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7. BIODIVERSITY

7.1 INTRODUCTION

This chapter of the remedial Environmental Impact Assessment Report (remedial EIAR) has been prepared by the ecology team at TOBIN on behalf of Bord na Móna Biomass Limited (Bord na Móna) in support of an application for Substitute Consent to An Coimisiún Pleanála (ACP). The Substitute Consent application relates to historic peat extraction activities and associated ancillary works undertaken between June 1988 and the present day at Derryhinch, Drumman, Derryarkin, Ballybeg and Toar Bogs, Counties Offaly, Meath and Westmeath (collectively referred to as the 'Application Site').

This assessment considers the likely significant effects on biodiversity arising from historic peat extraction and associated ancillary works undertaken at the Application Site, as well as the effects associated with current decommissioning and site management measures and proposed future rehabilitation activities. For the purposes of this chapter, all historic peat extraction and associated ancillary activities, together with decommissioning, site management, and measures implemented or proposed under the Draft Cutaway Bog Decommissioning and Rehabilitation Plans, are referred to collectively as the 'Project'.

The bogs comprising the Application Site form part of the wider Derrygreenagh Bog Group, owned and operated by Bord na Móna. The lands comprising the Application Site are outlined in red in Figure 7.1. Historically, the lands have been used primarily for milled peat production and extend to approximately 2,637 hectares (ha). The Application Site comprises predominantly cutaway bog and bare peat, together with associated infrastructure including buildings, operational yards, narrow-gauge railway lines, surface water drainage systems, silt ponds, drainage channels, and water pumping and treatment infrastructure. The lands at the Application Site have been used historically primarily to produce milled peat. The Application Site occupies an area of approximately 2,637 hectares (ha), comprising primarily of cutaway bog and bare peat. The Application Site also include several buildings, yards, railway lines, and surface water drainage systems including silt ponds and drainage channels, and water pumping and treatment infrastructure.

Site preparation works including vegetation clearance and drainage insertion commenced in 1950 across all bogs, with industrial peat extraction and ancillary activities were undertaken from 1958 onwards. Peat extraction commenced across the Application Site in 1958 and continued for varying differing durations within the different bogs, as follows:

- Derryhinch Bog - peat extraction occurred from 1958–2017;
- Drumman Bog - peat extraction occurred from 1958–2018;
- Derryarkin Bog - peat extraction occurred from 1958 to between 1988 and 1991;
- Ballybeg Bog peat extraction occurred from 1958–2020; and
- Toar Bog where - peat extraction occurred from 1958–2018.

As outlined above, while peat extraction ceased at different times across the individual bogs, industrial peat extraction permanently ceased at the Application Site in June 2020.

Following the Peat Extraction Phase, Bord na Móna is required to implement Cutaway Bog Decommissioning and Rehabilitation Plans for the Application Site, which are required to be implemented under Condition 10 of the EPA IPC Licence P0501-01. The Bord na Móna Cutaway Bog Decommissioning and Rehabilitation Plans for the Application Site are included in Appendix 4.3 of Chapter 4, while the EPA IPC Licence P0501-01 is included in Appendix 4.19.

To align with the temporal scope of the activities at the Application Site, this Chapter evaluates the likely significant effects on important ecological features of biodiversity across the following three distinct Phases of the Project:

- 1. Peat Extraction Phase (July 1988 – June 2020)** - This phase covers peat extraction and all ancillary works at the Application Site from the required transposition of the European Communities Environmental Impact Assessment (EIA) Directive into Irish law in 1988 to the cessation of peat extraction at the bogs across the Application Site, which varied between 2017 and 2020 depending on the bog. As outlined above, July 1988 is the earliest date by which EIA would have been required, while 2020 is a precautionary and conservative date by which all peat extraction activity across all bogs comprising the Application Site is considered to have ceased. Some rehabilitation was also carried out in this phase at Derryarkin and Drumman. At Derryarkin, rehabilitation measures undertaken in 2001-2002, including drain-blocking and main-outfall modifications, facilitated the development of extensive wetland, fen and scrub habitats across areas of former cutaway bog. At Drumman, rehabilitation trials undertaken between 2010 and 2014, involving fertiliser applications, nursery crops and later grass-seed trials, successfully established vegetation cover and stabilised previously bare peat areas.
- 2. Current Phase (June 2020 – Present Day)** - This phase covers all works from the cessation of peat extraction in 2020 to present day, including the implementation of the Draft Cutaway Bog Decommissioning Plan under Condition 10 of EPA Licence P0501, which to date has included infrastructure decommissioning, removal of peat stockpiles, and ongoing site management measures such as water level control, environmental monitoring, and maintenance of drainage network to support future site rehabilitation efforts.
- 3. Remedial Phase (Future)** - This phase comprises the future implementation of the Cutaway Bog Decommissioning and Rehabilitation Plans for the Application Site, which will include measures such as hydrological restoration, habitat establishment, and ecological enhancement, aimed at supporting the long-term recovery, stabilisation, and sustainable after-use of the site following peat extraction.

This Chapter presents an assessment of the likely significant effects of each Phase of the Project on biodiversity taking into account the changing environmental conditions and the management actions at the Application Site.

Following this evaluation, residual effects on biodiversity are assessed with consideration of the implemented control measures, ongoing management actions, and proposed future rehabilitation activities.

The remainder of this Chapter is structured as follows:

- **Section 0 Statement of Authority** – provides an overview of the credentials, qualifications, and authority of the team responsible for preparing this Chapter. This statement serves to confirm that the assessments and ecological surveys have been conducted by competent professionals in compliance with relevant legal and regulatory standards.
- **Section 7.3 Assessment Methodology and Relevant Legislation** – provides an overview of the legislation, guidance and policy applicable. The section serves to highlight key elements that provide the framework for assessments undertaken in this Chapter, ensuring adherence to current best practices for the assessment of impacts and effects on biodiversity.
- **Section 7.4 Methodology** – provides an overview of the desktop study, scoping and consultations, and multidisciplinary field surveys used to gather ecological information of the Application site and surrounding area to establish baseline ecological conditions for the Application Site and its surrounding area.
- **Section 7.5 Methodology for Assessment of Impacts and Effects** – details the approach undertaken for the assessment of likely significant effects on biodiversity.
- **Section 7.6 Site Location and Activities Over Time** - describes the geographical context of the Application Site and outlines the historical activities that have shaped its ecological conditions.
- **Section 7.7 Ecological Baseline** – establishes the ecological baseline against which the assessment is conducted.
- **Section 7.8 Ecological Impact Assessment (Assessment of Significant Effects on Biodiversity)** - presents an assessment of likely significant effects on ecological important biodiversity receptors during the Project Phases. This impact assessment is undertaken in the absence of the measures proposed to minimise effects to biodiversity.
- **Section 7.9 Control Measures** - summarises the current control measures and management actions in place, as well as the planned rehabilitation measures proposed.
- **Section 7.12 Residual Effects** – presents an assessment of effects to biodiversity that persist after control actions, and management strategies, and planned rehabilitation measures proposed have been implemented.
- **Section 7.13 Cumulative and In-combination Effects** - examines potential cumulative and in-combination effects, evaluating how the peat extraction activities between 1988 and present day, current decommissioning, and future rehabilitation measures may interact with other ongoing or planned developments in the area, potentially amplifying or mitigating effects to biodiversity.
- **Section 7.14 Conclusion**– summarises the main findings of the assessment.

The following terms are used in this Chapter:

- The Derryhinch, Drumman, Derryarkin, Ballybeg, and Toar Bogs are referred to as the ‘**Application Site**’, as presented in Figure 7-1.



- The ‘**Project**’ refers to **all Phases** of the Project at the Application Site. The Phases of the Project, which are described in detail Chapter 4 - Project Description, are:
 - **Peat Extraction Phase (July 1988 – June 2020)**
 - **Current Phase (June 2020 – Present Day)**
 - **Remedial Phase (Future)**
- In this Chapter, following the geographic levels of importance outlined in the National Roads Authority (NRA) Ecological Impacts of National Road Schemes Rev. 2 (2009) (referred to herein as NRA EcIA Guidelines (2009)), species or habitats of significant ecological importance at a Local Importance (Higher Value), County, Regional, National, International level, and that may be affected by likely significant effects are defined as **Key Ecological Receptors (KERs)** and selected for detailed evaluation. Species and habitats of lower ecological importance are not considered KERs, although they are described and considered where relevant to the assessment.
- The **Zone of Influence (Zol)** for KERs refers to the zone within which potential effects may have occurred or are anticipated. The Zol differs depending on the sensitivities of particular receptors (habitats and species) and were assigned in accordance with best available guidance and through adoption of a precautionary approach.

Zone of Influence

The Zol is defined as the area over which ecological features may be affected by changes as a result of Project activities at the Application Site. The extent of the Zol area depends on the sensitivities of the receiving ecological features and wider environment to an environmental change, and therefore, may vary between ecological features (CIEEM, 2018 [Version 1.3 updated September 2024]). Accordingly, feature-specific Zols were established to ensure that all ecological receptors with the potential to be affected by Project activities were appropriately considered.

A desk study area broader than the anticipated Zols was adopted to ensure that all ecological constraints, designated sites and protected species with the potential to be affected by Project activities at the Application Site. Upon identification of the KERs through the desk study, receptor-specific Zols were established using a source-pathway-receptor (SPR). Under the SPR approach, an ecological effect can only occur where all three elements of the SPR linkage are present:

- **Source:** an activity, pressure or impact pathway associated with peat extraction and related activities that has the potential to result in an ecological effect;
- **Pathway:** a mechanism through which that effect could be transmitted from the source to an ecological receptor; and
- **Receptor:** a habitat, species, ecosystem, designated site or other ecological feature that may be affected by the identified pathway.

Where no credible SPR linkage was identified, the receptor was scoped out of further assessment. Where a plausible linkage was identified, the receptor was carried forward for detailed assessment. The resulting receptor-specific Zols were defined according to the nature of the potential effects and the characteristics of the receptors under consideration. The Zols applied to each receptor group and the rationale for their selection are presented in Table 7-1.



Table 7-1: Desk Study Zol for each Ecological Feature

Ecological Feature		Zol	Rationale
Designated sites	International sites	Variable, based on the extent of potential source-pathway-receptor linkages	The Zol for designated site was defined by the maximum extent of credible impact pathways of Project Activities at the Application Site, including hydrological, hydrogeological and ecological connectivity pathways. Consequently, sites beyond an initial desk study area were included where a potential pathway existed.
	National sites		
	Other designated sites		
Habitats and Flora	Terrestrial habitats or plant species	Application Site footprint and relevant desk study area	Habitat and flora surveys were undertaken within the Application Site footprint, while records of protected and notable plant species were obtained from desk study sources, including NBDC records from overlapping hectads. Professional judgement was applied to determine the relevance of these records to the assessment.
Mammals	Non-volant (e.g. Otter, <i>Lutra lutra</i>)	Application Site and connected habitats within the extent of potential impact pathways	Defined using professional judgement, species ecology and source-pathway-receptor linkages. For wide-ranging species, including otter, the Zol was informed by habitat connectivity and hydrological pathways rather than a fixed distance threshold.
	Volant (Bats)	2 to 10 km	Defined in accordance with published guidance and species-specific foraging and commuting ranges (Collins, 2016).
Amphibians	Smooth Newt (<i>Triturus vulgaris</i>) Common Frog (<i>Rana temporaria</i>)	10 km Irish Grid Square	Desk study records were obtained at the 10 km Irish Grid Square scale in accordance with standard ecological assessment practice and informed by professional judgement.
Reptiles	Viviparous Lizard (<i>Lacerta (Zootoca) vivipara</i>)	10 km Irish Grid Square	Desk study records were obtained at the 10 km Irish Grid Square scale in accordance with standard ecological

Ecological Feature		Zol	Rationale
			assessment practice and informed by professional judgement.
Terrestrial Invertebrates	Marsh Fritillary (<i>Euphydryas aurinia</i>)	10 km Irish Grid Square	Desk study records were obtained at the 10 km Irish Grid Square scale in accordance with standard ecological assessment practice and informed by professional judgement.
Aquatic Environment	Water quality: Hydromorphology; aquatic ecology.	Extent of hydrologically connected receiving waters downstream of the Application Site	The Zol was defined by the maximum extent of credible hydrological pathways from the Application Site and encompasses downstream watercourses and aquatic receptors that could potentially be affected.

7.2 STATEMENT OF AUTHORITY

This Chapter was authored by Senior Ecologist Dr. James Forde (B.Sc. (Hons), M.Sc., Ph.D., MCIEEM), and Ecologist Aaron McCormick (B.Sc. (Hons), M.Sc.).

James is Senior Ecologist and Technical Director of the TOBIN Environment and Planning (E&P) division. James holds a B.Sc. (Hons) and M.Sc. degrees in marine ecology, and a Ph.D. in ecology. James is also a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). James has almost 20 years' academic and environmental consultancy experience. He has an extensive understanding of ecology and appreciation of the objectives and mechanisms of national and international environmental legislation and policy. He has significant experience in preparing and reviewing ecological reports including Screenings for AA, NIS and Ecological Impact Assessment (EcIA) reporting, and EIAR. James has provided strategic technical and environmental advice for developments across a wide range of sectors, including onshore and offshore renewables, telecommunications, flood relief schemes, port and harbour developments, energy generation and transmission.

Aaron is an ecologist in TOBIN's E&P division. Aaron holds a B.Sc. (Hons) degree in Marine Science from the University of Galway (formerly National University of Ireland, Galway), and an M.Sc. degree in Risk, Resilience, and Sustainability from University College Dublin. Aaron has several years of post-graduate ecological and conservation experience. His research and work experience includes studying effects of anthropogenic alteration throughout river catchments in Ireland, marine benthic ecology surveys, marine demersal and pelagic fisheries surveying, transitional and freshwater fisheries surveying, and catchment-wide climate change related temperature change studies for UCD, the Marine Institute, and Inland Fisheries Ireland. He has experience in report preparation for state organisations and is trained in the preparation of AASR, NIS, and EIAR documents.

The baseline ecological surveys used to inform this remedial assessment of likely significant effects on biodiversity were conducted by a team of qualified ecologists with the relevant skills and experience to undertake the required surveys.

7.3 ASSESSMENT METHODOLOGY AND RELEVANT LEGISLATION

The assessment methodology for this Chapter follows the NRA 'Guidelines for Assessment of Ecological Impacts of National Road Schemes Rev. 2' (NRA, 2009) (herein referred to as the NRA EcIA Guidelines), with survey methodologies based on the NRA 'Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (2009) (herein referred to as the NRA Survey Guidelines). These NRA documents are now maintained by Transport Infrastructure Ireland (TII). While these guidelines relate to road schemes, these standard guidelines are recognised methodologies that ensure good practice regardless of the development type.

In addition, the Chapter has been prepared with reference to the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018; Version 1.3 update published 2024) (herein referred to as the CIEEM EcIA Guidelines), and the Environmental Protection Agency's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EIAR) (EPA, 2022) (herein referred to as the EPA EIA Guidelines).

