were reviewed and an assessment of peat extraction and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-2.

Table 6-2 Targets and attributes associated with the conservation objectives for alluvial forests

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes.	Peat extraction and ancillary activities were confined to the boundaries of the Application Site, outside of the SAC. No potential for adverse effects to have occurred on alluvial forest within the SAC, in respect of habitat area or distribution, during the Peat Extraction Phase or Current Phase was identified. There is no potential for adverse effects on alluvial forest in respect of habitat area or distribution as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Habitat distribution	No decline, subject to natural processes.	
Woodland size	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size	Peat extraction and ancillary activities were confined to the boundaries of the Application Site, outside of the SAC. No potential for adverse effects to have occurred on alluvial forest within the SAC during the Peat Extraction Phase or Current Phase in respect of woodland size or structure, was identified. There is no potential for adverse effects on alluvial forest in respect of woodland size or structure as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Woodland structure: cover and height	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%	
Woodland structure: community diversity and extent	Maintain diversity and extent of community types	
Woodland structure: natural regeneration	Seedlings, saplings and pole age-classes of target species for 91E0 woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy	
Hydrological regime: flooding depth/height of water table	Appropriate hydrological regime necessary for maintenance of alluvial vegetation	Drainage commenced at the Application Site in 1950. Following this initial drainage, only minor annual changes in local bog hydrology and hydrogeology associated with the annual removal of peat and deepening of drains would have occurred (refer to Chapter 8: Hydrology and Hydrogeology of the rEIAR in Appendix 6 of this rNIS). No potential for adverse effects on hydrological regime in the SAC as a result of peat extraction and ancillary activities at the Application Site during the Peat Extraction Phase or Current Phase was identified.

		There is no potential for adverse effects on alluvial forest in respect of habitat hydrological regime as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Woodland structure: dead wood	At least 19 stems/ha of dead wood of at least 20cm diameter	Peat extraction and ancillary activities were confined to the boundaries of the Application Site, outside of the SAC. No potential for adverse effects to have occurred on alluvial forest within the SAC, in respect of woodland structure, during the Peat Extraction Phase or Current Phase was identified. There is no potential for adverse effects on alluvial forest in respect of woodland structure as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Woodland structure: veteran trees	No decline	
Woodland structure: indicators of local distinctiveness.	No decline in distribution and, in the case of red listed and other rare or localised species, population size	
Woodland structure: indicators of overgrazing	All five indicators of overgrazing absent	
Vegetation composition: native tree cover	No decline. Native trees cover at least 90% of canopy; target species cover at least 50% of canopy	Peat extraction and ancillary activities were confined to the boundaries of the Application Site, outside of the SAC. No potential for adverse effects to have occurred on alluvial forest within the SAC, in respect of vegetation composition, during the Peat Extraction Phase or Current Phase was identified. There is no potential for adverse effects on alluvial forest in respect of vegetation composition as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Vegetation composition: typical species	At least 1 target species for 91E0 woodlands present; at least 6 positive indicator species for 91E0 woodlands present	
Vegetation composition: negative indicator species	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent	
Vegetation composition: problematic native species	Cover of common nettle (<i>Urtica dioica</i>) less than 75%	

6.1.2.1 Determination on Potential for Adverse Effects Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnionincanae, Salicion albae) [91E0]

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information, that there is no potential for adverse effects to have occurred on the QI Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnionincanae, Salicion albae) associated with the River Shannon Callows SAC, as a result of peat extraction and ancillary activities at the Application Site during the Peat Extraction Phase and Current Phase.

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information, that there is no potential for adverse effects on Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnionincanae, Salicion albae) as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.

No potential for adverse effects on the integrity of the SAC in light of its conservation objectives was identified.

6.1.3 Alkaline Fens [7230]

The site-specific conservation objectives for this QI is:

‘To maintain the favourable conservation condition of Alkaline fens in River Shannon Callows SAC

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022a) were reviewed and an assessment of peat extraction and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-3.

Table 6-3 Targets and attributes associated with nominated site-specific conservation objectives for Alkaline fens [7230]

Attribute	Target	Assessment
Habitat area	Area stable or increasing, subject to natural processes.	Peat extraction and ancillary activities between 2002 (when the site was designated) and 2020 were confined to the boundaries of the Application Site. There was no loss of alkaline fen associated with the SAC. In addition, drainage commenced on the bog at the Application Site in 1950, prior to the designation of the SAC. No potential for peat extraction and ancillary activities to have resulted in adverse effects on alkaline fen associated with the SAC in respect of habitat area or distribution during the Peat Extraction Phase or Current Phase was identified. There is no potential for adverse effects on alkaline fen associated with the SAC in respect of habitat area or distribution as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase. These works will involve the rewetting and revegetation of the bog and will not impact on alkaline fen habitat associated with the SAC.
Habitat distribution	No decline, subject to natural processes.	
Ecosystem function: soil nutrients	Maintain soil pH and nutrient status within natural ranges	Since the regulation of peat extraction activities at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, a range of measures to ensure the protection of water quality have been in place. Drainage commenced at the Application Site in 1950. Following this initial drainage, only minor annual changes in local bog hydrology and hydrogeology associated with the annual removal
Ecosystem function: peat formation	Maintain active peat formation, where appropriate	
Ecosystem function: hydrology - groundwater levels	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat	
Ecosystem function: hydrology - surface water flow	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions	

Ecosystem function: water quality	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat	of peat and deepening of drains would have occurred (refer Chapter 8: Hydrology and Hydrogeology of the rEIAR in Appendix 6). No potential for adverse effects to have occurred on alkaline fen in respect of ecosystem function was identified during the Peat Extraction Phase or Current Phase. There is no potential for adverse effects on alkaline fen in respect of ecosystem function as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Vegetation composition: community diversity	Maintain variety of vegetation communities, subject to natural processes	The peat extraction and ancillary activities at the Application Site since the designation of the SAC have been confined to the boundary of the Application Site. Drainage commenced at the Application Site in 1950. Following this initial drainage, only minor annual changes in local bog hydrology and hydrogeology associated with the annual extraction of peat and deepening of drains would have occurred (refer to Chapter 8: Hydrology and Hydrogeology of the rEIAR in Appendix 6 of this rNIS). Since the regulation of peat extraction and ancillary activities at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, a range of measures have been in place to ensure that there is no deterioration in water quality due to peat extraction and ancillary activities during the Peat Extraction Phase and Current Phase. Considering the above, there is no potential for adverse effects on alkaline fen in respect of vegetation composition or structure as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Vegetation composition: typical brown mosses	Maintain adequate cover of typical brown moss species	
Vegetation composition: typical vascular plants	Maintain adequate cover of typical vascular plant species	
Vegetation composition: native negative indicator species	Cover of native negative indicator species at insignificant levels	
Vegetation composition: non-native species	Cover of non-native species less than 1%	
Vegetation composition: native trees and shrubs	Cover of scattered native trees and shrubs less than 10%	
Vegetation composition: algal cover	Cover of algae less than 2%	
Vegetation structure: vegetation height	At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type	There is no potential for adverse effects to have occurred to alkaline fen in respect of physical structure. The peat extraction and ancillary activities at the Application Site since the designation of the SAC have
Physical structure: disturbed bare ground	Cover of disturbed bare ground not more than 10%	
Physical structure: tufa formations	Disturbed proportion of vegetation cover where tufa is present is less than 1%	