Other guidance consulted included:

- Best Practice Guidance for Habitat Survey and Mapping. The Heritage Council (Smith, et. al., (2011).
- A Guide to Habitats in Ireland. The Heritage Council / NPWS reprint Fossitt, J.A. (2000).
- Birds of Conservation Concern in Ireland 4: 2020–2026 (Gilbert, et. al., (2021).
- Assessing Connectivity with Special Protection Areas (SPAs) Scottish Natural Heritage (SNH, now NatureScot) (2016).

In addition to the national and international legislation outlined in Chapter 1 – Introduction of this remedial EIAR, including the EIA Directive 2011/92/EU (as amended by 2014/52/EU) and the EU (Environmental Impact Assessment and Habitats) (No. 2) Regulations 2015 (S.I. No. 320 of 2015), this Chapter has been prepared having regard to with the following key pieces of legislation applicable to habitats, fauna, and water quality in Ireland:

- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) (as amended).
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (commonly referred to as the Habitats Directive).
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (commonly referred to as the Birds Directive).
- The Wildlife Acts 1976 to 2023 (as amended) (herein referred to as the Wildlife Acts).
- The Flora (Protection) Order 2022 (S.I. No. 235 of 2022).
- European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003).
- European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009).
- European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010).
- European Communities Environmental Objectives (Surface Waters) (Amendment) Regulations 2012 (S.I. No. 327 of 2012).
- European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2015 (S.I. No. 386 of 2015).
- European Union (Water Policy) Regulations 2014 (S.I. No. 350 of 2014).
- Planning and Development Acts 2000 (as amended 2024).
- Relevant fisheries legislation up to and including the Inland Fisheries Acts 1959-2017 (as amended).

The following legislation applies with respect to non-native species:

- Regulation 49 and 50 of European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended).

The following publicly available planning policies and strategy guidance documents below were also considered in the preparation of this assessment.

National

- Ireland's 1st National Biodiversity Plan 2002–2006¹
- Actions for Biodiversity 2011–2016: Ireland's National Biodiversity Plan²
- Ireland's 3rd National Biodiversity Action Plan³
- Ireland's 4th National Biodiversity Action Plan 2023-2030⁴
- Ireland's National Peatlands Strategy 2015⁵

Offaly County Development Plans

- Offaly County Development Plan 1967
- Offaly County Development Plan 1987
- Offaly County Development Plan (Draft) 1995
- Offaly County Development Plan 2003–2009
- Offaly County Development Plan 2009–2015⁶
- Offaly County Development Plan 2014 – 2020⁷
- Offaly County Development Plan 2021–2027⁸

Offaly County Action Plans

- Offaly Biodiversity Action Plan 2025–2030⁹

Meath County Development Plans

- Meath County Development Plan 1994
- Meath County Development Plan 2000 (Draft)
- Meath County Development Plan 2007 - 2013¹⁰
- Meath County Development Plan 2013–2019¹¹

¹ Available at: https://www.npws.ie/sites/default/files/publications/pdf/DAHGI_2002_NBP.pdf.

Accessed in July 2026

² Available at: <https://www.npws.ie/sites/default/files/general/national-biodiversity-plan-english.pdf>.

Accessed in July 2026

³ Available at: <https://www.gov.ie/en/department-of-housing-local-government-and-heritage/publications/irelands-4th-national-biodiversity-action-plan-20232030>. Accessed in July 2026

⁴ Available at: <https://assets.gov.ie/233057/f1a92f68-e668-498d-a56c-df777a19b549.pdf>. Accessed July 2026.

⁵ Available at:

<https://www.npws.ie/sites/default/files/publications/pdf/NationalPeatlandsStrategy2015EnglishVers.pdf>. Accessed July 2026.

⁶ Online copy not available. Hard copy location information available at National Library of Ireland: <https://catalogue.nli.ie/Record/vtls000300543/TOC>

⁷ Available at: <https://docslib.org/doc/8784760/offaly-county-development-plan-2014-2020>. Accessed July 2026

⁸ Available at: <https://www.offaly.ie/stage-4-final-plan/> Accessed July 2026

⁹ Available at: <https://www.offaly.ie/offaly-heritage-plan/offaly-biodiversity-action-plan/> Accessed July 2026

¹⁰ Available at <https://www.meath.ie/council/council-services/planning-and-building/development-plans/meath-county-development-plan/previous-development-plans/meath-county-development-plan-2007-2013>. Accessed July 2026

¹¹ Available at <https://countydevelopmentplan.meath.ie/adoptedplan/>. Accessed July 2026



- Meath County Development Plan 2021-2027¹²

Meath County Action Plans

- Meath Biodiversity Action Plan 2008–2012
- Meath Biodiversity Action Plan 2015–2020

Westmeath County Development Plans

- Westmeath County Development Plan
- Westmeath County Development Plan 1986
- Westmeath County Development Plan 1994
- Westmeath County Development Plan 2002–2008
- Westmeath County Development Plan 2008 - 2014¹³
- Westmeath County Development Plan 2014 - 2020¹⁴
- Westmeath County Development Plan 2021-2027¹⁵

Westmeath County Action Plans

- Westmeath Biodiversity Action Plan 2014–2020¹⁶
- Westmeath Biodiversity Action Plan 2025–2031¹⁷

7.4 METHODOLOGY

The following sections describe the methodologies used to establish ecological baselines for the Application Site and surrounding area: (i) the Peat Extraction Phase (July 1988 to June 2020), based on historical information relevant to the period of peat extraction, and (ii) the Current Phase (June 2020 to the Present Day).

7.4.1 Desk Study

The desk study undertaken included a review of available data pertaining to the Application Site and surrounding area including the following:

¹² Available at: <https://www.meath.ie/council/council-services/planning-and-building/development-plans/meath-county-development-plan> Accessed July 2026

¹³ Available at <https://www.westmeathcoco.ie/en/ourservices/planning/developmentplans/archivedplans/countydevelopmentplan2008-2014/>. Accessed July 2026

¹⁴ Available at: <https://www.westmeathcoco.ie/en/ourservices/planning/developmentplans/archivedplans/countydevelopmentplan2014-2020/>. Accessed July 2026

¹⁵ Available at <https://www.westmeathcoco.ie/en/ourservices/planning/developmentplans/countydevelopmentplan2021-2027/> Accessed July 2026

¹⁶ Available at <https://www.westmeathcoco.ie/en/ourservices/planning/biodiversity/westmeathbiodiversityactionplan2014-2020/>. Accessed July 2026

¹⁷ Available at <https://www.westmeathcoco.ie/en/ourservices/planning/biodiversity/westmeathbiodiversityactionplan2025-2031/>. Accessed July 2026



- Bord na Móna Cutaway Bog Decommissioning and Rehabilitation Plans (included in Appendix 4.3 of Chapter 4)
 - Derryhinch Bog - Draft Cutaway Bog Decommissioning and Rehabilitation Plan 2026
 - Drumman Bog - Draft Cutaway Bog Decommissioning and Rehabilitation Plan 2026
 - Derryarkin Bog - Draft Cutaway Bog Decommissioning and Rehabilitation Plan 2026
 - Ballybeg Bog - Draft Cutaway Bog Decommissioning and Rehabilitation Plan 2026
 - Toar Bog - Draft Cutaway Bog Decommissioning and Rehabilitation Plan 2026

Other sources also consulted to obtain information on the ecology of the Application Site and wider area included:

- Review of historic 6 inch and 25-inch maps of the Application Site and surrounding area available through Ireland's National Geospatial Data Hub¹⁸.
- Review of National Park and Wildlife Service (NPWS) data, including database of areas designated for nature conservation¹⁹, NPWS web-mapper and review of records from the NPWS Rare and Protected Species Database²⁰ for the hectads in which the Application Site is located, and Review of NPWS Article 17²¹ and Article 12²² reporting and mapping.
- Review of records from the National Biodiversity Data Centre (NBDC) database and web-mapper²³.
- Review of EPA datasets and mapping resources^{24, 25, 26}.
- Review of Inland Fisheries Ireland²⁷ (IFI) mapping and reports, where available.
- Review of data from the Geological Survey Ireland (GSI)²⁸.
- Botanical Society of Britain and Ireland (BSBI) database²⁹.
- Review of the Mammal Atlas³⁰.
- Review of Regional Red Lists for the Island of Ireland of Threatened Species³¹.

¹⁸ Available at: <https://www.geohive.ie/>. Accessed July 2026.

¹⁹ Available at <https://www.npws.ie/protected-sites>. Accessed in July 2026

²⁰ Available at: <https://www.npws.ie/maps-and-data>. Accessed July 2026.

²¹ Available at: <https://www.npws.ie/publications/article-17-reports>. Accessed July 2026

²² Available at: <https://www.npws.ie/status-and-trends-ireland%E2%80%99s-bird-species-%E2%80%93-article-12-reporting>. Accessed in July 2026

²³ Available at: <https://maps.biodiversityireland.ie/Map>. Accessed July 2026.

²⁴ Available at <https://www.epa.ie/>. Accessed in July 2026

²⁵ Available at: <https://gis.epa.ie/EPAMaps/>. Accessed July 2026.

²⁶ Available at: <https://www.catchments.ie/maps/>. Accessed July 2026.

²⁷ Available at: <https://opendata-ifigeo.hub.arcgis.com>. Accessed July 2026.

²⁸ Available at <https://www.gsi.ie/>. Accessed in July 2026

²⁹ Available at <https://database.bsbi.org/maps/>. Accessed in July 2026

³⁰ Collated by the National Biodiversity Data Centre from different sources, Atlas of Mammals in Ireland 2010-2015, accessed 22 July 2026 <https://maps.biodiversityireland.ie/Dataset/252>

³¹ Available at <https://www.npws.ie/publications/red-lists>. Accessed in July 2026



7.4.2 Scoping and Consultation

For the Project consultation requests were issued to a broad range of 53 statutory and non-statutory stakeholders between 9 and 11 June 2026. The consultees included government departments, local authorities, environmental bodies, infrastructure providers, prescribed bodies and non-governmental organisations with potential interests in the Project.

A full description of consultations undertaken are described in Section 2.4 of Chapter 2 Methodology of the remedial EIAR. Responses were received from ACP, the Department of Climate, Energy and the Environment (DCEE), the Geological Survey of Ireland (GSI), the Health & Safety Authority (HAS), Inland Fisheries Ireland (IFI), Meath County Council Heritage Office (MCCHO) and Transport Infrastructure Ireland (TII). No response was received from the remaining consultees. Any comments received were reviewed and have informed the preparation of the assessments for the Project, where relevant.

Table 7-2 summarises the consultation responses of relevance to the assessment of likely significant effects on biodiversity arising from the Project. In particular, the responses received from IFI and MCCHO were taken in account in the assessment of potential effects on European sites. The response addressed matters relating to aquatic ecology, protected species, hydrological pathways, ecological rehabilitation, and long-term habitat management.

Table 7-2: Scoping and Consultation Responses

Consultee Name	Date Consultation Letter Issued	Date Consultation Response Received	Summary of Response Received	Where Addressed in this Chapter
Inland Fisheries Ireland	11/06/2026	13/06/2026	An email response dated 13/06/2026 from Inland Fisheries Ireland (IFI) stated that the Yellow River at this site has poor status. It contains stocks of fish such as Atlantic Salmon, Brown Trout, Eel and Lamprey. A copy of Guidelines on Protection of Fishing During Construction works in and adjacent to waters (Inland Fisheries Ireland, 2016) was also provided.	Addressed through the aquatic baseline assessment, fisheries habitat assessment, water quality assessment, identification of aquatic Key Ecological Receptors (KERs) and assessment of potential effects on aquatic ecology and fisheries resources. In particular, Sections 7.7.2.4 Aquatic Surveys, 7.7.2.5 Aquatic Ecology, 7.8.2 Water Framework Directive Water Body Status, 7.9 Key Ecological Receptors, and Sections 7.10.3.2, 7.10.4.2 and 7.10.5.2 Effects on Water

Consultee Name	Date Consultation Letter Issued	Date Consultation Response Received	Summary of Response Received	Where Addressed in this Chapter
				Quality, Aquatic Fauna and Habitats.
Meath County Council Heritage Office (MCCHO)	11/06/2026	13/07/2026	In an email response dated 13/07/2026 the MCCHO suggested that it was appropriate for the EIAR to also include a Decommissioning Plan to outline: • Removal of Infrastructure: Plans for the removal, decontamination, or repurposing of ancillary infrastructure (e.g., railway lines, silt ponds, site workshops, and machinery). • Pollution Control: Measures to manage runoff and protect downstream water quality during and immediately after the decommissioning process. • Site Rehabilitation Measures: Details on how the bog will be restored or re-wetted (e.g., blocking drains, raising the water table) to promote the growth of peat-forming vegetation and reduce carbon emissions. • Long-Term Monitoring: A framework for long-term ecological and hydrological monitoring, including greenhouse gas flux, to ensure the site stabilizes as a functioning wetland or carbon sink. • Safety and Public Access: Outline areas that may be retained as	Addressed through the assessment of decommissioning, rehabilitation, pollution control, monitoring and ecological restoration measures, including the Cutaway Bog Decommissioning and Rehabilitation Plans. In particular, Section 7.1 Introduction (Current Phase and Remedial Phase), Sections 7.10.4 and 7.10.5 Assessment of Significant Effects during the Current Phase and Remedial Phase, Section 7.11 Control Measures, and Section 7.12 Residual Effects



Consultee Name	Date Consultation Letter Issued	Date Consultation Response Received	Summary of Response Received	Where Addressed in this Chapter
			undisturbed ecological refugia and other areas managed for public access that ensures safe access and egress.	

7.4.3 Field Surveys 2022 - 2026

The following section summarises the ecological baseline surveys undertaken at the Application Site.

The Application Site substantially overlaps with the proposed Derrygreenagh Wind and Solar Farm Project. Consequently, ecological survey data collected within these shared areas have been used to inform both the Derrygreenagh Wind and Solar Farm Project and the Substitute Consent application. These surveys included avifauna, habitat, flora and fauna assessments and provide comprehensive ecological information across the overlapping areas. Collectively, the Derrygreenagh Wind and Solar Farm Project and Application Site survey datasets provide a comprehensive baseline for the ecological assessments presented in support of the Substitute Consent application.

Table 7-3 lists the suite of ecological surveys undertaken by TOBIN ecologists at the Application Site between 2023 and 2026. Section 7.4.3.1 summarises the surveys undertaken while findings of the surveys are provided in Section 7.7.2.

Table 7-3: Summary of surveys used to inform this remedial Ecological Impact Assessment

Survey	Date
Ecology Survey Derryhinch Bog	Multidisciplinary Surveys 19/09/2023-20/09/2023, 15/04/2026
Ecology Survey Drumman Bog	Multidisciplinary Surveys 22/08/2023 – 23/08/2023, 28/04/2026 – 30/04/2026
Ecology Survey Derryarkin Bog	Multidisciplinary Surveys 14/08/2023 – 15/08/2023, 30/04/2026 – 01/05/2026
Ecology Survey Ballybeg Bog	Multidisciplinary Surveys 08/08/2023 - 14/08/2023, 27/04/2026 - 30/04/2026
Ecology Survey Toar Bog	Multidisciplinary Surveys 13/04/2026 - 17/04/2026
Aquatic Surveys	River Habitat Survey 12/06/2023 – 16/06/2023 June and July 2026

Survey	Date
	Water Quality Assessment 12/06/2023 – 16/06/2023 June and July 2026
	Electrofishing: 06/07/2026 – 10/06/2026
	White Clawed Crayfish Survey 15/06/2026 – 19/06/2026
	Environmental DNA (eDNA) Survey 06/07/2026
Bird Surveys	Surveys undertaken at Derryarkin Bog, Drumman Bog, Derryhinch Bog and Ballybeg Bog - Breeding Season 2024 Bird Surveys (April to September 2024) Winter Season 2024-2025 Bird Surveys (October 2024 to March 2025) Breeding Season 2025 Bird Surveys (April to September 2025)
	Surveys undertaken at Toar Bog: Winter Bird Surveys (December 2025 to March 2026) Breeding Bird Surveys (April to June 2026)
Marsh Fritillary Surveys	24/08/2023, 04/09/2023, 05/09/2023

7.4.3.1 Multidisciplinary Surveys

Multidisciplinary walkover survey was carried out in August 2023 by TOBIN ecologists. This survey was complemented by further visits in April-May 2026, again by TOBIN ecologists. The multidisciplinary field surveys were undertaken to characterise the ecological baseline of the Application Site, encompassing habitats, flora, invasive species, and faunal groups of conservation interest, including mammals and invertebrates.

7.4.3.1.1 Habitat and Flora

Habitat and flora surveys were undertaken by TOBIN ecologists across the Application Site on various dates between 2023 and 2026. Multidisciplinary ecological surveys were completed at Derryarkin Bog, Ballybeg Bog, Drumman Bog, Derryhinch Bog and Toar Bog to characterise habitats and flora present within the site and establish baseline ecological conditions. Survey dates are summarised in Table 7-3.

The study area for habitat surveys comprised the Application Site and adjoining lands. Surveys focused on peatland habitats, drainage features, watercourses, hedgerows, treelines, scrub, woodland, grassland and other habitats occurring within the Application Site.

Habitats were classified in accordance with the Heritage Council publication A Guide to Habitats in Ireland (Fossitt, 2000) and were assigned ecological importance following the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018; updated 2024). Particular attention was given to habitats of conservation importance, Annex I habitats, peatland habitats, invasive alien plant species, and habitats with the potential to support protected fauna species.



The objectives of the surveys were to establish the distribution and condition of habitats within the Application Site, identify habitats and flora of conservation significance, and provide baseline information to inform the impact assessment.

The findings of the habitat and flora surveys are presented in Section 7.7.2.1.

During the multidisciplinary ecological surveys searches were undertaken for Invasive Alien Species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended).

The findings of invasive alien species surveys are presented in Section 7.7.2.8.

7.4.3.1.2 Protected Species

As part of the multidisciplinary ecological surveys listed in Table 7-3 protected species surveys were undertaken by TOBIN ecologists on various date between 2023 and 2026.

The surveys focused on mammal species protected under the Wildlife Acts, the Habitats Directive and other relevant legislation, with survey effort informed by desk study findings, habitat suitability assessments and field observations. Surveys were undertaken concurrently with habitat surveys and included the inspection of suitable habitats and features such as drainage channels, watercourses, scrub, woodland, hedgerows, treelines and other habitats with the potential to support protected species.

The objectives of the protected species surveys were to establish baseline conditions, identify the presence or likely presence of protected species. Survey findings were used to inform the identification of ecological receptors and the assessment of potential impact pathways associated with the Project. Target species were assessed using recognised survey methodologies appropriate to the species concerned. Evidence such as direct sightings, field signs, tracks, feeding remains, burrows, holts, features and other indicators of species activity were recorded where encountered. The extent and quality of habitats suitable for protected species were also evaluated to inform the assessment of likely usage of the site. The findings of the surveys are presented in Section 7.7.2.6 below.

7.4.3.1.2.1 Non-volant Mammal Surveys

As part of the multidisciplinary ecological surveys listed in Table 7-3, surveys for mammal species protected under the Wildlife Acts, the Habitats Directive and other relevant legislation were undertaken, with survey effort informed by desk study findings, habitat suitability assessments and field observations. Surveys were conducted concurrently with habitat surveys and included inspections of drainage channels, watercourses, scrub, woodland, hedgerows, treelines and other habitats with the potential to support protected mammal specie

The surveys were undertaken to establish baseline ecological conditions, determine the presence or likely presence of protected species, and inform the identification of ecological receptors and potential impact pathways associated with the Project. During multidisciplinary walkover surveys, TOBIN ecologists carried out searches for non-volant mammals in accordance with the NRA Survey Guidelines (2009). Evidence of species activity, including direct sightings, tracks, prints, feeding remains, scat, spraints, burrows, holts, couches, dens and other field signs, was recorded where encountered. Habitat suitability and the extent of habitats capable of supporting protected species were also evaluated.

The findings of the surveys are presented in Section 7.7.2.6 below.

7.4.3.1.2.2 Marsh Fritillary Surveys

During the multidisciplinary surveys, areas supporting Devil's-bit Scabious (*Succisa pratensis*), the larval foodplant of Marsh Fritillary (*Euphydryas aurinia*), were identified and mapped. These areas were subsequently revisited in September 2025, which coincides with the optimal period for Marsh Fritillary larval web surveys. During late August to early October, larvae form conspicuous communal silken webs on their host plant, facilitating their detection prior to dispersal into smaller groups for overwintering. The survey was undertaken during dry weather conditions, with no rainfall and little to no wind, thereby providing optimal conditions for the detection and assessment of larval webs.

The survey methodology followed the NRA Survey Guidelines (2009) best practice guidance document. In addition, habitat suitability assessments were undertaken within areas of suitable habitat for the species. The surveys also aligned with the NBDC's Marsh Fritillary Monitoring Scheme³², which provides standardised protocols for assessing larval web presence and habitat quality to support conservation efforts. This involved an assessment of the vegetation characteristics at a requisite number of stops within the area of suitable habitat. Records of vegetation height, abundance of Devil's-bit Scabious, presence of structured vegetation, low invading scrub and stock grazing were noted within the relevant recording sheets.

The findings of the surveys are presented in Section 7.7.2.7 below.

7.4.3.2 Bird Surveys

The ornithological baseline has been informed by detailed surveys undertaken across the Application Site as part of the Derrygreenagh Wind and Solar Farm Project, together with supplementary surveys completed at Toar Bog. Survey effort comprised breeding and winter surveys undertaken between 2024 and 2026 within the Derrygreenagh Wind and Solar Farm study area, supplemented by targeted wintering and breeding bird surveys at Toar Bog between December 2025 and June 2026. Collectively, these surveys provide a comprehensive and representative baseline of ornithological conditions across the Application Site and surrounding receiving environment.

Summary reports for the Derrygreenagh Wind and Solar Farm surveys are provided in Appendix 7.1 through Appendix 7.4 below, while the Toar Bog survey report is presented in Appendix 7.50. Although survey effort at Toar Bog was more targeted than that undertaken within the main Derrygreenagh Wind and Solar Farm study area, it is considered sufficient to characterise the ornithological resource of this part of the Application Site.

The combined findings of the ornithological surveys undertaken for the Derrygreenagh Wind and Solar Farm Project and this Substitute Consent are presented in Section 7.7.2.5.

7.4.3.2.1 Proposed Derrygreenagh Wind and Solar Farm Project Breeding Season Surveys (April – September)

Breeding Season Surveys 2024 and Breeding Season Surveys 2025.

³² Detail available at <https://biodiversityireland.ie/surveys/marsh-fritillary-monitoring-scheme/>.



- Vantage Point (VP) surveys to record flight activity and spatial use of birds across the site and surrounding area.
- Breeding waterbird surveys at wetlands within the site and surrounding study area.
- Breeding raptor surveys targeting suitable nesting and foraging habitats.
- Breeding bird transect surveys to determine species distribution, abundance and breeding status.
- Woodcock transect surveys focusing on roding activity.
- Recording of incidental sightings of target and notable species.

7.4.3.2.2 Proposed Derrygreenagh Wind and Solar Farm Project - Winter Season Surveys (October – March)

Winter Surveys 2024 and 2025, and Winter Surveys 2025 and 2026.

- Vantage Point (VP) surveys to record flightlines, flight activity and site utilisation.
- Winter bird transect surveys to assess species distribution and abundance.
- Hen Harrier roost surveys targeting suitable roosting habitats.
- I-WeBS (Irish Wetland Bird Survey) / winter waterbird counts.
- Recording of incidental sightings.

7.4.3.2.3 Toar Bog - Winter and Breeding Season (December 2025 – June 2026):

- Scoping surveys to identify vantage points and transect routes.
- VP surveys.
- Transect surveys (including dusk/dawn surveys for crepuscular species).
- Targeted species Kingfisher surveys.
- Incidental observations of species of conservation concern.

7.4.3.3 Aquatic Surveys

Aquatic surveys were conducted by TOBIN between in June 2023 and again in June and July 2026. A detailed aquatic habitat and macroinvertebrate survey was conducted at 13 sites in 2026 and 18 sites (10 biologically sampled) in June 2023 (see Appendix 7. 6).

Electrofishing surveys were carried out by TOBIN ecologists between the 6-9th July 2026. Crayfish surveys were carried out 15-19th June and eDNA sampling was carried out on the 6th of July.

These were conducted at representative locations on watercourses draining the Application Site and within the wider study area selected for surveying. The study area for aquatic surveys is defined as the surface waters potentially affected by the proposed project, including watercourses within the proposed project site as well as those downstream of the proposed project with hydrological connectivity. A baseline aquatic ecological assessment was carried out at a total of n=14 representative aquatic survey site locations in 2026. These sites are located within the WFD watercourses: Castlejordan_020, Castlejordan_030, Yellow (Castlejordan)_010, Yellow (Castlejordan)_020, Yellow (Castlejordan)_030, Kinnegad_010, and Castletown Tara Stream_010 river waterbodies (RWB) relevant to the proposed project and downstream. The aquatic survey sites were located within the Yellow [Castlejordan]_SC_010, Figile_SC_020 and Boyne_SC_030 subcatchments.

These were on known watercourses mapped by the EPA/OSI. All aquatic survey sites were accessed using public roadways, forest tracks and across lands where permitted.

Aquatic surveys consisted of an evaluation of the aquatic habitats, fisheries assessment (fisheries habitat appraisal, salmonid nursery and spawning habitat), as per McGarrigle *et al.*, (2002), a biotic assessment using aquatic macroinvertebrates and an analysis of the biological water quality of the watercourse, invasive species presence and electrofishing for the presence/absence of protected fish species. Rare / protected / conservation interest aquatic species were searched for at each survey site. Field surveys were carried out during base flow conditions, where the flow of water within the stream or river has not increased from the contribution of direct runoff from rainfall.

The objective of the surveys was to provide the baseline conditions of the existing freshwater ecology and potential fisheries value of the riverine watercourses, specifically in terms of their importance for species of conservation importance which are listed in Annex II of the Habitats Directive, such as Atlantic Salmon (*Salmo salar*), Lamprey (*Lampetra spp.*) and White-clawed Crayfish (*Austropotamobius pallipes*) as well as salmonid nursery and spawning habitat.

Survey effort focused on both instream and riparian habitats at each aquatic sampling location. Surveys at each of these sites included a fisheries assessment (fisheries habitat appraisal), macrophyte and (where suitable) biological water quality sampling (Q-sampling), and electrofishing and eDNA. This approach informed the overall aquatic ecological evaluation of each site and ensured that any habitats and species of high conservation value.

7.4.3.3.1 River Fisheries Assessment

River fisheries assessment was carried out utilising elements of the approaches in the Fishery Assessment Methodology (O'Grady, 2006) and 'Ecology of the Atlantic Salmon' (Hendry & Cragg-Hine, 2003) to broadly characterise the river sites (i.e. channel profiles, substrata etc.).

A broad appraisal/overview of the upstream and downstream habitat at each aquatic site was undertaken to evaluate the wider contribution to salmonid and Lamprey spawning, to assess if the watercourse could support salmonids and to access the general fisheries habitat.

An assessment was made on the suitability of the habitat to support aquatic species of conservation concern listed in Annex II of the Habitats Directive (e.g. White-Clawed Crayfish, River Lamprey (*Lampetra fluviatilis*), Brook Lamprey (*Lampetra planeri*), Atlantic salmon and Freshwater Pearl Mussel (*Margaritifera margaritifera*). Suitable salmonid spawning and nursery habitats were assessed.

An evaluation of potential Lamprey habitats within the study area was made with reference to methodologies outlined in 'Ecology of the River, Brook, and Sea Lamprey' (Maitland, 2003) and also NPWS Irish Wildlife Manuals Lamprey surveys (O'Connor, 2007). A visual assessment was carried out on the habitat suitability for Lamprey such as slower flowing water, nursery areas of sandy silt beds, an assessment on potential barriers on migration route, potential spawning areas, suitable hiding places and clean spawning gravels over stretches of running water. Juvenile Lamprey (River/Brook Lamprey ammocetes) habitat was identified from the descriptions given in Maitland (2003).

7.4.3.3.2 Biological Water Quality Sampling

The water quality within each site was obtained from Q-values obtained at each accessible site from kick sampling as part of additional aquatic surveys in relation to the proposed project. Semi-quantitative sampling of benthic (or bottom dwelling) macroinvertebrates was undertaken at seven sites using standard EPA kick-sampling methods (Toner *et al.*, 2005). The Biological River Quality Classification System Quality Rating (Q) System (Toner *et al.*, 2005) was used to obtain a water quality rating and risk status for each site. The resulting species list was used to assign a Biotic Index value (Q-Value) to the sampled streams.

7.4.3.3.3 Fish Stock Assessment

Electrofishing surveys were carried out to establish the presence of support aquatic species of conservation concern listed on Annex II of the Habitat Directive (e.g. White-Clawed Crayfish, River Lamprey, Brook Lamprey and Atlantic Salmon).

Ten-minute electrofishing following the methodology set out by Beaumont (2016) and Matson *et al.*, (2018). The electrofishing methodology and technique also complied with the European Committee for Standardisation (CEN) guidelines for fish stock assessment in wadable rivers (CEN, 2003) and Section 14 licensing requirements. A single anode Smith-Root LR24 backpack (12V DC input; 300V, 100W DC output) and electrofishing dip nets were used to electrofish sites on watercourses in the vicinity of the proposed project. Electrofishing was conducted under license following a Section 14 application to the Department of the Environment, Climate and Communications (DoECC) to conduct the surveys.

7.4.3.3.4 Protected Aquatic Species Survey

White-clawed Crayfish habitat and presence were assessed at each survey site. An assessment of the habitat to support White-clawed Crayfish (*Austropotamobius pallipes*) was undertaken following methodologies outlined in 'Guidance on Habitat for White-clawed Crayfish' (Peay, 2002). This included a visual and hand search for suitable refuge such as boulders, crevices, burrows in the bank, the presence of a partial, or even a complete barrier, food source including leaf litter, instream macrophytes, aquatic invertebrates and fish and good water quality absent of pollution.