		been confined to the boundary of the Application Site. Drainage commenced at the Application Site in 1950. Following this initial drainage, only minor annual changes in local bog hydrology and hydrogeology associated with the annual removal of peat and deepening of drains would have occurred (refer to Chapter 8: Hydrology and Hydrogeology of the rEIAR in Appendix 6 of this rNIS). Since the regulation of peat extraction and ancillary activities at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, a range of measures have been in place to ensure that there is no deterioration in water quality due to peat extraction and ancillary activities during the Peat Extraction Phase and Current Phase. There is no potential for adverse effects on alkaline fen in respect of physical structure as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Indicators of local distinctiveness	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes	There is no potential for adverse effects to have occurred to alkaline fen in respect of indicators of local distinctiveness. The peat extraction and ancillary activities at the Application Site since the designation of the SAC have been confined to the boundary of the Application Site. Drainage commenced at the Application Site in 1950. Following this initial drainage, only minor annual changes in local bog hydrology and hydrogeology associated with the annual removal of peat and deepening of drains would have occurred (refer to Chapter 8: Hydrology and Hydrogeology of the rEIAR in Appendix 6 of this rNIS). Since the regulation of peat extraction activities at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, a range of measures have been in place to ensure that there is no deterioration in water quality due to peat extraction and ancillary activities

		during the Peat Extraction Phase and Current Phase. There is no potential for adverse effects on alkaline fen in respect of indicators of local distinctiveness as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.
Transitional areas between fen and adjacent habitats	Maintain adequate transitional areas to support/protect the alkaline fen ecosystem and the services it provides	There is no potential for adverse effects to have occurred to alkaline fen in respect of transitional areas between fen and adjacent habitats. The peat extraction and ancillary activities at the Application Site since the designation of the SAC have been confined to the boundary of the Application Site. Drainage commenced at the Application Site in 1950. Following this initial drainage, only minor annual changes in local bog hydrology and hydrogeology associated with the annual removal of peat and deepening of drains would have occurred (refer to Chapter 8: Hydrology and Hydrogeology of the rEIAR in Appendix 6 of this rNIS). Since the regulation of peat extraction and ancillary activities at the Application Site under IPC Licence in 2000, which predates the designation of the SAC, a range of measures have been in place to ensure that there is no deterioration in water quality due to peat extraction and ancillary activities during the Peat Extraction Phase and Current Phase. There is no potential for adverse effects on alkaline fen in respect of indicators of local distinctiveness as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.

6.1.3.1 Determination on Potential for Adverse Effects Alkaline Fens [7230]

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information, that there is no potential for adverse effects to have occurred on the QI Alkaline fens [7230] associated with the r River Shannon Callows SAC, as a result of peat extractions and ancillary activities at the Application Site during the Peat Extraction Phase and Current Phase.

Based on the above, it can be concluded, in view of best scientific knowledge and based on objective information, that there is no potential for adverse effects on alkaline fen as a result of the implementation of the proposed Rehabilitation Plan for the Application Site during the Remedial Phase.

No potential for adverse effects on the integrity of the SAC in light of its conservation objectives was identified.

6.1.4

Determination of Potential Adverse Effects in the River Shannon Callows SAC

The regulation of peat extractions and ancillary activities under IPC Licence predates the designation of the River Shannon Callows SAC which was designated in 2002. Since the regulation of peat extractions and ancillary activities at the Application Site under IPC licence, and the broad compliance with the Licence conditions by the Applicant over a 20 year monitoring period, there is no potential for significant effects on water quality to have occurred and therefore no potential for adverse effects on the SAC and its QI species or habitats to have occurred as a result the Peat Extraction Phase, Current Phase and Remedial Phase.

Following an examination, evaluation and analysis, in light of best scientific knowledge, and, on the basis of objective information, it can be concluded that there is no potential for adverse effects on the River Shannon Callows SAC to have occurred as a result of peat extractions and ancillary activities at the Application Site during the Peat Extraction Phase, Current Phase and Remedial Phase.

There is no potential for adverse effects on the SAC as a result of the implementation of the proposed Rehabilitation Plan for the Application Site.

6.2

Middle Shannon Callows SPA

The potential for residual adverse effects on each of the individual SCIs that were identified as being at risk of potential effects in Section 2 above is assessed in this section in view of the Conservation Objectives of those habitats and species.

6.2.1

Whooper Swan [A038]

The site-specific conservation objective for this QI is:

'To maintain the favourable conservation condition of whooper swan in Middle Shannon Callows SPA'

The attributes and targets for this species as per the site-specific conservation objectives (NPWS, 2022b) were reviewed and an assessment of peat extractions and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-4.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for whooper swan [A038]

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing	Although whooper swan have been recorded utilising the Application Site, it is located beyond the 5km core foraging range (SNH, 2016) from the SPA and it is not considered ecologically connected to the SPA population.

		Therefore, there is no potential for adverse effects on the long-term winter population trend of whooper swan during the Peat Extraction Phase, Current Phase or Remedial Phase.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Although whooper swan have been recorded utilising the Application Site, it is located beyond the 5km core foraging range (SNH, 2016) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on the spatial distribution of whooper swan during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0-500-01. There is therefore no potential for adverse effects on whooper swan with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	Although whooper swan have been recorded utilising the Application Site, it is located beyond the 5km core foraging range (SNH, 2016) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for adverse effects on the whooper swan due to disturbance during the Peat Extraction Phase, Current Phase or Remedial Phase.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Although whooper swan have been recorded utilising the Application Site, it is located beyond the 5km core foraging range (SNH, 2016) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for adverse effects on whooper swan due to barriers to connectivity and site use during the Peat Extraction Phase, Current Phase or Remedial Phase.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Although whooper swan have been recorded utilising the Application Site, it is located beyond the 5km core foraging range (SNH, 2016) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on whooper swan during the Peat

		Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0-500-01. There is therefore no potential for adverse effects on whooper swan with respect to water quality impacts on supporting habitats and availability of food resources during the Peat Extraction Phase, Current Phase or Remedial Phase.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Although whooper swan have been recorded utilising the Application Site, it is located beyond the 5km core foraging range (SNH, 2016) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on whooper swan during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0-500-01. There is therefore no potential for adverse effects on whooper swan with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0-500-01. There is therefore no potential for adverse effects on whooper swan with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase

6.2.2 Wigeon [A050]

The Site specific conservation objectives for this QI is:

‘To restore the favourable conservation condition of wigeon in Middle Shannon Callows SPA species’

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022b) were reviewed and an assessment of peat extractions and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-5.