7.4.3.3.5 Environmental DNA

Environmental DNA sampling to detect the presence/absence of protected aquatic species including White-clawed crayfish, Atlantic Salmon (*Salmo salar*), Lamprey species, Freshwater pearl mussel (*Margaritifera margaritifera*) (FWPM) was carried out at four of the 14 sites.

7.4.3.3.6 Biosecurity Measures

Strict biosecurity measures were carried out during all surveys, with particular consideration made during the aquatic surveys. All equipment and PPE used was inspected and disinfected with 1% Virkon® solution prior to, and post-survey.

7.4.3.4 Survey Limitations

Seasonal factors that affect distribution patterns and habits of species were taken into account when conducting the field surveys that were undertaken to establish the current ecology of the Application Site.

Where required, surveys, studies, analysis, and reporting were conducted in accordance with appropriate guidelines and best practice, including European standards (CEN, 2003) and Inland Fisheries Ireland protocols. With the exception of electrofishing, the habitats and species surveyed were readily identifiable during site visits, allowing for comprehensive assessments, and no significant limitations were identified in this regard.

To address these constraints, survey methodologies were adapted as necessary, including the use of alternative approaches such as targeted sampling, reduced electrofishing effort (e.g. 5-minute Catch Per Unit Effort at constrained sites), or fisheries appraisal where electrofishing was not feasible (e.g. canal sections or deep watercourses).

To address these constraints, survey methodologies were adapted as necessary, including the use of a targeted 'spot-electrofishing' approach where electrofishing was conducted at discrete locations with adequate water depth rather than across entire river reaches.

Information gathered during the surveys described above provided information on the nature of the habitats present across the wider survey area, including modified river channels, areas affected by historical drainage, and locations with reduced hydromorphological heterogeneity. Using this information, it is possible to infer baseline ecological conditions at the Application Site. However, no detailed, site-specific ecology and habitat surveys from earlier periods are available to inform a direct comparison.

There are a number of limitations inherent to field-based surveying, in particular for bird surveys. These may relate to the availability of suitable weather conditions for completing surveys, with good visibility and limited wind or rain conditions of paramount importance. As such, when undertaking and completing fieldwork, careful consideration and planning was made to ensure optimal weather conditions during survey periods. Toar Bog was incorporated into the Application Site boundary at a later stage and, accordingly, supplementary ornithological surveys were undertaken between December 2025 and June 2026 to provide baseline information for this additional area. It is considered that there were no significant constraints, and the survey data presented herein provides a robust and representative baseline of the ornithology on the site and surrounding environments.

Notwithstanding the limitations referenced above, the overall ecological dataset provides a robust basis for characterising the surveyed areas of the Application Site.

7.5 METHODOLOGY FOR ASSESSMENT OF IMPACTS AND EFFECTS

The following sections outline the methodology used to identify ecological receptors and assess the potential impacts and effects of and ancillary activities, including rehabilitation, at the Application Site.

7.5.1 Likely Significant Effects Assessment

In accordance with the SPR conceptual model described in Section 7.1, the assessment considered the potential for peat extraction and associated activities at the Application Site to affect KERs through identifiable impact pathways. The assessment evaluated the relationship between the activities undertaken at the site, the mechanisms by which effects could occur, and the ecological receptors that could potentially be affected.

This framework provided the basis for identifying and assessing the likely significant effects on biodiversity associated with historic peat extraction, ongoing site management and decommissioning activities, and the implementation of future rehabilitation measures.

7.5.2 Key Ecological Receptors

The assessment herein followed a precautionary screening approach with regard to the identification of KERs following the NRA EcIA Guidelines (2009). Based on comprehensive desk study, initial site visits, stakeholder consultation and ecological field surveys, KERs likely to occur in the Zone of Influence (see Section 7.1) of the Project were identified. The KERs are those receptors of ecological importance that may be affected by likely significant effects. The KERs included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive and EU Birds Directive including Qualifying Interests (QI) of Special Areas of Conservation (SAC) and Special Conservation Interests (SCIs) of Special Protected Area (SPAs) within the likely Zone of Influence.
- Species protected under the Wildlife Acts 1976 to 2023 (as amended).
- Species protected under the Flora Protection Order 2015.

The importance of the ecological receptors identified was assessed using geographic importance levels (e.g., International, National, County, and Local) following the NRA EcIA Guidelines (2009). This ensured that only receptors of significant ecological importance were selected for detailed evaluation.

The ecological impacts and effects were characterised according to the CIEEM EcIA Guidelines (2018), considering factors such as magnitude, duration, extent, reversibility, and whether the effects were positive or negative.

The assessments herein also adhered to the EPA EIA Guidelines (2022) ensuring all significant ecological effects, including cumulative and residual effects, were identified and addressed comprehensively.

By integrating the established methodologies described in the guidelines above, this Chapter provides a thorough evaluation of the likely ecological impacts and effects, both in isolation and cumulatively, ensuring alignment with best practice standards in EcIA and EIA.

7.5.3 Determining Importance of Ecological Receptors

The importance of the ecological features identified within the Application Site and surrounding areas was evaluated following the methodology set out in Chapter 3 of the NRA EcIA Guidelines (NRA, 2009). These guidelines assign ecological receptors to one of five geographical scales, creating a hierarchical system for determining ecological value. The levels are defined as follows:

- **International Importance** applies to sites designated under the Natura 2000 Network (SACs, SPAs) or other globally significant areas like Ramsar sites, which support critical habitats or species.
- **National Importance** includes sites protected under Irish law (e.g., NHAs, proposed NHAs, Flora Protection Order 2015) that are rare, biodiversity-rich, or significant at a national level.

- **County Importance** covers ecological features of value within a county or region, such as County Biodiversity Areas or habitats important to regional ecological networks.
- **Local Importance (Higher Value)** refers to semi-natural habitats or species of local significance that support biodiversity and ecosystem services.
- **Local Importance (Lower Value)** includes common, widespread habitats and species with limited ecological significance beyond the immediate area.

Table 7-4 below provides detailed criteria for each level (NRA 2009).

In accordance with the NRA EclA Guidelines, only ecological receptors of at least *Local Importance (Higher Value)* are selected as KERs for detailed assessment. This rEIAR adopts that approach: receptors assessed as being of International, National, County, or Local Importance (Higher Value) are considered KERs where a source-pathway-receptor link exists. Receptors of Local Importance (Lower Value) are not considered KERs.

Table 7-4: Ecological Valuation (adapted from, and subject to the conditions of NRA, 2009)

Resource valuation	NRA Criteria
International Importance	• 'European Site' including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed SAC. • Proposed Special Protection Area (SPA). Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). Features essential to maintaining the coherence of the Natura 2000 Network. • Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • Biogenetic Reserve under the Council of Europe. • European Diploma Site under the Council of Europe.

Resource valuation	NRA Criteria
	Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	- Site designated or proposed as a Natural Heritage Area (NHA). - Statutory Nature Reserve. - Refuge for Fauna and Flora protected under the Wildlife Acts. - National Park. - Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); - Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: - Species protected under the Wildlife Acts; and/or - Species listed on the relevant Red Data list. - Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.
County Importance	- Area of Special Amenity. - Area subject to a Tree Preservation Order. - Area of High Amenity, or equivalent, designated under the County Development Plan. - Resident or regularly occurring populations (assessed to be important at the County level) of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; - Species protected under the Wildlife Acts; and/or - Species listed on the relevant Red Data list. - Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. - County important populations of species, viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared. - Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. - Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (Higher Value)	- Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; - Resident or regularly occurring populations (assessed to be important at the Local level) of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;



Resource valuation	NRA Criteria
	○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; ○ Species protected under the Wildlife Acts; and/or ○ Species listed on the relevant Red Data list. • Sites containing semi natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (Lower Value)	• Sites containing small areas of semi natural habitat that are of some local importance for wildlife; • Sites or features containing non-native species that is of some importance in maintaining habitat links.

7.5.4 Characterisation of Effects and Impacts

In this Chapter the ecological effects of the Project are classified in line with the CIEEM EcIA Guidelines (2018). This Chapter has also been prepared in accordance with the EPA EIA Guidelines (2022). The impacts are characterised using the headings outlined in the CIEEM EcIA Guidelines and applied as appropriate. A summary of the characteristics considered in assessments is provided below:

- **Positive or Negative:** Assessment of whether effect of a proposed development or project on the ecological receptor is beneficial or adverse.
- **Extent:** Description of the spatial area over which the effect occurs.
- **Magnitude:** Assessment of the size, amount, intensity, and volume of the impact quantified (if possible) in absolute or relative terms, such as the amount of habitat lost or the percentage change in a species population.
- **Duration:** Defining the time period over which the effect occurs, considering ecological characteristics and human timeframes.
- **Frequency and Timing:** Considering how often the impact occurs and its timing, noting that even small-scale impacts can be significant if repeated over time.
- **Reversibility:** Evaluating whether the effect can be undone within a reasonable timescale, which may vary between receptors.

7.5.5 Determining the Significance of Effects

The ecological significance of the Project's effects is determined using the precautionary principle, in line with the CIEEM EcIA Guidelines (2018). A 'significant effect' is one that meets or exceeds a threshold, either supporting or undermining biodiversity conservation objectives for the KERs or biodiversity overall. The objectives can be specific (e.g., for designated sites) or broad (e.g., national/local policies or biodiversity enhancement). Effects may be significant at scales ranging from international to local (CIEEM, 2018). Significance is assessed based on consideration of whether:

- Any processes or key characteristics of KERs will be removed or changed.
- There will be an effect on the nature, extent, structure, and function of important ecological features.
- There is an effect on the average population size and viability of ecologically important species.
- There is an effect on the conservation status of important ecological habitats and species.

The EPA EIA Guidelines (EPA, 2022) and the NRA EcIA Guidelines (NRA, 2009) were also considered when determining significance and the assessment is in accordance with those guidelines, with the terminology used in this Chapter for the determination of significance following the suggested language set out in the EPA Guidelines as shown in Table 7-5.

Table 7-5: Criteria for determining significance of effect, based on EPA EIA Guidelines (2022)

Effect Magnitude	Definition
Imperceptible effect	An effect capable of measurement but without noticeable consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate effect	An effect that alters the character of the environment that is consistent with existing and emerging trends.
Significant effect	An effect which, by its character, its magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound effect	An effect which obliterates sensitive characteristics.

As per NRA EcIA Guidelines (2009) and CIEEM EcIA Guidelines (2018) the following key elements should also be examined when determining the significance of effects:

- In the context of EcIA, '**integrity**' refers to the coherence of a site's ecological structure and function, enabling it to sustain its valued resources (NRA, 2009). The likely effects on integrity should be used to determine whether an impact is significant. Adverse changes to habitat extent, structure, or function, as well as impacts on species population size and viability, can compromise integrity by shifting the ecosystem to an unfavourable condition. If an impact threatens long-term stability for example through habitat loss, degradation, fragmentation, or disruptions to population dynamics, it is considered significant. The assessment should evaluate whether proposed activities could undermine the site's viability, coherence, or conservation objectives.

- A ‘**significant effect**’ is an effect that either supports or undermines biodiversity conservation objectives (CIEEM, 2018). Significant effects include impacts on the structure and function of designated sites, habitats, or ecosystems, as well as on the conservation status of habitats and species, encompassing changes in their extent, abundance, and distribution.
- **Conservation status** - An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status. According to CIEEM EclA Guidelines (2018) the definition for conservation status in relation to habitats and species are as follows:
 - Habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical area.
 - Species – conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

As defined in the EU Habitats Directive 92/43/EEC, the conservation of a habitat is favourable when:

- Its natural range, and areas it covers within that range, are stable or increasing.
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- The conservation status of its typical species is favourable.

The conservation of a species is favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats.
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future.
- There is and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis.

According to the NRA/CIEEM EclA guidelines, if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e. local, county, national, international).

7.5.6 Incorporation of Control Measures and Mitigation

Environmental controls and management measures implemented at the Application Site have evolved over time and can be broadly divided into two distinct phases.

Prior to the introduction of the EPA IPC (P0501-01) in 2000, Bord na Móna implemented a range of standard operating procedures and best practice measures to manage the environmental risks associated with peat extraction and ancillary activities, particularly in relation to water quality, suspended solids, and potential contamination.

Following the introduction of IPC licensing in 2000, the standard operating procedures and best practice measures were supplemented by the environmental controls, monitoring requirements, and management obligations prescribed under IPC Licence No. P0501-01.

Section 7.11.1 of this remedial EIAR outlines the pre-IPC operational procedures and best practice implemented by Bord na Móna to manage the environmental risks associated with peat extraction and ancillary activities.

Since the year 2000 all operations at the Application Site have been licenced under an IPC Licence (P0501-01) and have been subject to the conditions of that licence. The IPC Licence is described in Section 7.11.2 below and presented in full in Chapter 4 - Project Description - Appendix 4.1 (and here as Appendix D). Cutaway Bog Decommissioning and Rehabilitation Plans will be implemented across the Application Site to fulfil the requirements of Condition 10 of the IPC licence (see Appendix A). The key objective of the Applicant's peatland rehabilitation is environmental stabilisation. The implemented control measures and mitigation measures avoid or reduce or offset potential significant Residual Effects, post mitigation.

7.5.7 Remedial Impact Assessment Structure

The following section outlines the structure of the remedial impact assessment. This structured approach followed ensures a clear and systematic evaluation of potential impacts, mitigation measures, and Residual Effects, providing a comprehensive understanding of the environmental implications of the Project, while ensuring alignment with best practice standards of EcIA and EIA.

7.5.7.1 'Do Nothing' Scenario

As stated in the EPA EIA Guidelines (May 2022), the concept of 'Do-Nothing Effects' refers to the projected state of the environment in the future if the Project did not proceed. For the Project the assessment of the effects of the 'Do Nothing' scenario is presented in Section 7.10.1. The 'Do Nothing' scenario assessment considers the natural progression of environmental conditions at the Application Site in the absence of the Project, including any ongoing processes, existing land uses, and potential changes over time.

This Chapter of the remedial EIAR considers two 'Do-Nothing' scenarios:

- The first 'Do-Nothing' scenario is defined as the Project (as described in Section 4.2 of Chapter 4 - Project Description) having ceased at the Application Site in 1988.
- The second 'Do-Nothing' scenario assumes that Substitute Consent is not granted. In this case, the ongoing obligations under the IPC Licence would still apply, requiring Bord na Móna to continue implementing the Cutaway Bog Decommissioning and Rehabilitation Plans. The Applicant's obligations under the IPC Licence remain in place regardless of the outcome of the Substitute Consent process.

7.5.7.2 Remedial Impact Assessment

As outlined in Section 7.1 above the remedial impact assessment of the Project follows a phased evaluation approach to assess biodiversity effects throughout the Project's lifecycle. This approach ensures a clear understanding of the changing environmental conditions, and the control measures and management actions in place or proposed to be implemented. The assessments for each Phase of the Project are presented in the following:



- **Section 7.10.3 Peat Extraction Phase (July 1988 – June 2020)**
 - Considers impacts due to peat extraction and ancillary activities at the Application Site from when the EIA Directive was required to be transposed into Irish law in 1988 until the cessation of peat extraction in June 2020. The baseline for the assessment is established as the likely ecological condition at the Application Site in July 1988 following installation of drainage in 1950s, and peat extraction ongoing since at 1958. As much of the Application Site would have been drained by the 1988 baseline and characterised by dominant cutover bog, the habitats present then would have predominantly bare peat and cutover bog with small sections of remnant raised bog.
- **Section 7.10.3 4 Current Phase (June 2020 – Present Day)**
 - Considers impacts due to activities at the Application Site from when peat extraction was ceased in June 2020 until present day.
- **Section 7.8.5 Remedial Phase (Future)**
 - Considers impacts of planned implementation of rehabilitation measures proposed as part of the Cutaway Bog Decommissioning and Rehabilitation Plans.