Table 6-5 Targets and attributes associated with nominated site-specific conservation objectives for wigeon [A050]

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing	The Application Site is located beyond the 2.5-2.8km core foraging range (Johnston <i>et al.</i>, 2013) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for adverse effects on the long-term winter population trend of wigeon during the Peat Extraction Phase, Current Phase or Remedial Phase.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	The Application Site is located beyond the 2.5-2.8km core foraging range (Johnston <i>et al.</i>, 2013) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on the spatial distribution of wigeon during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000 peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on wigeon with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The Application Site is located beyond the 2.5-2.8km core foraging range (Johnston <i>et al.</i>, 2013) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for adverse effects on the wigeon due to disturbance during the Peat Extraction Phase, Current Phase or Remedial Phase.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other	The Application Site is located beyond the 2.5-2.8km core foraging range (Johnston <i>et al.</i>, 2013) from the SPA and it is not considered ecologically connected to the SPA population.

	ecologically important sites outside the SPA	Therefore, there is no potential for adverse effects on wigeon due to barriers to connectivity and site use during the Peat Extraction Phase, Current Phase or Remedial Phase.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The Application Site is located beyond the 2.5-2.8km core foraging range (Johnston <i>et al.</i>, 2013) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on wigeon during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000 peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on wigeon with respect to water quality impacts on supporting habitats and availability of food resources during the Peat Extraction Phase, Current Phase or Remedial Phase.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	The Application Site is located beyond the 2.5-2.8km core foraging range (Johnston <i>et al.</i>, 2013) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on wigeon during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0-500-01. There is therefore no potential for adverse effects on wigeon with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on wigeon with respect to water quality impacts

		on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase
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6.2.3 Golden Plover [A140]

The site-specific conservation objective for this QI is:

‘To maintain the favourable conservation condition of golden plover in Middle Shannon Callows SPA’

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022b) were reviewed and an assessment of peat extractions and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-6.

Table 6-6 Targets and attributes associated with nominated site-specific conservation objectives for golden plover [A140]

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing	Golden plover have been recorded using the Application Site on a small number of occasions, indicating irregular and opportunistic use. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for adverse effects on the long-term winter population trend of golden plover during the Peat Extraction Phase, Current Phase or Remedial Phase.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Golden plover have been recorded using the Application Site on a small number of occasions, indicating irregular and opportunistic use. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for direct adverse effects on the spatial distribution of golden plover during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on golden plover with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase.

Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	Golden plover have been recorded using the Application Site on a small number of occasions, indicating irregular and opportunistic use. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for adverse effects on the golden plover due to disturbance during the Peat Extraction Phase, Current Phase or Remedial Phase.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Golden plover have been recorded using the Application Site on a small number of occasions, indicating irregular and opportunistic use. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. No barriers to connectivity for golden plover are associated with the Application Site. Therefore, there is no potential for adverse effects on golden plover due to barriers to connectivity and site use during the Peat Extraction Phase, Current Phase or Remedial Phase.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	. Golden plover have been recorded using the Application Site on a small number of occasions, indicating irregular and opportunistic use. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for direct adverse effects on golden plover during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on golden plover with respect to water quality impacts on supporting habitats and availability of food resources during the Peat Extraction Phase, Current Phase or Remedial Phase.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Golden plover have been recorded using the Application Site on a small number of occasions, indicating irregular and opportunistic use. The Application Site is not considered to be an important or regularly used wintering site.

		Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for direct adverse effects on golden plover during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on golden plover with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on golden plover with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase

6.2.4 Lapwing [A142]

The site-specific conservation objective for this QI is:

‘To restore the favourable conservation condition of lapwing in Middle Shannon Callows SPA’

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022b) were reviewed and an assessment of peat extractions and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-7.

Table 6-7 Targets and attributes associated with nominated site-specific conservation objectives for lapwing [A142]

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing	Lapwing have been recorded using the Application Site during winter months, however records were infrequent and low in number. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for adverse effects on the long-term winter population trend of

		lapwing during the Peat Extraction Phase, Current Phase or Remedial Phase.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Lapwing have been recorded using the Application Site during winter months, however records were infrequent and low in number. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for direct adverse effects on the spatial distribution of lapwing during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on lapwing with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	Lapwing have been recorded using the Application Site during winter months, however records were infrequent and low in number. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for adverse effects on the lapwing due to disturbance during the Peat Extraction Phase, Current Phase or Remedial Phase.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Lapwing have been recorded using the Application Site during winter months, however records were infrequent and low in number. The Application Site is not considered to be an important or regularly used wintering site. No barriers to connectivity for lapwing are associated with the Application Site. Therefore, there is no potential for adverse effects on lapwing due to barriers to connectivity and site use during the Peat Extraction Phase, Current Phase or Remedial Phase.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Lapwing have been recorded using the Application Site during winter months, however records were infrequent and low in number. The Application Site is not considered to be an important or regularly used wintering site.

		Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for direct adverse effects on lapwing during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on lapwing with respect to water quality impacts on supporting habitats and availability of food resources during the Peat Extraction Phase, Current Phase or Remedial Phase.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Lapwing have been recorded using the Application Site during winter months, however records were infrequent and low in number. The Application Site is not considered to be an important or regularly used wintering site. Extensive suitable foraging and roosting habitats are available in the wider landscape. Therefore, there is no potential for direct adverse effects on lapwing during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on lapwing with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on lapwing with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase

6.2.5

Black-tailed Godwit [A156]

The site-specific conservation objective for this QI is:

‘To restore the favourable conservation condition of Black-tailed godwit in Middle Shannon Callows SPA’

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022b) were reviewed and an assessment of peat extractions and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-1.

Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for black-tailed godwit [A156]

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing	The Application Site is located beyond the core foraging range (<8km) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for adverse effects on the long-term winter population trend of black-tailed godwit during the Peat Extraction Phase, Current Phase or Remedial Phase.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	The Application Site is located beyond the core foraging range (<8km) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on the spatial distribution of black-tailed godwit during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-tailed godwit with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	The Application Site is located beyond the core foraging range (<8km) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for adverse effects on the black-tailed godwit due to disturbance during the Peat Extraction Phase, Current Phase or Remedial Phase.

Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	The Application Site is located beyond the core foraging range (<8km) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for adverse effects on black-tailed godwit due to barriers to connectivity and site use during the Peat Extraction Phase, Current Phase or Remedial Phase.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The Application Site is located beyond the core foraging range (<8km) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on black-tailed godwit during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-tailed godwit with respect to water quality impacts on supporting habitats and availability of food resources during the Peat Extraction Phase, Current Phase or Remedial Phase.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	The Application Site is located beyond the core foraging range (<8km) from the SPA and it is not considered ecologically connected to the SPA population. Therefore, there is no potential for direct adverse effects on black-tailed godwit during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-tailed godwit with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase

Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000 peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-tailed godwit with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase
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6.2.6 Black-headed Gull [A179]

The site-specific conservation objective for this QI is:

'To restore the favourable conservation condition of black-headed gull in Middle Shannon Callows SPA'

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022b) were reviewed and an assessment of peat extractions and ancillary activities at the Application Site against the attributes and targets is provided in

Table 6-8 Targets and attributes associated with nominated site-specific conservation objectives for black-headed gull [A179]

Attribute	Target	Assessment
Winter population trend	Long term winter population trend is stable or increasing	Although the Application Site lies within the core foraging range of black-headed gull (11.4 km; Thaxter <i>et al.</i>, 2012), the site lacks significant optimal habitat for roosting, nesting, or regular foraging. During the extensive suite of surveys, observations of black-headed gull were limited to 1-3 birds travelling over the site, with no evidence of birds utilising habitats within the Application Site. Therefore, there is no potential for adverse effects on the long-term winter population trend of black-headed gull during the Peat Extraction Phase, Current Phase or Remedial Phase.
Winter spatial distribution	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target	Although the Application Site lies within the core foraging range of black-headed gull (11.4 km; Thaxter <i>et al.</i>, 2012), the site lacks significant optimal habitat for roosting, nesting, or regular foraging. During the extensive suite of surveys, observations of black-headed gull were limited to 1-3 birds travelling over the site, with no evidence of birds utilising habitats within the Application Site. Therefore, there is no potential for direct adverse effects on the spatial distribution of black-headed gull during the Peat Extraction Phase, Current Phase or Remedial Phase.

		Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-headed gull with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase.
Disturbance at wintering site	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution	Although the Application Site lies within the core foraging range of black-headed gull (11.4 km; Thaxter <i>et al.</i>, 2012), the site lacks significant optimal habitat for roosting, nesting, or regular foraging. During the extensive suite of surveys, observations of black-headed gull were limited to 1-3 birds travelling over the site, with no evidence of birds utilising habitats within the Application Site. Therefore, there is no potential for adverse effects on black-headed gull due to disturbance during the Peat Extraction Phase, Current Phase or Remedial Phase.
Barriers to connectivity and site use	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Although the Application Site lies within the core foraging range of black-headed gull (11.4 km; Thaxter <i>et al.</i>, 2012), the site lacks significant optimal habitat for roosting, nesting, or regular foraging. During the extensive suite of surveys, observations of black-headed gull were limited to 1-3 birds travelling over the site, with no evidence of birds utilising habitats within the Application Site. Therefore, there is no potential for adverse effects on black-headed gull due to barriers to connectivity and site use during the Peat Extraction Phase, Current Phase or Remedial Phase.
Forage spatial distribution, extent and abundance	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Although the Application Site lies within the core foraging range of black-headed gull (11.4 km; Thaxter <i>et al.</i>, 2012), the site lacks significant optimal habitat for roosting, nesting, or regular foraging. During the extensive suite of surveys, observations of black-headed gull were limited to 1-3 birds travelling over the site, with no evidence of birds utilising habitats within the Application Site. Therefore, there is no potential for direct adverse effects on black-headed gull during the Peat Extraction Phase, Current Phase or Remedial Phase.

		Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-headed gull with respect to water quality impacts on supporting habitats and availability of food resources during the Peat Extraction Phase, Current Phase or Remedial Phase.
Roost spatial distribution and extent	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target	Although the Application Site lies within the core foraging range of black-headed gull (11.4 km; Thaxter <i>et al.</i>, 2012), the site lacks significant optimal habitat for roosting, nesting, or regular foraging. During the extensive suite of surveys, observations of black-headed gull were limited to 1-3 birds travelling over the site, with no evidence of birds utilising habitats within the Application Site Therefore, there is no potential for direct adverse effects on black-headed gull during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-headed gull with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase
Supporting habitat: area and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA	Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on black-headed gull with respect to water quality impacts on supporting habitats during the Peat Extraction Phase, Current Phase or Remedial Phase

6.2.7

Wetlands [A999]

The site-specific conservation objective for this QI is:

‘To maintain the favourable conservation condition of wetlands in Middle Shannon Callows SPA’

The attributes and targets for this habitat as per the site-specific conservation objectives (NPWS, 2022b) were reviewed and an assessment of peat extractions and ancillary activities at the Application Site against the attributes and targets is provided in Table 6-9.

Table 6-9 Targets and attributes associated with nominated site-specific conservation objectives for wetlands [A999]

Attribute	Target	Assessment
Wetland habitat area	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation	The Application Site lies <8km from the SPA and therefore there is no potential for direct loss of wetland habitat area during the Peat Extraction Phase, Current Phase or Remedial Phase. Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on wetland habitat area with respect to water quality impacts during the Peat Extraction Phase, Current Phase or Remedial Phase.
Wetland habitat quality and functioning	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation	Prior to the regulation of activities at the Application Site under IPC Licence in 2000, a range of measures were in place to ensure there was no deterioration of water quality in receiving watercourses. Since 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence P0500-01. There is therefore no potential for adverse effects on wetland habitat quality and functioning with respect to water quality impacts during the Peat Extraction Phase, Current Phase or Remedial Phase.

6.2.8

Determination on Potential Adverse Effects in the Middle Shannon Callows SPA

The regulation of peat extractions and ancillary activities under IPC Licence commenced in 2000, following the designation of the Middle Shannon Callows SPA in 1996. Although the SPA was designated prior to regulation under the IPC Licence, the site was subject to control and mitigation measures implemented by the Applicant to protect water quality in receiving waters. Given these early mitigation measures, along with broad compliance with IPC Licence conditions over a 20-year monitoring period, there is no potential for significant effects on water quality to have occurred. Consequently, there is no potential for adverse effects on the SPA and its SCI species to have arisen as a result of peat extractions and ancillary activities at the Application Site.

Following an examination, evaluation and analysis, in light of best scientific knowledge, and, on the basis of objective information, it can be concluded that there is no potential for adverse effects on the Middle Shannon Callows SPA to have occurred as a result of peat extractions and ancillary activities at the Application Site during the Peat Extraction Phase, Current Phase and Remedial Phase.

There is no potential for adverse effects on the SPA as a result of the implementation of the proposed Rehabilitation Plan for the Application Site.

6.3 Conclusion of Impact Assessment

Following an examination, evaluation and analysis, in light of best scientific knowledge and the conservation objectives of the site, and, on the basis of objective information, it can be concluded that there is no potential for adverse effects on the integrity of any European Site to have occurred as a result of peat extractions and ancillary activities (i.e. Peat Extraction Phase, Current Phase and Remedial Phase) at the Application Site.

Since the year 2000, peat extractions and ancillary activities at the Application Site have been regulated under IPC Licence, the conditions of which include a range of measures to ensure the protection of water quality. The River Shannon Callows SAC was designated in 2002 and, as such, peat extractions and ancillary activities at the Application Site were regulated under the IPC Licence prior to its designation. While Middle Shannon Callows SPA was classified in 1996, prior to regulation under the IPC Licence in 2000, it was also subject to control and mitigation measures implemented at the Application Site to protect water quality in receiving waters. Given the mitigation measures in place prior to the IPC Licence and subsequent regulation of activities under IPC Licence, there is no potential for the peat extractions and ancillary activities at the Application Site to have had an adverse effect on the integrity of any European Site due to water quality impacts. As part of the IPC Licence, there is a limit of 35mg/l for suspended solids. Quarterly monitoring of water quality has only recorded 4 no. exceedances of this threshold during the monitoring period (2000–2020). However, these exceedances are outliers with 93% of all data being well below the 35mg/l threshold. The concentrations of suspended solids ranged from <2 to 174mg/l, with an average concentration of 15.7mg/l (refer to Chapter 8 ‘Hydrology & Hydrogeology’ of the accompanying rEIR, which is included as Appendix 6 of this rNIS).

The conditions within the IPC Licence, and broad compliance with the conditions over a 20 year period, ensure that there is no potential for significant effects on water quality to have occurred and no potential for adverse effects on the integrity of the above European Sites, in light of their conservation objectives, to have occurred in this regard as a result of peat extractions and ancillary activities during the Peat Extraction Phase, Current Phase and Remedial Phase.

There is no potential for peat extractions and ancillary activities during the Peat Extraction Phase, Current Phase and Remedial Phase to have had a significant effect on otter, golden plover or lapwing as a result of disturbance for the reasons outlined in the sections above.

There is no potential for adverse effects on the integrity of any European Site as a result of the implementation of the proposed Rehabilitation Plan for the Application Site.

Following an examination, evaluation and analysis, in light of best scientific knowledge, and, on the basis of objective information, it can be concluded that there is no potential for adverse effects on the integrity of any European Site to have occurred or to occur as a result of the Project at the Application Site.

7.

IN COMBINATION EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Sites where potential for adverse effects was identified at the screening stage (Appendix 1). This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

7.1

Development Context – Ecological Plans and Policies

The following development plans have been reviewed and taken into consideration as part of this assessment, those marked as partial had only incomplete County Development Plans available:

- Offaly County Development Plan 2021 – 2027
- Partial Offaly County Development Plan 2014 – 2020
- Partial Offaly County Development Plan 2009 – 2015
- Partial Offaly County Development Plan 2003 – 2009
- Partial Offaly County Development Plan 1995
- Partial Offaly County Development Plan 1987
- National Biodiversity Action Plan 2007-2013
- 4th National Biodiversity Action plan 2023-2030.

The review focused on policies and objectives that relate to designated sites for nature conservation from 1996 (when the Middle Shannon Callows SPA was designated). Policies and objectives relating to the conservation of peatlands and sustainable land use were also reviewed, particularly where the policies relate to the preservation of surface water quality. An overview of the search results with regard to plans is provided in Table 7-1 Assessment of Plans.

Table 7-1 Assessment of Plans

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
Offaly County Development Plan 2021 - 2027	The Strategic Vision of the Development Plan has been identified: <i>To create a sustainable and competitive county that supports the health and wellbeing of our people and places, from urban to rural, with access to employment opportunities supported by high quality housing and physical, social and community infrastructure for all, in a climate resilient manner and with respect for our biodiversity</i> The policies concerning peatlands in the Offaly County Development Plan 2021-2027 are as follows: • CAEP-16 It is Council policy to support the preparation of a comprehensive after use framework plan for the industrial peatlands and associated workshops, office buildings and industrial sites in the midlands and adjacent parts of the north west and southern regions, which meets the environmental, economic and social needs of communities in these areas, and also demonstrating leadership in climate change mitigation and land stewardship. The Council recognises that the industrial peatlands in the midlands are a significant resource will transition to after uses ranging from amenity, tourism, biodiversity services, 'wild areas', flood management, climate mitigation, energy development, industry, education, conservation and many more. • CAEP-17 It is Council policy to investigate the potential for a Green Energy Hub on peatlands in the county and facilitate it if possible. • CAEP-18 It is Council policy to investigate the feasibility of an energy park with educational and amenity facilities relating to any future development of renewable energy projects of significant scale that comes forward over the lifetime of this Plan. Any development of renewable energy on cutaway bog will be required to provide increased opportunities for amenity access and educational facilities. • CAEP-19 It is Council policy that planning applications for development on or immediately adjacent to peatlands shall be accompanied by assessments considering the following issues where relevant; peatland stability, hydrology, carbon emissions balance and ecological impact assessment.	The Plans were comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. The potential for peat extractions and ancillary activities, which were undertaken at different times and at different levels of intensity throughout the bog between 1996 (when the Middle Shannon Callows SPA was first designated) and 2020, and between 2002 (when the River Shannon Callows SAC was designated) and 2020, to result in adverse effects on European Sites was assessed. No potential for adverse effects on the integrity of any European Site in light of their conservation objectives was identified, and therefore historic peat extractions and ancillary activities are not considered to be in contravention of the policies and objectives within the development plans. The ongoing operations such as peat extractions and ancillary activities since 1994, which were undertaken at different times and at different levels of intensity throughout the bog, are unlikely to have resulted in adverse effects on the integrity of any European Site and are therefore not considered to be in contravention of the policies and objectives within the plan.