7.5.7.3 Residual Effects

The CIEEM EclA Guidelines (2018) and EPA EIAR Guidelines (2022) categorises residual effects by significance, permanence, and reversibility, ensuring clear differentiation from unmitigated effects and transparent assessment of cumulative impacts.

The assessment of Residual Effects is presented in Section 7.12. The section presents an assessment of the Residual Effects (i.e. the impacts that remain after all mitigation, control, and best practice measures have been implemented). It evaluates the extent to which these measures have effectively minimised or eliminated potential adverse effects on biodiversity receptors, and other environmental factors across the Peat Extraction Phase (see Section 7.12.1), the Current Phase (see Section 7.12.2), and the Remedial Phase (see Section 7.12.3) of the Project.

After characterising the KERs and assessing the significance of effects from peat extraction and associated activities, including decommissioning and rehabilitation measures at the Application Site, specific additional mitigation measures may be identified to avoid and/or reduce the significance of these ecological effects. Following the implementation of these measures, a final assessment of the likely significant Residual Effects on KERs would be required, applying the criteria outlined in Table 7-5, where relevant.

7.5.7.4 Cumulative and In-combination Effects

Annex IV of the EIA Directive (2011/92/EU as amended by 2014/52/EU) requires that an EIAR provides a:

- *“description of the likely significant effects of the project on the environment resulting from...the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.”*

The EPA EIA Guidelines (EPA 2022) defines cumulative effects as:

- “The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects”.

A relatively minor effect on a biodiversity receptor caused by the Project in-isolation could result in a significant effect if it is added to by impacts from other projects. This Chapter identifies and provides an assessment of likely significant cumulative effects caused by the Project in combination with other projects.

With respect to cumulative effects CIEEM EclA Guidelines (CIEEM 2018) outlines the following:

- “Different types of actions can cause cumulative impacts and effects
 - Additive/incremental – in which multiple activities/projects (each with potentially insignificant effects) add together to contribute to a significant effect due to their proximity in time and space; and
 - Associated/connected – a development activity ‘enables’ another development activity e.g. phased development as part of separate planning applications. Associated developments may include different aspects of the Project which may be authorised under different consent processes. It is important to assess the potential impacts of the ‘project’ as a whole and not ignore impacts that fall under a separate consent process.”

Taking into account the above, along with the characterisation of the KERs and the description of effects, information regarding other relevant plans and projects has been gathered to assess the potential for cumulative effects and effect interactions between effects considering spatial and temporal scope of the Project.

The assessment of cumulative and in-combination effects is presented in Section 7.13.

7.6 SITE LOCATION AND ACTIVITIES OVER TIME

7.6.1 Site Location

The Application Site extends to approximately 2,637 ha and comprises lands at five bogs within the wider Derrygreenagh Bog Group. These bogs include Derryarkin Bog, located centrally within the Application Site, Ballybeg Bog to the south, Toar Bog to the west, Drumman Bog to the northeast, and Derryhinch Bog further to the northeast. Drainage works and clearance of vegetation commenced at the Application Site from the 1950s across all five bogs. Prior to this time the Application Site would have likely consisted of uncut raised bog, however, no survey data are available for this time period.

By 1988, the Application Site was well established as an industrial peat extraction area, with extensive drainage infrastructure and railway networks already in place following decades of peatland development and drainage works undertaken from the mid-twentieth century onwards. The formerly natural bog landscape was predominantly characterised by cutover bog, bare peat and drained peatlands, with large areas actively managed for milled peat extraction. The extensive drainage network facilitated peat extraction, while the railway infrastructure enabled the transport of harvested peat and reinforced the industrial character of the site.

From 1988 to 2020, the Application Site remained predominantly under industrial peat extraction management, although the extent of active extraction varied between the individual bogs as peat production ceased at different times. The spatial extent of peat production and the areas actively under extraction during different phases of the operational period are illustrated in Section 7.6.6. Throughout this period, cutover bog, bare peat and drained peatlands remained the dominant land cover across much of the site. However, localised changes in habitat composition occurred in areas where peat extraction had ceased and rehabilitation measures were implemented.

At Derryarkin Bog, peat extraction ceased between 1988 and 1991. Some rehabilitation was also carried out at Derryarkin between 2001-2002, including drain-blocking and main-outfall modifications, facilitated the development of extensive wetland, fen and scrub habitats across areas of former cutaway bog. At Drumman Bog, peat extraction ceased in 2018. Rehabilitation trials were undertaken at Drumman Bog between 2010 and 2014, involving fertiliser applications, nursery crops and later grass-seed trials, successfully established vegetation cover and stabilised previously bare peat areas. Peat extraction at Toar Bog until 2018, and 2017 at Derryhinch, while peat extraction remained ongoing at Ballybeg Bog until 2020. Notwithstanding these localised changes, peat extraction and ancillary activities remained the principal land use across the wider Application Site until extraction ceased in the final peat extraction areas in 2020.

At present, much of the Application Site comprises cutaway bog resulting from historic peat extraction. Since the cessation of peat extraction, a range of secondary habitats has developed across parts of the site, including wetland, scrub and woodland communities.

The Application Site is situated in three Water Framework Directive (WFD) catchments:

- Boyne WFD Catchment [07] covers most of the site, with surface water primarily draining into this catchment via the following 2 sub-catchments:
 - Yellow [Castlejordan]_SC_010 (encompassing most of the Application Site and receiving most site drainage)
 - Boyne_SC_030 (receiving drainage from a small northeastern section (approximately 54 ha) of Derryhinch Bog)
- Barrow WFD Catchment [14], specifically the following sub-catchment:
 - Figile_SC_020 (receiving drainage from a southern section of Ballybeg Bog).
- Lower Shannon 25A WFD Catchment, specifically the following sub-catchments:
 - Silver [Tullamore]_SC_010 (receiving drainage from a small section of Toar Bog to the southwest of the Application Site).
- BROSNA_SC_020 (receiving drainage from– a small section (0.6 ha) of Toar bog).

These catchments define the flow of surface water within and around the site, impacting local rivers, streams, and lakes. The WFD ensures that water quality in these catchments is regularly monitored and assessed against ecological and chemical standards.

Key surface water bodies within these catchments include:

- Silver (Tullamore) River network (headwaters of the Brosna River, a tributary of the River Shannon), located to the west and southwest of the Application Site and flowing generally southwest.

- Yellow (Castlejordan) River and Castlejordan River networks (tributaries of the River Boyne), located within and draining parts of Derryarkin, Drumman, Ballybeg and Toar Bogs, and flowing generally eastwards.
- Kinnegad River network (tributaries of the River Boyne), located to the northeast of the Application Site.
- Esker Stream network (tributaries of the Figile River, which ultimately drains to the River Barrow), located to the south of the Application Site and flowing east before turning south downstream of the Application Site.
- Lough Ennell located approximately 8 km north of the Application Site within the Brosna_SC_010 sub-catchment. Although a small portion of Toar Bog overlies the Clara Groundwater Body, which also extends beneath land surrounding Lough Ennell, no direct surface water connection exists between the Application Site and Lough Ennell.

7.6.2 Characteristics of the Application Site Bogs

The location and a summary of the bogs comprising the Application Site are outlined below.

Derryhinch Bog

Derryhinch Bog measures approximately 334 ha and is located about 6 km northeast of Rochfortbridge and 5 km southwest of Kinnegad, Co. Westmeath, within the townlands of Pass of Kilbride, Rattin, Derryhinch, and Baltigeer. The bog is located within a landscape of former cutaway peatlands and agricultural land. The M6 motorway forms the western boundary, with agricultural fields to the north, east, and south, and the Kinnegad Quarry complex located approximately 2 km to the east. Access is provided primarily from the north via a track connecting to the L5010 road, with an additional route along the eastern boundary from Baltinoran. An industrial rail line runs along the southern boundary and continues southwards to connect with Drumman Bog and the wider Derrygreenagh Bog Group rail network.

Two rail and two vehicular bridges facilitate connectivity between Derryhinch and Drumman Bog, which cross over the Milltown River near Derryhinch Bog and Mongagh River near Drumman Bog. The installation date of the vehicle bridges is unknown although it is likely that the majority were in place prior to the commencement of the formal planning system.

Derryhinch Bog is a gravity-drained bog. Much of the site currently comprises bare peat and cutaway bog, with milled peat production having ceased in 2017. Parts of the bog had been taken out of production considerably earlier and have undergone natural regeneration, resulting in the development of typical pioneer cutaway habitats, including poor fen, scrub and areas of regenerating vegetation along the motorway boundary. Several ridges and mounds of higher ground, together with areas of exposed gravel and gravelly till, occur within the cutaway landscape. At present, no extraction related cutaway areas are of sufficient scale to warrant targeted active management.

Milled-peat extraction at Derryhinch ceased in 2017.

Drumman Bog

The extent of the Application Site within Drumman Bog measures approximately 830 ha and is located east of the R400 and Derryarkin Bog, approximately 2 km east of Rochfortbridge and 5km north of Rhode at its closest point, within the townlands of Farthingstown, Drumman, Derrygreenagh, Knockdrin, Garr, Carrick, and Corbetstown. The site comprises a former cutaway bog situated on the border of Counties Offaly and Westmeath, with the Mongagh River delineating the county boundary, and the Substitute Consent site extending to lands both north and south of the river. A historic industrial rail track links Drumman Bog to Derryhinch Bog to the northeast, and an existing forestry plantation is located within the boundary to the north of the Mongagh River.

Certain lands within the wider area have existing planning permissions but are excluded from the Substitute Consent application boundary and are considered only in the cumulative effects assessment (see Section 7.13), including permitted sand and gravel extraction pits (Offaly CC ref: 01/365; Westmeath CC ref: 01/444), a 2019 extension to these pits (Offaly CC ref: 19/25), a biomass storage facility granted retention in 2021 (Offaly CC ref: 20/329), and a weighbridge and control rooms permitted in 2018 (Offaly CC ref: 18/209).

Derrygreenagh Works is also excluded, having been constructed prior to the Planning and Development Act 1963, as is the consented Derrygreenagh Power Plant which was consented by ACP in April 2026 (ACP ref: 319023). These lands fall outside the Substitute Consent boundary and are not assessed within this remedial AASR other than on an in-combination basis.

Milled-peat extraction continued on part of Drumman Bog until 2018, while large areas have been out of production since the early 1990s and are now considered cutaway. Approximately 8% of the cutaway in the northern section was developed by Coillte as a conifer plantation in the 1990s, comprising Lodgepole Pine (*Pinus contorta*), Sitka Spruce (*Picea sitchensis*), Scots Pine (*Pinus sylvestris*), Norway Spruce (*Picea abies*), and Japanese Larch (*Larix kaempferi*). Some areas experienced tree failure due to wet conditions and poor soil nutrient status, while others remain stable. Rehabilitation trials were carried out on 19ha of bare-peat cutaway in the north, stabilising and re-vegetating these areas.

Drumman is a gravity-drained bog. Large parts of the cutaway are naturally regenerating, with pioneer wetlands, including developing reedbeds, forming where a main outfall was blocked in 2005, leading to raised water levels and re-wetting. Drier areas support birch scrub, woodland, and pioneer poor-fen habitats. Exposed gravel underlying former peat is colonised by species such as Blue Fleabane (*Erigeron acris*).

Bare peat still forms a significant portion of ground cover. This peat consists of *Phragmites*-layered material over substantial gravel deposits, making natural colonisation and tree establishment particularly difficult. The substrate is prone to drying and mobility during summer, which slows successional development compared to most other cutaway bogs. Some localised basins hold temporary winter water but dry to bare peat in summer due to rapid percolation through underlying gravel, resulting in significant seasonal water-level fluctuations that constrain vegetation establishment. Rehabilitation trials using fertilisers and nurse-crops have successfully created vegetation cover in parts of the bare-peat areas.

Between 2010 and 2014, a series of rehabilitation trials were implemented at Drumman Bog, including the application of fertiliser, nursery crop establishment and subsequent grass-seed trials. These measures successfully promoted vegetation establishment and facilitated the stabilisation of previously exposed bare peat surfaces.

Derryarkin Bog

The extent of the Application Site within Derryarkin Bog measures approximately 400 ha and is located on the boundary of Counties Westmeath and Offaly, approximately 5 km east of Tyrellspass and 3 km south-southeast of Rochfortbridge, within the townlands of Derryarkin, Derrygreenagh, Farthingstown, Kiltotan and Collinstown, Rathincuill, Rathgarrett, and Bunsallagh. It comprises a former cutaway bog and is defined within the Application Site by three distinct parcels of land: an access track between Toar and Derryarkin Bog, and lands to the east and west of the existing sand and gravel extraction pits.

Following peat extraction, part of the central area was developed as a sand and gravel extraction pit permitted in 2001 (Offaly CC ref: 01/365; Westmeath CC ref: 01/444). Access to the site is primarily from the R400 via an existing track serving the extraction area, office, and weighbridge, with a secondary access point approximately 660m southeast of Derrygreenagh Works. Historic rail access also connects the site southwards to Toar Bog, with some rail infrastructure remaining along the southwestern and southeastern boundaries of the extraction pit.

A number of permitted developments fall outside the Application Site boundary and are considered only in terms of cumulative effects (see Section 7.13), including the sand and gravel extraction pit, a concrete batching plant (Offaly CC ref: 011163), a blacktop (asphalt) plant (Offaly CC ref: 05/1113), and a motocross facility permitted in 2011 (refs: 10/4078 and 10/391). The consented Derrygreenagh Power Plant (ACP Ref: 319023) is also located outside the Application Site boundary.

The surrounding landscape includes a forestry plantation to the north within the Application Site boundary, while lands to the south (outside Applicant's ownership) have been developed for agricultural, industrial, and quarry-related uses, including facilities operated by Kilmurray Precast Concrete Ltd. The Yellow River Wind Farm, comprising 29 turbines, is located nearby, with the nearest turbine approximately 115m southwest of the Application Site.

Industrial milled-peat extraction ceased on Derryarkin in the 1990s. Large areas of cutaway developed subsequently, with scrub establishing in western sections and re-wetted wetlands forming to the southeast following drain-blocking and main-outfall modifications in 2001–2002 as part of rehabilitation works. Birch (*Betula sp.*) scrub, pioneer poor fen and small wetland complexes have since developed in this area, although substantial areas of bare peat remain.

A significant portion of the site has been developed as a Coillte conifer plantation since the 1990s, including cutaway north of the site and northeast of the R400. These plantations comprise Sitka Spruce and Lodgepole Pine and are generally of poor condition, with tree quality ranging from moderate to severely stunted or dying.