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
	• CAEP-20 It is Council policy to support the implementation of any relevant recommendations contained in the National Peatlands Strategy 2015 and any subsequent revisions. • CAEO-06 It is an objective of the Council to source E.U. and national funding to support projects which assist the transition of the industrial peatlands to sustainable after uses. • CAEO-07 It is an objective of the Council to ensure that renewable energy projects located on peatlands or in close proximity to peatlands do not negatively impact on any rehabilitation measures including enhanced rehabilitation measures (i.e. drain blocking and rewetting).	The implementation of the Rehabilitation Plan for the Application Site will not have an adverse effect on the integrity of any European Site and is in compliance with the policies and objectives outlined within the plan.
Offaly County Development Plan 2014-2020	A number of policies and objectives relative to the historical use of the Lemanaghan Bog Group are outlined below. • Chapter 2: Economic and Enterprise Strategy ➤ 'It is Council policy to actively encourage the redevelopment of brownfield sites for enterprise and employment creation throughout the county, in particular, sites with antecedent uses or disused sites which were formerly ESB plants and Bord na Móna work' (Entp-07). ➤ It is Council Policy to encourage expansion and employment in industries such as agriculture, horticulture, peatlands, food, craft, tourism and energy' (RDP-11). ➤ ➤ The County Development Plan also recognises the potential of cutaway bog sites for wind energy development. • Chapter 3: Energy Strategy ➤ 'The characteristics of cutaway bog appear to be particularly suitable for wind development. The individual sites on cutaway bogs are large and generally uninterrupted by hedgerows, streams, or other natural features. Many are already connected to each other via corridors i.e. bog railway routes, which will allow for transmission infrastructure and roadways to be built between sites, avoiding impacts on the public road in terms of traffic or visual impact. The areas where peatlands occur have a low density road network and are traditionally sparsely populated, and while they	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
	have not completely avoided sporadic urban generated one-off housing, they are the least densely populated areas of the county' >	
Offaly County Development Plan 2009-2015	The Offaly County Development Plan 2008-2015 was adopted on January 19th 2009, replacing the Offaly County Development Plan 2003-2009. Policies related to the historical activities at Lemanaghan are noted below. At the time of the writing of the 2009-2025 CDP, 'after use' of cut away bogs and alternative development of cutaway bogs are being considered in the future planning and sustainable development of the county. • Chapter 3: Overall Strategy <i>'The Council intends to facilitate proposals for employment generation and services improvement in this part of the county. One important action in this regard is to work closely with Bord na Mona to investigate and facilitate (where appropriate on planning grounds) the re-use and alternative development of cutaway bogs within its ownership for development which will give an employment and economic boost to the county'</i> • Chapter 6: Employment, Economy & Enterprise > The 32,400 ha of peatlands within the ownership of Bord na Mona are highlighted and identified as potential sites for industrial/business type generation, in particular wind/biomass energy generation. Section 6.4 acknowledges and is in favour of re-development of disused sites such as former ESB power stations and Bord na Mona works. P06-11 states: <i>It is Council policy to actively encourage the redevelopment of brownfield sites for enterprise and employment creation throughout the county, in particular, disused sites which were formerly ESB plants and Bord na Mona works.</i> > • Chapter 10 Rural Development > P10-15: <i>It is Council policy to support the development of the peatlands within the county for appropriate alternative uses, subject to environmental considerations and nature designations.</i> > • Chapter 12: Environment	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
	➤ The CDP recognises the commitment to the National Climate Change Strategy and seeks to facilitate measures which reduce emissions of greenhouse gasses in accordance with the Kyoto Agreement. The CDP also commits to implementing ‘<i>relevant EU and Irish Legislation pertaining to the environment</i>’ (P12-08). The CDP also commits to co-operating with the EPA in regard to any licencing arrangements for scheduled industries in County Offaly in accordance with the provisions of the Environmental Protection Agency Act 1992 (P12-09). ➤ • Chapter 15: Natural Heritage ➤ The CDP notes that peatlands comprise the main topographical feature of the landscape in Offaly and the heritage value associated with them. As such the CDP commits to protecting areas of bogland in line with existing designations. As such the CDP sets an objective to prepare a biodiversity management strategy for Offaly’s peatlands in co-operation with Bord na Móna and other relevant authorities. ➤ • Chapter 16 Landscape and Amenities ➤ The preservation of landscape, views and amenities as well as places of natural beauty within the county is set out as a role of the Local Authority. To that effect the Local Authority will ensure that development respects and enhances the appearance and character of existing local landscape. The Landscape Character assessment identifies cut away bog as a moderately sensitive landscape. Lough Boora has been development as a ‘prototype’ parkland area and the CD P reiterates the need to plan for the future use of large areas of cut-away bog within County Offaly. Table 16.4 states that some cut away bog landscapes may be appropriate for sensitively designed and located development including renewable energy and/or industrial use.	
Offaly County Development Plan 2003-2009	<i>The CDP recognises boglands as a major natural and archaeological resource. The development of this resource and its critical role in employment is also noted. The Council aimed to continue to promote and facilitate the conservation of a representative sample of peatlands and looked to co-operate with Dúchas and the Irish Peatland Conservation Council to have a Bog Conservation Study undertaken the remaining peat resources of County Offaly.</i>	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
	Plan for After-use of Industrial Peatlands (Cutaway Bogs) <i>‘The Council will seek the formulation of a comprehensive integrated landuse plan for the future development and utilisation of the large areas of cutaway bog, which now exists in the county. In addition, the plan should cater for development of further areas of cutaway bog, which will arise over the next thirty years as turf/peat production comes to an end of the county’s industrial boglands. There are 32,000 hectares (80,000) of peatland in Bord na Móna ownership in County Offaly. Because of the significant area of land involved, it is important to avoid piecemeal or unco-ordinated use/development of this major resource.’</i> Renewable Energy <i>In general,</i> a) <i>Wind Farms will not be permitted in NHAs, SACs or in areas above the 400-foot contour, or in areas of special control.</i>	
Offaly County Development Plan 1995	The Offaly County Development Plan of 1995 recognised the importance of the raised boglands as a major natural resource within the county. The importance of peatlands for employment is clear. The CDP notes a major change in employment over the previous 10 years, owing to job losses at Bord na Móna. The Council state that it is an aim of the CDP to continue to support the development of peatlands for peat production. <i>‘The development of the County’s peat resources will be promoted and facilitated.’</i> However, the CDP also recognises the importance of the conservation and preservation of peat land habitats along with the potential for other peatland uses, such as tourism, amenity, educational and research purposes. The Council set a goal to secure at least 4% of the county’s original peatland area for conservation.	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
	While the continued industrialisation of peatland was supported, the Council acknowledged the need to develop a plan for the county's peatland when turf/ peat production comes to an end. The 1995 CDP states: <i>'The council will seek the formulation of a comprehensive integrated land use plan for the future development and utilization of the large areas of cutaway bog which now exist in the county. In addition, the plan should cater for development of the further areas of cutaway bog which will arise over the next 30 years as turf/peat production comes to an end on the County's industrial boglands. There are 32,400 hectares (80,000 acres) of peatland in Bord na Móna ownership in County Offaly. Because of the significant area of land involved; it is important to avoid piecemeal or uncoordinated use/ development of this major resource.'</i>	
Offaly County Development Plan 1987	The Offaly County Development Plan of 1987 recognized the significance of peatlands and peat production as an employment opportunity County Offaly. At the time of publication, over 50% of the industrial jobs in the county were provided by the joint activities of Bord na Mona and the ESB as follows: <i>"Over half the industrial jobs in County Offaly are provided by the joint activities of Bord na Mona and the E.S.B. total 2,800 jobs provided by the two, 2,200 are provided in the seven Bord na Mona works and 600 in the three E.S.B Stations. This does not include Bord na Mona seasonal work which amounts Many of the rural Of the to approximately 800 jobs every year, communities in the County are heavily dependent on peat-based employment. On a county-wide basis it is estimated that approximately 12,000, or one-fifth of the total population are directly dependent on this type of employment."</i> The CDP 1987 also recognized the heavy dependence on the peat industry and that "peat resources are running out will be major causes for concern in the coming years". With this in mind, it was anticipated that the Council would need to cooperate with other agencies to identify new initiatives and an overall employment strategy for the County. Objectives relevant to biodiversity are outlined below	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
	11.5 Areas of Scientific Interest in County Offaly: Offaly County Council recognises the importance of sites of scientific interest in The County. These sites have been identified and classified by An Foras Forbartha and the Department of Fisheries and Forestry. Some of these items are considered to be of international importance. It shall be an objective of the Council to use its powers to ensure the protection and conservation of those areas. The Wildlife Act of 1976 makes provision for the protection of certain plant species and their habitats. County Offaly contains 4 such sites (S.I. no. 338 of 1980). It is an offence to disturb those plants or the habitats in which they grow. The following are the sites concerned: (a) Grand Canal at Tullamore (N340 250). (b) Grand Canal at Kilbeggan (N35 35). (c) Shannonharbour near Bullock Island (N020 178). (d) Camus Callows, Clonmacnoise (N02 31). The Minister for Fisheries and Forestry intends to confirm an Order under the Wildlife Act for Lough Roe (Clara Bog). 11.6 Trees and Woodlands: Offaly County Council intends to uphold the amenity, educational and scientific value of trees and woodlands. To this end a number of woods have been listed in “Areas of Scientific Interest in County Offaly”. In addition, the Council has made a number of specific Tree Preservation Orders under the Local Government (Planning and Development) Acts, 1963 to 1983 and details of these are contained in Table 33 (Appendix A of the AASR). In particular, the following groups of trees are considered to make important contributions to amenity: - Trees West of Tullamore centring on Charleville Castle and the Gold Links. - Trees along the Ballinagar to Ballina Cross Roads. - Trees at Durrow Demesne. - Trees at Rahan College. It is the intention of the Council to preserve important groups of trees at these and other locations.	

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
National Biodiversity Action Plan 2017-2021	Target 6.2 - Sufficiency, coherence, connectivity and resilience of the protected areas network substantially enhanced by 2020.	The Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. The potential for peat extractions and ancillary activities, which were undertaken at different times and at different levels of intensity throughout the bog between 1996 (when the Middle Shannon Callows SPA was first designated) and 2020, and between 2002 (when the River Shannon Callows SAC was designated) and 2020, to result in adverse effects on European Sites was assessed. No potential for adverse effects on the integrity of any European Site in light of their conservation objectives was identified, and therefore historic peat extractions and ancillary activities are not considered to be in contravention of the policies and objectives within the development plans. The implementation of the Rehabilitation Plan for the Application Site will not have an adverse effect on the integrity of any European Site and is in compliance with the policies and objectives outlined within the plan.
4th National Biodiversity Action Plan 2023-2030	The purpose of the 4th National Biodiversity Action Plan is to set out the approach to governance and conservation of biodiversity through a series of targeted actions within the Plan. This is underpinned by five strategic objectives aimed at ensuring that Irelands' biodiversity and ecosystems are conserved and restored, delivering benefits essential for all sectors of society and that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally. The strategic objectives are:	The Plan was comprehensively reviewed, with particular reference to Policies and Objectives that relate to European Sites. The potential for peat extraction and ancillary activities, which were undertaken at different times and at different levels of intensity throughout the

Plans	Key Policies and Objectives directly related to European Sites and Biodiversity in the Zone of Influence	Assessment of Potential Impact on European Sites
	- Objective 1: Adopt a Whole-of Government, Whole of-Society Approach to Biodiversity - Objective 2: Meet Urgent Conservation and Restoration Needs - Objective 3: Secure Nature's Contribution to People - Objective 4: Enhance the Evidence Base for Action on Biodiversity - Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives	bog between 1996 (when the Middle Shannon Callows SPA was first designated) and 2020, and between 2002 (when the River Shannon Callows SAC was designated) and 2020, to result in adverse effects on European Sites was assessed. No potential for adverse effects on the integrity of any European Site in light of their conservation objectives was identified, and therefore historic peat extractions and ancillary activities are not considered to be in contravention of the policies and objectives within the development plans. The implementation of the Rehabilitation Plan for the Application Site will not have an adverse effect on the integrity of any European Site and is in compliance with the policies and objectives outlined within the plan.

7.2

Projects

A search was conducted using data from Offaly and Westmeath County Councils and An Coimisiún Pleanála's planning portals to search for all planned and/or permitted planning applications within 5km of the Application Site boundary. Applications considered within this boundary include all extant permissions available on the various online portals mentioned above. This distance was chosen as it is considered that cumulative impacts would not exist with any applications made greater than 5km from the Application Site boundary.

The majority of planning applications granted permission by the relevant planning authorities during the Peat Extraction Phase mainly relate to one-off rural dwelling houses, residential development (i.e. modification and/or re-development of existing dwellings) and agricultural development, including new entrances, sheds and ancillary plant and infrastructure. It should be noted that the commencement of peat extraction and ancillary activities within the Application Site generally pre-dates the current built environment, and consequently, potential impacts (e.g. traffic movements) arising from the activities associated with the Peat Extraction Phase would have been considered by the planning authorities in their assessment of said applications.

With regard to planning applications lodged during the Current Phase (June 2020 to present day), peat extraction within the Application Site was already permanently ceased and removal of peat stockpiles and Licence compliance activities were ongoing without any discernible effects on the environment.

Lemanaghan DAC, a joint venture between SSE Renewables and Bord na Móna (BnM) (i.e the Applicant) are proposing a wind energy development consisting of 15 turbines with an overall blade to tip height of 220m at the Application Site. The overall footprint of the infrastructure associated with the wind farm is approximately 3% of the total area of the Application Site. The Draft Cutaway Bog Decommissioning and Rehabilitation Plan for the Application Site will be updated as required to incorporate the proposed wind farm infrastructure, with the key objectives of the rehabilitation plan, i.e. rewetting and revegetation, occurring between and surrounding the proposed wind farm infrastructure. A separate EIAR and NIS are being undertaken for the proposed Lemanaghan Wind Farm development. At the time of writing, the planning application for this development has not yet been submitted to An Coimisiún Pleanála.