Large areas of Derryarkin and neighbouring Drumman Bog have been developed for sand and gravel extraction since 2001–2002 (Offaly CC Ref. 01/365; Westmeath CC Ref. 01/444). An Environmental Impact Statement (EIS) was prepared for this development.

The former gravel pit now contains a large quarry lake (approximately 32ha), surrounded by tall gravel piles, levelled extraction areas and spoil mounds that are slowly revegetating. Part of the extraction area extends into the former conifer plantation. A private tarred road connects the quarry to the R400. Much of the site is zoned by Bord na Móna for continued or future expansion of sand and gravel extraction.

The remainder of Derryarkin is cutaway peatland supporting a mosaic of pioneer habitats, including pioneer poor fen, small open-water pools, birch scrub and wetland complexes. Several higher cutaway fields remain largely unvegetated, and abandoned stockpiles are slowly colonising. Exposed gravel underlying former peat is now colonised by species such as Blue Fleabane. Bare peat remains widespread, composed of *Phragmites*-layered material over gravel, a substrate known to be difficult for natural colonisation and tree establishment. Large areas have remained unvegetated for over 20 years. Localised basins hold temporary winter water but dry rapidly in summer due to high percolation through the underlying gravel.

Rehabilitation measures implemented at Derryarkin between 2001 and 2002, including drain blocking and modifications to the main outfalls, promoted the establishment of extensive wetland, fen, and scrub habitats within areas of previously cutaway bog.

Ballybeg Bog

The extent of the Application Site within Ballybeg Bog measures approximately 673 ha and is located about 5 km southeast of Rochfortbridge and 2 km west of Rhode, County Offaly, adjoining the southeastern boundary of Derryarkin Bog and situated entirely within County Offaly, in the townlands of Derryarkin, Ballybeg, Derrygreenagh, Derryiron, Coolcor, Clonin, Barrysbrook, Toberdaly, and Togher. It comprises a former cutaway bog and forms the southernmost of the five bog units at the Application Site, with the application boundary consisting of two distinct land parcels located to the east and west of the consented Derrygreenagh Power development (application reference 319023).

Historically, access to Ballybeg Bog was provided from the north via Derryarkin Road, which connects to the R400, and from the east via a separate connection to the R400. The site was formerly served by an extensive industrial rail network forming part of the BnM system, with lines entering from Derryarkin Bog to the north, crossing Derryarkin Road and continuing south toward the former Rhode Power Station, approximately 300 m west of the bog, and further linking to other bogs and the Croghan Briquette Factory located approximately 5 km to the south.

Ballybeg Bog is located within a predominantly rural landscape characterised by agricultural, quarrying, and energy-related land uses. The R400 defines the eastern boundary, while the L1010 borders the southern edge, and surrounding lands comprise agricultural fields interspersed with renewable energy developments, quarries, and rural dwellings. Croghan Hill lies approximately 850m to the west. The Yellow River Wind Farm is located on either side of the bog, with the nearest turbine approximately 135 m away. A solar photovoltaic development is situated to the east, having received planning permission from Offaly County Council in 2016 and 2019 (refs: 16/246 and 19/194).

Bord na Móna began development at Ballybeg in 1950, with peat extraction commencing in 1958 and ceasing in 2020. Ballybeg is part of a group of Bord na Móna bogs including Derryarkin to the north and Cavemount to the south. The most southern area of the site lies adjacent to the Grand Canal pNHA, although none of the Bord na Móna owned lands are designated. Ballybeg is a pumped bog with the main pumps located near the centre, discharging through a drainage system and silt ponds to the Yellow River via a tributary.

The Coolcor Stream, a canalised tributary of the Yellow River, bisects the bog flowing west to east and is assigned to the Castletown Tara Stream_010 waterbody.

A large area in the northern part of the bog has been out of production for some time. Cutaway maturity decreases southwards, where areas likely ceased production later. The cutaway supports a complex mosaic of Birch scrub, dry grassland and poor fen dominated by Soft Rush (*Juncus effusus*), interspersed with significant areas of bare peat and zones where scattered Soft Rush grows among exposed peat. The north-east section is used for gravel extraction for railway-grade material and contains a series of old and recent spoil heaps.

Approximately 60 ha of cutaway east of the main railway line were planted with Alder (*Alnus glutinosa*) as a biomass trial for East Offaly Power. The southern half of the site remains dominated by bare peat associated with milled-peat fields.

Toar Bog

The extent of the Application Site within Toar Bog measures approximately 400 ha and is located entirely in County Westmeath, approximately 2 km south of Tyrrellspass, within the townlands of Rathgarrett, Montrath, Pallasboy, Killavally, and Cornaher. The site lies east of the M6 motorway and the L1024 road, west of the L1113 road, and north of the Mullagharush, Montrath, and Pallasboy townlands, and is the most westerly of the five bogs included in this Substitute Consent application.

The bog comprises a predominantly cutaway landscape, historically used exclusively for milled peat extraction from 1958 until its cessation in 2018, and is characterised by an extensive network of north-south oriented drainage channels. It supports a mosaic of bare peat, partially revegetated areas, and milled fields at varying stages of regeneration, along with smaller areas of trees, scrub, internal roads, yard areas, and a remnant raised bog section at its southern extent, which slightly encroaches into County Offaly. Drainage commenced in 1950, and by 1973 the bog was under active peat extraction, with five silt ponds and five surface water emission points recorded by 1988. The site remains connected to the wider Derrygreenagh network a service road (approximately 3km) linking it to the southwestern extent of Derryarkin Bog, and historic mechanised peat harvesting has resulted in a fragmented bog surface.

Access to Toar Bog is provided from the north via the L1113 Ballykilmore Road, with a secondary access point to the east via the L1113/L1019 Derrycoffey Road, which was consented in 2012 to facilitate peat out-loading activities (Westmeath CC application reference 124018). Historic industrial rail infrastructure runs along the northern boundary, extending eastwards and northeastwards to Derryarkin Bog, including a rail crossing over the L1113 permitted in 1983; parts of this network lie within the boundary of a consented biomass storage facility and are therefore excluded from the Substitute Consent application area.

A number of developments fall outside the Application Site boundary and are considered only in terms of cumulative effects (see Section 7.13), including the Toar biomass storage facility (granted retention permission in 2020 and subsequent permission with revised conditions in 2021, valid to 2030 – ACP reference 309112), a consented access track for peat out-loading (Westmeath CC application ref: 124018).

7.6.3 Application Site Connectivity to European Sites (SACs and SPAs)

As part of the remedial AASR which accompanies the substitute consent application, potential ecological, hydrological and hydrogeological pathways between the Application Site and European sites were assessed to determine whether SPR linkages existed. All European sites for which a potential SPR linkage was identified were considered during the AA Screening process.

Potential SPR linkages were identified for 13 European sites, which were subsequently considered in the AA Screening process. These comprised 11 sites identified within the initial 15km screening area and two additional SACs identified through refinement of the definitive Zol. The 13 sites were:

- **SACs**
 - Raheenmore Bog SAC [000582]
 - Split Hills and Long Hill Esker SAC [001831]
 - Mount Hevey Bog SAC [002342]
 - Lough Ennell SAC [000685]
 - Wooddown Bog SAC [002205]
 - River Boyne and River Blackwater SAC [002299]
 - Clara Bog SAC [000572]
 - Charleville Wood SAC [000571]
 - The Long Derries, Edenderry SAC [000925]
 - River Barrow and River Nore SAC [002162]
 - River Shannon Callows SAC [000216]
- **SPAs**
 - Lough Ennell SPA [004044]
 - River Boyne and River Blackwater SPA [004232]

Following the screening assessment, likely significant effects could not be excluded for certain QIs and SCIs of four European sites, whereas likely significant effects on the QIs and SCIs of all remaining European sites were objectively excluded. The European sites, together with the relevant QIs and SCIs for which likely significant effects could not be excluded, were therefore screened in and brought forward for detailed assessment in the remedial NIS. Table 7-6 list the relevant QIs and SCIs and their associated European sites considered further in the remedial NIS, alongside site distances and the year that the site was designated. The remedial NIS includes an assessment of whether the Project, either alone or in combination with other plans or projects, would give rise to adverse effects on the integrity of these European sites. A summary of the conclusions of the remedial NIS is presented in Section 7.8.3.1 below.



Table 7-6: Relevant European Sites

Site name [Site code]	QI/ SCI for which significant effect could not be excluded	Site Distance (as the crow flies) from Application Site	References (accessed February 2026)	Year Designated
River Boyne and River Blackwater SAC [0002299]	• River Lamprey (<i>Lampetra fluviatilis</i>) [1099] • Atlantic Salmon (<i>Salmo salar</i>) [1106] • Otter (<i>Lutra lutra</i>) [1355] • Alkaline fens [7230] • Alluvial forests (<i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>) [91E0]*	9.34 km north east	(NPWS, 2021a) ³³	2003
River Barrow and River Nore SAC [0002162]	• Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) [1016] • Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1029] • White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092] • Sea Lamprey (<i>Petromyzon marinus</i>) [1095] • Brook Lamprey (<i>Lampetra planeri</i>) [1096] • River Lamprey (<i>Lampetra fluviatilis</i>) [1099] • Twaite Shad (<i>Alosa fallax</i>) [1103] • Atlantic Salmon (<i>Salmo salar</i>) [1106] • Otter (<i>Lutra lutra</i>) [1355] • Killarney Fern (<i>Trichomanes speciosum</i>) [1421] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] • Hydrophilous tall herb fringe communities [6430] • Alluvial forests (<i>Alnus glutinosa</i>, <i>Fraxinus excelsior</i>) [91E0]*	19.56 km south	(NPWS, 2025) ³⁴	1998
Lough Ennell SPA [0004044]	• Pochard (<i>Aythya ferina</i>) [A059] • Tufted Duck (<i>Aythya fuligula</i>) [A061] • Coot (<i>Fulica atra</i>) [A125]	7.83 km west	(NPWS, 2024) ³⁵	1995

³³ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002299.pdf

³⁴ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002162.pdf

³⁵ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004044.pdf



Site name [Site code]	QI/ SCI for which significant effect could not be excluded	Site Distance (as the crow flies) from Application Site	References (accessed February 2026)	Year Designated
River Boyne and River Blackwater SPA [0004232]	Kingfisher (<i>Alcedo atthis</i>) [A229]	9.34 km north east	(NPWS, 2024) ³⁶	2010

7.6.4 Application Site Connectivity to National Sites – NHA and pNHAs

As part of the ecological assessment, potential ecological, hydrological and hydrogeological pathways between the Application Site and nationally designated National Heritage Areas NHAs ecological sites and proposed National Heritage Areas (pNHAs) for which a potential SPR linkage was identified were considered during the assessment process.

Potential SPR linkages were identified for 26 nationally designated sites, comprising seven NHAs and 19 pNHAs. The sites considered were:

- **NHAs**
 - Black Castle Bog NHA (000570)
 - Cloncrow Bog (New Forest) NHA (000677)
 - Wooddown Bog NHA (000694)
 - Molerick Bog NHA (001582)
 - Nure Bog NHA (001725)
 - Daingean Bog NHA (002033)
 - Milltownpass Bog NHA (002323)
- **pNHAs**
 - Ballina Bog pNHA (000390)
 - Charleville Wood pNHA (000571)
 - Clara Bog pNHA (000572)
 - Raheenmore Bog pNHA (000582)
 - Woodfield Bog pNHA (000586)
 - Lough Ennell pNHA (000685)
 - Lough Sheever Fen / Slevin's Lough Complex pNHA (000690)
 - Ballyduff Esker pNHA (000885)
 - Derrygolan Esker pNHA (000896)
 - Rahugh Ridge (Kiltobber Esker) pNHA (000918)
 - The Long Derries, Edenderry pNHA (000925)
 - Ballynabarny Fen pNHA (001573)
 - Mount Hevey Bog pNHA (001584)
 - Ardan Wood pNHA (001711)
 - Murphy's Bridge Esker pNHA (001775)
 - Ballyduff Wood pNHA (001777)

³⁶ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004232.pdf



- Split Hills and Long Hill Esker pNHA (001831)
- Royal Canal pNHA (002103)
- Grand Canal pNHA (002104)

Section 7.8.3.2 below provides a baseline description and screening appraisal of nationally designated biodiversity sites (NHAs and pNHAs) within the study area and wider hydrologically connected catchments.

7.6.5 Application Site Connectivity to Ramsar Site

Within the initial 15 km screening area, two Ramsar Wetland of International Importance were identified:

- Lough Ennell Ramsar Site [848]
- Raheenmore Bog Ramsar Site [417]

Lough Ennell Ramsar Site

Lough Ennell was designated as a Ramsar Wetland of International Importance on 7 June 1996 (Site No. 848), while Raheenmore Bog was designated on 6 December 1988 (Site No. 417). The Lough Ennell Ramsar Site (Site No. 848) substantially overlaps with the Lough Ennell SPA (Site Code 004044). The Ramsar designation recognises the international importance of Lough Ennell as a wetland supporting significant populations of wintering waterbirds, including species that also form part of the SPA qualifying interests. The Ramsar Information Sheet identifies the site's importance for wintering waterfowl and notes that the site is designated as a Natura 2000 Special Protection Area due to its important populations of Pochard, Tufted Duck and Coot.

Given the substantial geographic overlap between the Ramsar Site and SPA, and the strong correspondence between their ecological interests, particularly in relation to wetland habitats and wintering waterbirds, the assessment of impacts on the SPA is considered representative of, and applicable to, the Ramsar Site. Potential impact pathways affecting hydrology, water quality, disturbance, habitat loss or fragmentation would operate similarly for both designations and would affect the same wetland ecosystem and waterbird assemblages. Accordingly, a separate detailed assessment of the Lough Ennell Ramsar Site is not considered necessary, and the conclusions of the Lough Ennell SPA assessment are considered sufficient to determine likely effects on the Ramsar Site.

Raheenmore Bog Ramsar

Raheenmore Bog Ramsar Site (Site No. 417) and Raheenmore Bog SAC (Site Code 000582) encompass the same raised bog ecosystem and are designated for closely related nature conservation objectives.

The Raheenmore Bog Ramsar designation recognises the international importance of the site as a classic example of a Midland raised bog developed within a small basin on the catchment divide between two major river systems. The site supports characteristic raised bog vegetation, including a good cover of Sphagnum mosses, and contains peat deposits up to 15 m deep, making it the deepest known raised bog in Ireland.

The overlapping Raheenmore Bog SAC protects the Annex I habitats Active Raised Bog [7110], Degraded Raised Bog still capable of natural regeneration [7120] and Depressions on Peat Substrates of the *Rhynchosporion* [7150], which represent the principal ecological features contributing to the ecological character and international importance of the Ramsar Site.

The assessment undertaken for Raheenmore Bog SAC concluded that no SPR linkage exists between the Proposed Development and Raheenmore Bog. In the absence of a viable impact pathway, there is no mechanism by which the Proposed Development could affect the ecological character, hydrology, habitats, or conservation interests of the Ramsar Site. Accordingly, no impacts on Raheenmore Bog Ramsar Site are predicted.

7.6.6 Overview of Peat Extraction Activity at the Application Site

Understanding the historical pattern of land use within the Application Site is important in establishing how the bog has changed over time and in providing context for its current condition. Historical land use within the Application Site has been categorised based on the presence or absence of drainage and active peat extraction activities at the time of each assessment. The land-use categories are defined as follows:

- **Subject to Peat Extraction** – extent of area in that assessment year that was subject to active peat extraction.
- **Neither Drained nor Subject to Peat Extraction** - extent of area in that assessment year that were undrained and had not subjected to peat extraction.
- **Drained - Not Subject to Peat Extraction** - extent of areas in that assessment year that had been drained but were not subject to active peat extraction

Figure 7-2 through Figure 7-6 illustrate the extent of historical land-use areas within the Application Site in 1973, 1988, 1995, 2004 and 2020 providing a series of temporal snapshots that demonstrate the evolution of land use across the site. Table 7-7 summarises the estimated extent of each historical land-use category within the Application Site at these time intervals.

The mapping and table provide context for the historical evolution of land use across the Application Site. The changes in land use reflect the progressive development and expansion of peat extraction activities across the bogs, followed by their gradual cessation of peat extraction across the bogs: where extraction ceased at Derryarkin Bog between 1988 and 1991, Derryhinch in 2017, Drumman and Toar in 2018, and Ballybeg in 2020.

The temporal changes in the land-use categories illustrate the evolution of the bog landscape over time and provide important context for understanding the factors that have influenced the current ecological condition of the Application Site. In particular, the declining extent of areas subject to peat extraction, coupled with the increasing extent of areas no longer actively worked, illustrates the progressive transition of the Application Site from active peat production to post-extraction. The cessation of extraction pressures and associated disturbance allowed natural ecological succession to proceed across portions of the site, resulting in the gradual colonisation of formerly worked peat surfaces by pioneer vegetation, including rushes (*Juncus* spp. and *Luzula* spp.), scrub, and other early successional plant communities.

Areas classified as drained but not subject to peat extraction represent lands where drainage infrastructure was present but active peat extraction was not occurring during the assessment year, while areas classified as neither drained nor subject to peat extraction represent portions of the site that remained unaffected by both drainage and peat extraction activities at the time of assessment.

Further details on the peat extraction activities during the assessment period are provided in Chapter 4.

Table 7-7: BnM Estimates of Peat Extraction Extents (ha) at the Application Site

Area Type	1973	1988	1995	2004	2020
Subject to Peat Extraction	2,011	2,285	2,267	1,025	301
Neither Drained nor Subject to Peat Extraction	566	269	269	248	367
Drained - Not Subject to Peat Extraction	60	83	101	1,364	2,389

7.6.7 Peat Extraction Volumes 1994 - 2020

Between July 1988 and 2020, an average of 173,799 tonnes of peat were extracted each year, with a total of 5,735,371 tonnes extracted at the Application Site between July 1988 and the cessation of peat extraction in 2020 (see Table 7-8). Further details of peat extraction activity at the Application Site are provided in in Chapter 4.

Table 7-8: Annual Peat Production Quantities for the Period 1988 to 2020

Year	Annual Extraction (Tonnes)
1988	110,675*
1989	221,350**
1990	221,350**
1991	221,350**
1992	102,953
1993	274,759
1994	187,384
1995	400,097
1996	316,376
1997	156,079
1998	174,322
1999	295,317
2000	270,631
2001	319,668

Year	Annual Extraction (Tonnes)
2002	122,597
2003	129,718
2004	982,40
2005	966,03
2006	114,255
2007	128,810
2008	127,422
2009	102,959
2010	213,908
2011	117,933
2012	39,409
2013	218,854
2014	185,143
2015	158,376
2016	194,944
2017	210,919
2018	134,171
2019	55,551
2020***	13,248
Total	5,735,371

*1988 peat extraction volumes are for months July – December 1988, when the Baseline period began as per Section 4.1.

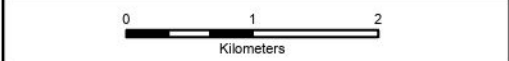
**Based on average peat extraction volumes at the Application Site for the period 1992-2019 absence of accurate data.

***Peat extraction at the Application Site came to an end midway through this year leading to a lower annual extraction volume compared to previous years



Legend

- Application Site Boundaries
- Peat Production Areas 1973
 - Drained - Not Subject to Peat Extraction
 - Neither Drained nor Subject to Peat Extraction
 - Subject to Peat Extraction



Spatial Reference Datum: IRENET95 EPSG: 2157		Copyrights: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community,			
A	25/09/2026	First issue	K.K	J.F	
Rev	Date	Description	By	Chkd.	

Client:

Project:
Derrygreenagh Substitute Consent

Title:
Figure 7-2:
Peat Production Areas 1973

Scale @ A3:	1:60,000	
Prepared by:	Checked by:	Date:
K.Kale	J.Forde	September 2026

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Map Ref:	Draft:
12334-004..NIS-Peat.D..73-P.App.BO-TOB-A	A



- Legend**
- Application Site Boundaries
 - Peat Production Areas 1988
 - Drained - Not Subject to Peat Extraction
 - Neither Drained nor Subject to Peat Extraction
 - Subject to Peat Extraction

012Kilometers			
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Title:

Figure 7-3:
Peat Production Areas 1988

Scale @ A3:

1:60,000

Prepared by:

Checked by:

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Map Ref:

Draft:

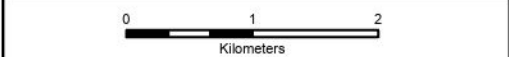
12334-005..NIS-Peat.D..88-P.App.BO-TOB-A

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- Legend**
- Application Site Boundaries
 - Peat Production Areas 1995
 - Drained - Not Subject to Peat Extraction
 - Neither Drained nor Subject to Peat Extraction
 - Subject to Peat Extraction



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Project:
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Title:
Figure 7-4:
Peat Production Areas 1995

Scale @ A3: 1:60,000

Prepared by: K.Kale Checked by: J.Forde Date: September 2026

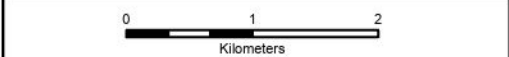


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Map Ref: 12334-006..NIS-Peat.D..95-P.App.BO-TOB-A Draft: A



- Legend**
- Application Site Boundaries
 - Peat Production Areas 2004
 - Drained - Not Subject to Peat Extraction
 - Neither Drained nor Subject to Peat Extraction
 - Subject to Peat Extraction



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Title:
Figure 7-5:
Peat Production Areas 2004

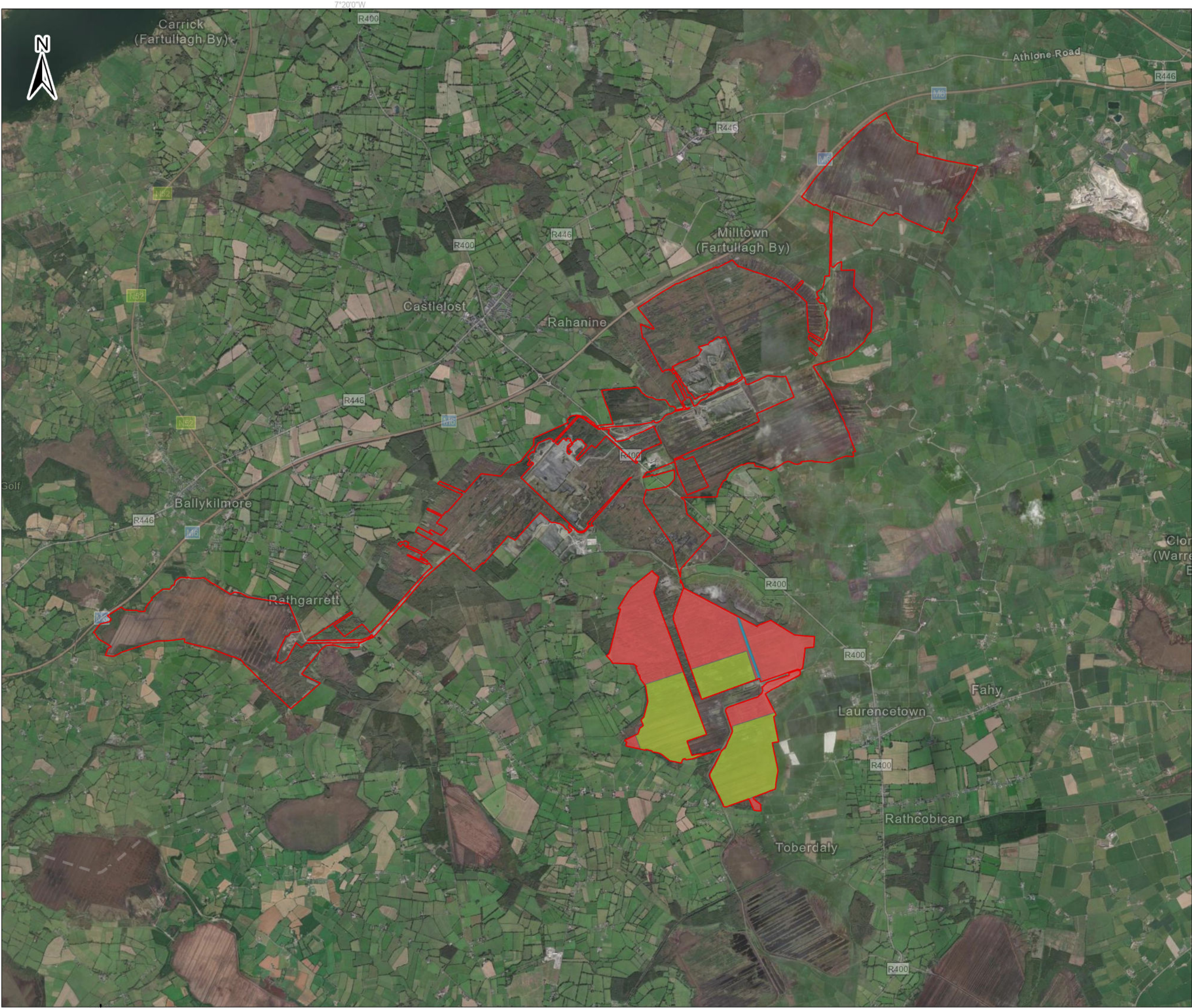
Scale @ A3: 1:60,000

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Legend

Application Site Boundaries

Peat Production Areas 2020

Category

- Drained - Not Subject to Peat Extraction
- Neither Drained nor Subject to Peat Extraction
- Subject to Peat Extraction

0 1 2 Kilometers			
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Client: 

Project: **Derrygreenagh Substitute Consent**

Title: **Figure 7-6:
Peat Production Areas 2020**

Scale @ A3: 1:60,000

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7.7 ECOLOGICAL BASELINE

As outlined, the Project covers the period from July 1988, when the EIA Directive was required to be transposed into Irish law, through to the present day and into the future. Specifically, this Chapter evaluates the likely significant effects on biodiversity using ecological baseline of 1988. This represents the ecological conditions at the time the EIA Directive was required to be transposed into Irish law and serves as the reference point for assessing historical impacts. The following sections present the results of a detailed desk study and field surveys conducted to gather ecological data and establish the 1988 baseline at the Application Site and its surrounding area.

It should be noted, however, that in order to provide as detailed a description as possible of the Application Site over time to inform the assessment, the environmental conditions during each of the Phases of the Project have also been described, using a combination of referenced surveys and studies, as well as information acquired during a desk study.

7.7.1 Peat Extraction Phase (July 1988 – June 2020)

By 1988 the land use at the Application Site was well established as industrial peat extraction, with extensive drainage networks established, milled peat extraction underway and railway infrastructure in place. However, some areas remained neither drained nor subject to peat extraction at that time.

Prior to the insertion of any drainage and the commencement of peat extraction activity in the 1950s, the Application Site was likely dominated by uncut raised bog and associated habitats, including fens, flushes, soaks, and bog woodland, while in 1988 the habitats at the site would have been predominantly bare peat and cutover bog, with small sections of remnant raised bog.

In the absence of historical data for the Application Site, this description of the baseline ecology at the site before the Project and during the Peat Extraction Phase, is informed by Fossitt (2000) "*A Guide to Habitats in Ireland*" and by NPWS published accounts of bog habitats at SACs.

- Fossitt (2000) provides detailed descriptions habitat and fauna of:
 - **Raised Bog (PB1):** Characterised by peat-forming vegetation, including *Sphagnum* mosses, heathers, and other wetland species, typical of undisturbed raised bogs.
 - **Cutover Bog (PB4):** Areas where peat extraction has occurred, altering the natural vegetation and hydrology, but which may still support some bog species and have potential for ecological recovery.
- NPWS reports on SAC sites that contain examples of bog habitats, including:
 - **Active Raised Bogs (Habitat Code 7110):** This habitat features waterlogged, peat-forming vegetation and intact hydrological conditions.
 - **Degraded Raised Bogs Still Capable of Natural Regeneration (Habitat Code 7120):** These areas, though affected by drainage or extraction, still retain the potential for ecological recovery and regeneration.

Section 7.7.1.1 through Section 7.7.1.3 summarises habitat and fauna descriptions from Fossitt (2000) and NPWS, focusing on raised and cutover bogs, their ecological characteristics, and their conservation status within SACs.

The purpose of describing sources such as Fossitt (2000), NPWS publications and other relevant reference material in Sections 7.7.1.1 to 7.7.1.3 is to establish an understanding of the ecological characteristics, habitats and fauna that were present, or likely to have been present, within and surrounding the Application Site prior to Project development activities. Moreover, these sources help address the information gap regarding the baseline ecology at the Application Site during the earlier years of the Peat Extraction Phase. This is especially important given that detailed ecological survey reports are not available until 2009 – 2012. As a result, the sources used facilitate the description of the 1988 baseline, in the absence of, or with limited, available information from that period. The findings of these surveys are presented below.

7.7.1.1 Raised Bog and Associated Habitats

The habitats that were likely present at the Application Site before any drainage or peat extraction activities commenced in the 1950s would have been similar to those found in the well-preserved raised bogs in Ireland, such as those at Raheenmore Bog SAC (Site code: 000582) located approximately 1.3 km southwest of the Application Site.

The NPWS have published Site Specific Conservation Objectives (SSCOs) for the SAC (NPWS, 2015). For the site the NPWS have also published Site Synopsis Report (NPWS, 2013) and SSCO Supporting Document (NPWS, 2016) that present background information that has been used to inform the process of setting the SSCO in relation to the Annex I habitats. The SSCO Supporting Document for the site provide detailed descriptions of the habitats and fauna recorded at the site.

The Raheenmore Bog SAC is designated for Active raised bogs [7110]* (priority habitat), Degraded raised bogs still capable of natural regeneration [7120] and Depressions on peat substrates of the *Rhynchosporion* [7150] (NPWS, 2013). This raised bog developed in a small basin in the catchment of two major river systems i.e. the Brosna and the Boyne. The peat is very deep, up to 15m in places. The bog has a well-developed hummock and hollow system. Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum spp.*) is high, and where some or all of the following features occur: hummocks, pools, wet flats, Sphagnum lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration.

The *Rhynchosporion* habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera spp.*), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

Raheenmore Bog contains a relatively large wet central core of active raised bog. Pools are well-represented, and it is the pool edges and wet lawns that the *Rhynchosporion* habitat is best developed. These areas are typically dominated by the bog moss *S. cuspidatum*. Overall, the cover of *Sphagnum* moss on the bog is very good.