7.3

Assessment of Cumulative Effects

7.3.1

Peat Extraction Phase

The majority of planning applications granted permission by the relevant planning authorities during the Peat Extraction Phase mainly relate to one-off rural dwelling houses, residential development (i.e. modification and/or re-development of existing dwellings), and agricultural development, including new entrances, sheds, and ancillary plant and infrastructure. It should be noted that the commencement of peat extraction and ancillary activities within the Application Site generally pre-dates the current built environment, and consequently, potential impacts (e.g. traffic movements) arising from the activities associated with the Peat Extraction Phase would have been considered by the planning authorities in their assessment of said applications.

No potential for the Peat Extraction Phase to contribute to any likely significant negative cumulative effects on European Sites was identified during this phase when considered in-combination with other plans and projects.

7.3.2 Current Phase

With regard to projects during the Current Phase, peat extraction within the Application Site had ceased permanently, and activities on site were limited to peat stockpile removal and Licence compliance measures. These activities were ongoing without any discernible effects on the environment.

In the review of the projects that was undertaken, no connection that could potentially result in additional or negative cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Project.

7.3.3 Remedial Phase

While the proposed Lemanaghan Wind Farm development is located within the Application Site, it will occupy approximately 5% of the site, with the remainder of the site continuing to support peatland rehabilitation. Potential cumulative impacts are considered minimal due to the limited development footprint, extensive mitigation measures, and integration with ongoing rewetting and revegetation works.

The proposed Lemanaghan Wind Farm EIAR and NIS will include a suite of best-practice mitigation measures to ensure protection of water quality and biodiversity during construction, operation and decommissioning. As such, when considered in combination with ongoing rehabilitation activities, the proposed Lemanaghan Wind Farm development is not expected to result in significant cumulative effects on any European Sites, with the implementation of the control measures and mitigation measures outlined within this rNIS and mitigation measures to be included within the NIS for the proposed Lemanaghan Wind Farm.

The implementation of the Draft Bord na Móna Cutaway Bog Decommissioning and Rehabilitation Plan will have a positive effect on habitats within the Application Site as well as on downstream water quality and therefore will not contribute to any negative effects on European Sites when considered cumulatively with other projects and plans.

The Peatland Climate Action Scheme (PCAS) is a programme of enhanced peatland rehabilitation measures, which is in addition to the IPC Licence decommissioning and rehabilitation requirement. PCAS is being applied at specific locations across the Bord na Móna landbank that are identified as suitable for the prescribed enhancement measures.

Whilst no PCAS works are proposed within the Application Site, the Applicant is planning to rehabilitate two bogs to the south of the R436. These bogs include an area of high drained bog, Curraghalassa Bog, and an area of cutaway bog, known as Derrynagun Bog. Curraghalassa Bog and Derrynagun Bog will be subject to enhanced restoration which will comprise of targeted measures designed to rewet the peat. Whilst these form part of the Boora Bog Group, they do not form part of the Application Site. These bogs drain to the same watercourses as the Application Site. The implementation of PCAS measures in the Derrynagun and Curraghalassa bogs will provide greater surface water attenuation and surface water quality benefits in and downstream of the restoration areas. These PCAS measures and the standard remedial measures, which will be implemented across the Application Site, will not contribute to any negative effects on European Sites.

7.4 Conclusion of In Combination Impact Assessment

Following the assessment provided in the preceding sections, it is concluded that, the Project has not and will not result in any adverse effects on the integrity of any European Sites. Having considered

other projects in the area as listed above, no potential for the Project to contribute or have contributed to any adverse cumulative effects on any European Sites was identified when considered in combination with other plans and projects.

In the review of the projects that was undertaken, no connection, that could potentially result in additional or negative cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the Project.

The implementation of the Draft Bord Na Móna Cutaway Bog Decommissioning and Rehabilitation Plan will have a positive long-term impact on biodiversity within the Application Site as well as on downstream water quality and therefore will not contribute to any adverse effects on water quality of European Sites when considered cumulatively with other projects and plans.

- The proposed Lemanaghan Wind Farm planning application has formed part of this cumulative assessment. With the implementation of the control measures and mitigation measures outlined within this rNIS and mitigation measures to be included within the NIS for the proposed Lemanaghan Wind Farm, no potential for in-combination effects were identified.

8.

CONCLUDING STATEMENT

This rNIS has provided an assessment of all potential direct or indirect adverse effects on European Sites.

By 1996, when the Middle Shannon Callows SPA was first designated, peat extraction and ancillary activities at the Application Site were well established. Drainage had been inserted and the site consisted predominantly of a large area of cutover bog, comprising bare peat and smaller areas of revegetating scrub, woodland and pioneer habitats of open cutaway bog.

Activities between 1996 and June 2020 largely comprised peat extraction, creation and removal of stockpiles and drain maintenance. Since the year 2000, peat extraction and ancillary activities at the Application Site have been regulated under IPC Licence, the conditions of which include a range of measures to ensure the protection of water quality. The River Shannon Callows SAC was designated in 2002 and, as such, peat extraction and ancillary activities at the Application Site were regulated under the IPC Licence prior to its designation. While Middle Shannon Callows SPA was classified in 1996, prior to regulation under the IPC Licence in 2000, it was also subject to control and mitigation measures implemented at the Application Site to protect water quality in receiving waters. Given the mitigation measures in place prior to the IPC Licence and subsequent regulation of activities under IPC Licence, there is no potential for the peat extraction and ancillary activities at the Application Site to have had an adverse effect on the integrity of any European Site in light of their conservation objectives.

Since the cessation of peat extraction at the Application Site in June 2020, activities have been confined to removal of stockpiles from the Application Site. These activities have continued to be regulated under IPC Licence and therefore there is no potential for these activities to have resulted in adverse effects on the integrity of any European Site. The existing silt control measures will continue to operate in the Remedial Phase during the early stages of the proposed Rehabilitation Plan, when there is potential for the entrainment of suspended solids in surface waters as a result of drain blocking. During this time no remedial works will be completed during periods of prolonged rainfall. Silt ponds will continue to be in use and will be regularly inspected and maintained as per IPC Licence requirements.

There is no potential for adverse effects on the integrity of any European Site as a result of the implementation of the proposed Rehabilitation Plan for the Application Site.

Following an examination, evaluation and analysis, in light of best scientific knowledge and the conservation objectives of the European Sites, and, on the basis of objective information, it can be concluded that the peat extraction and ancillary activities at the Application Site and the implementation of the proposed Rehabilitation Plan for the Application Site have not and will not have a residual adverse effect on the integrity of any European Site, either alone or in combination with other plans or projects during the Peat Extraction Phase, Current Phase and Remedial Phase.

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