Degraded raised bog dominates the marginal areas of the uncut high bog where drainage effects are most pronounced. The vegetation of these degraded areas is still dominated by plant species typical of intact raised bog, though the vegetation tends to be less species-rich than in intact areas and the cover of *Sphagnum* is usually below 25%.

Raheenmore Bog is a classic example of a midland raised bog and the deepest remaining in Ireland. It is of high conservation importance as it contains good examples of the priority Annex I habitat active raised bog, and the non-priority habitats degraded raised bog and depressions on peat substrates (*Rhynchosporion*).

Fossitt (2000) describes Raised Bogs (PB1) as:

- *'...accumulations of deep acid peat (3-12 m) that originated in shallow lake basins or topographic depressions. The name is derived from the elevated surface, or dome, that develops as raised bogs grow upwards from the surface; the domed effect is often exaggerated when the margins of a bog are damaged by turf cutting or drainage, and are drying out...'*

In their natural state, raised bogs rely on water retention, primarily sustained by precipitation but also due to groundwater. Actively accumulating peat conditions occur in the wettest parts of the bog, indicating the presence of good quality active raised bog (Fossitt, 2000). In active raised bogs the upper living peat-forming layer is actively growing and primarily composed of *Sphagnum* mosses, which are essential for peat accumulation. This living layer, termed the acrotelm, is underlaid by the dead peat layer, the catotelm.

Typical Flora of Raised Bogs

The surface of an intact active raised bog is typically wet, acidic, nutrient-poor, and features a complex topography with hummocks and hollows. Bogs are typically driest at the edges and become wetter towards the centre, where well-developed pool systems are common (Fossitt, 2000). In drier areas and hummocks support species such as ling heather (*Calluna vulgaris*), deergrass (*Trichophorum germanicum*), hare's tail cottongrass (*Eriophorum vaginatum*), cross-leaved heath (*Erica tetralix*), and various species of *Sphagnum* moss. Wetter areas and pools are characterised by species such as common cottongrass (*Eriophorum angustifolium*), bog asphodel (*Narthecium ossifragum*), white beak sedge (*Rhynchospora alba*), bogbean (*Menyanthes trifoliata*), and various species of *Sphagnum* moss.

Intact raised bogs areas are likely to have included extensive soaks and flushed areas. These areas can be either wet or dry, where the nutrient supply is increased over time through concentrated surface flows or connections with groundwater and underlying mineral substratum (Fossitt, 2000). This mineral enrichment enhances both habitat and species diversity. Flush and soaks are considered an integral part of the raised bog habitat.

Raised bogs are nutrient-poor ecosystems characterised by acidic, waterlogged conditions that constrain overall species richness and productivity. They support a distinct assemblage of specialised flora and fauna adapted to these conditions, all of which contribute to ecosystem functioning through nutrient cycling and ecological interactions.

Despite the challenging conditions, Irish raised bogs, support faunal assemblages. The NPWS SSCO supporting document for Raheenmore Bog SAC (NPWS, 2015) and the NPWS Site Synopsis (NPWS, 2013) describe the key fauna associated with Irish raised bogs and those recorded at Raheenmore as follows:

- **Amphibian**

The Common Frog (*Rana temporaria*), Ireland's only native frog species, is well adapted to the acidic waters of raised bogs and breeds in the bog pools.

- **Reptile**

The Common Lizard (*Zootoca vivipara*) is often found on raised bogs.

- **Birds**

Meadow Pipit (*Anthus pratensis*) is a characteristic bird species of Irish peatlands, often seen perching on bog vegetation.

Skylark (*Alauda arvensis*) is often found breeds in open bog habitats.

Snipe (*Gallinago gallinago*) is a wader that nests in bog vegetation, its distinctive "drumming" display flight is common in spring.

Red Grouse (*Lagopus lagopus scotica*) is a key indicator species of healthy bog ecosystems, relying on heather for food and cover.

Merlin (*Falco columbarius*) is a small falcon typically associated with open bog and heath habitats, where it hunts small birds such as Meadow Pipit and Skylark and may utilise extensive peatland landscapes for foraging and breeding.

- **Mammals**

Irish Hare (*Lepus timidus hibernicus*) is frequently found in raised bogs, using the open landscape for feeding and shelter.

Otter (*Lutra lutra*) occurs in bogs with wet channels and streams, hunting amphibians and fish.

Badger (*Meles meles*) often use these areas for foraging and as movement corridors between other habitats.

Pine Marten (*Martes martes*) is more commonly associated with woodlands, but it occasionally traverses raised bogs in search of food.

- **Invertebrates**

Raised-bog pools and wet lawns support distinctive **invertebrate assemblages**; research cited by NPWS highlights specialist groups on high-quality bog.

Dragonflies and damselflies (*Odonata*) species like the Black Darter (*Sympetrum danae*) and the Large Red Damselfly (*Pyrhosoma nymphula*) are found in pools and wet areas of the bog.

Butterflies and moths (*Lepidoptera*) species found include the Large Heath Butterfly (*Coenonympha tullia*) which is identified as a peatland specialist.

A variety of ground beetles and water beetles (*Coleoptera*) are found in the waterlogged conditions present.

Several species of spiders (*Araneae*) that inhabit the surface of the raised bogs.

7.7.1.2 Cutaway Bog and Associated Habitats

By 1988, the installation of drainage systems and extensive peat extraction activities would have significantly altered the Application Site from its pre-development state. As illustrated by the historical land-use mapping presented in Section 7.6.6, large areas of the site had either been drained and were undergoing peat extraction or had previously been drained in preparation for extraction. Consequently, much of the Application Site would have comprised cutover bog and areas of bare peat, with remnants of unworked raised bog largely restricted to isolated areas that had neither been drained nor subjected to peat extraction. Excavated bog face banks would have been a characteristic feature of the peatland landscape, particularly along the margins of historically worked areas

The land-use data presented in Table 7-7 demonstrate the progressive expansion of peat extraction activities between 1973 and 2020, together with a corresponding reduction in the extent of undrained and unworked bog. These changes would have altered the ecological condition of the bog over time, resulting in extensive areas of cutover peatland and a range of associated habitats developing on areas no longer actively worked. Such habitats are characteristic of cutover bogs and may include mosaics of bare peat, wet depressions, flushes, marshy vegetation, scrub and developing woodland, depending on local hydrological conditions and site management history.

Fossitt (2000) describes Cutover Bog (PB4) as:

'...a variable habitat, or complex of habitats, that can include mosaics of bare peat and revegetated areas with woodland, scrub, heath, fen and flush or grassland communities....'

In general, the recolonisation of vegetation on cutover bogs is influenced by a range of factors including hydrological conditions, the depth and nature of the remaining peat, disturbance history, drainage characteristics and the presence of standing water. Consequently, formerly worked peatlands may develop a diverse range of secondary habitats over time. The nature and extent of this ecological succession varies considerably between sites and according to local environmental conditions and management practice.

7.7.1.3 Typical Fauna of Cutaway Bogs

By 1988, most of the Application Site consisted of cutover bog, with smaller patches of uncut raised bog likely remaining around the edges. This history of drainage and peat extraction significantly shaped the site's habitats, making it more likely to support wildlife typical of cutover bogs rather than species found exclusively in intact raised bogs. Therefore, this section provides a general overview of fauna commonly associated with cutover bogs, reflecting the open, varied landscape created by peat extraction and drainage.

Cutover bogs are a patchwork of habitats, including bare peat, regrowing vegetation, pools, and patches of scrub. This mix of features supports a variety of species adapted to the changing landscape.

Bird species commonly associated with cutaway bogs may include Skylark, Meadow Pipit, Snipe, Reed Bunting (*Emberiza schoeniclus*) and raptors such as Kestrel (*Falco tinnunculus*) depending on habitat conditions. Open and sparsely vegetated areas may provide foraging and nesting opportunities for some ground-nesting bird species, while more vegetated areas may be used by seed-eating and insectivorous birds. Mammal species commonly associated with cutaway bog habitats may include Irish Hare, Badger and Otter, which may utilise these areas for foraging and movement between habitats.

The mix of wet pools and drier open ground supports a variety of insects, including beetles, spiders, and dragonflies, which thrive in these diverse microhabitats.

7.7.1.4 BnM Historical Surveys

Section 0 through Section 7.7.1.4.5 summarise the main finding ecological baseline surveys undertaken by Bord na Móna at the bogs comprising the Application Site between 2009 and 2012. The survey reports for the BnM survey are appended in full to the relevant Bord na Móna Cutaway Bog Decommissioning and Rehabilitation Plans, which are included in Appendix 4.3 of Chapter 4. The information gathered during these surveys has been used to characterise the receiving environment of the Application Site during the peat extraction phase and to establish the baseline ecological conditions that existed at that time. For the surveys habitat classifications were undertaken using the Bord na Móna habitat classification scheme, which was developed specifically for cutaway peatland environments. The scheme includes a range of pioneer peatland, fen, wetland, woodland, scrub, grassland and disturbed-ground communities that are characteristic of industrial peat cutaway landscapes. To facilitate comparison with national habitat classifications, equivalent habitat codes from the Heritage Council's A Guide to Habitats in Ireland (Fossitt, 2000) are provided alongside the Bord na Móna habitat codes in Section 7.7.1.4.6 where appropriate. It should be noted that the equivalent Fossitt habitat classifications are indicative only, as a number of habitat types within the Bord na Móna classification scheme represent pioneer, early successional or transitional vegetation communities that are characteristic of cutaway peatlands and are not readily accommodated within the standard habitat categories defined by the Heritage Council's A Guide to Habitats in Ireland (Fossitt, 2000). Consequently, the corresponding Fossitt classifications should be regarded as approximate equivalents rather than direct habitat correlations.

7.7.1.4.1 Derryhinch Bog – October 2009

Ecological baseline surveys of Derryhinch Bog were undertaken by on 21 October 2009. The survey found that the bog was dominated by extensive areas of Bare Peat (BP) associated with former industrial peat extraction. Early stages of natural recolonisation were evident across parts of the site, with pioneer poor fen communities dominated by Soft Rush (pJeff) and Bog Cotton (pEang). Areas of developing scrub vegetation were also recorded, principally Birch scrub (eBir) and Gorse scrub (eGor).

The most ecologically diverse habitats were recorded within the former sod-peat extraction area in the southern part of the bog, where a mosaic of habitats had developed following the cessation of peat cutting. These included Birch scrub (eBir and oBir), areas of Birch woodland (WN7), Heather dominated vegetation, Poor Fen communities (pRos and pEang), Reedbed vegetation (pPhrag) and Reedmace communities (pTyp). Areas of Sphagnum regeneration were also recorded, together with a small area of remnant Raised Bog (PB1).



Other area within the bog included localised areas of Pioneer Dry Calcareous Grassland (gCal) and Gorse scrub (eGor) had developed on shallower peat and mineral substrates.

7.7.1.4.2 Drumman Bog – October 2009

Ecological baseline surveys of Drumman Bog were undertaken by Bord na Móna on 16 and 17 October 2009. The survey found that Drumman Bog was characterised by a diverse mosaic of habitats associated with varying stages of ecological succession following peat extraction. Extensive areas of Bare Peat (BP) remained throughout the site, interspersed with developing Poor Fen communities dominated by Soft Rush (pJeff), Bog Cotton (pEang) and Bottle Sedge (pRos), together with areas of Birch scrub (eBir and oBir). These habitats were particularly well developed within re-wetted areas of the northern cutaway, where extensive wetland habitat had become established following earlier rehabilitation measures.

Large areas of wetland habitat were present, comprising a mosaic of shallow open water, Poor Fen communities (pJeff, pEang and pRos) and developing stands of Common Reed (pPhrag) and Reedmace (pTyp). Elsewhere across the bog, drier areas supported mosaics of Birch scrub (eBir, oBir and cBir), Pioneer Dry Calcareous Grassland (gCal), Disturbed Pioneer Vegetation (DisCF) and, locally, Heather-dominated vegetation (dHeath). Smaller areas of Campylopus-dominated pioneer vegetation (pCamp), Purple Moor-grass vegetation (gMol) and open water habitats were also recorded.

The survey also recorded a number of additional habitat types associated with the cutaway landscape, including areas of Conifer Plantation (WD4) and scattered areas of remnant Raised Bog (PB1).

7.7.1.4.3 Derryarkin Bog – October 2009

Ecological baseline surveys of Derryarkin Bog were undertaken by Bord na Móna on 27 and 28 October 2009. The survey found that the former cutaway bog supported a diverse mosaic of habitats reflecting varying stages of ecological succession following peat extraction. The dominant habitats comprised Bare Peat (BP), together with extensive Poor Fen communities including Soft Rush-dominated vegetation (pJeff), Bog Cotton-dominated vegetation (pEang), Marsh Arrowgrass-dominated vegetation (pTrig) and Bottle Sedge-dominated vegetation (pRos). These habitats occurred in association with extensive areas of Birch scrub (eBir and oBir) that had become established across much of the naturally recolonising cutaway.

A substantial re-wetted wetland complex was present within the south-eastern portion of the site, where earlier rehabilitation measures had facilitated the development of a mosaic of shallow open water habitats, Common Reed communities (pPhrag), Reedmace communities (pTyp), Poor Fen vegetation (pJeff, pEang and pRos) and extensive stands of Birch and Willow scrub (eBir and oBir). Numerous smaller wetland complexes and pools were also recorded elsewhere across the cutaway.

Drier areas of the bog supported Pioneer Dry Calcareous Grassland (gCal), Disturbed Pioneer Vegetation (DisCF), Heather dominated vegetation (dHeath) and localised areas of Purple Moor-grass vegetation (gMol), particularly on mineral ridges, glacial deposits and elevated areas within the cutaway. Areas of exposed glacial till and gravel spoil were present within the site and supported early successional vegetation communities.



Additional habitats recorded within the bog included a large artificial lake (FL8) associated with quarry development, areas of Conifer Plantation (WD4), localised patches of Birch Woodland (WN7) and small remnants of Raised Bog (PB1) around the margins of the site.

7.7.1.4.4 Ballybeg Bog – August 2010

Ecological baseline surveys of Ballybeg Bog were undertaken by Bord na Móna between 23 and 25 August 2010. The survey identified a diverse mosaic of habitats associated with varying stages of ecological succession following peat extraction. Extensive areas of Bare Peat (BP) remained across the site, particularly within the southern section, while the northern cutaway supported extensive areas of Poor Fen vegetation dominated by Soft Rush (pJeff), together with Bog Cotton (pEang), Marsh Arrowgrass (pTrig) and locally Bottle Sedge (pRos). These habitats frequently occurred in association with extensive areas of Birch scrub (eBir, oBir and cBir), which represented the dominant recolonising vegetation across much of the cutaway.

Wetland habitats were distributed throughout the site and comprised a mosaic of permanent and temporary open water (OW and tOW), Poor Fen communities (pJeff, pEang and pRos) and localised areas of Reedbed vegetation, including Common Reed (pPhrag) and Reedmace (pTyp). Wetland development was generally more pronounced within localised depressions, flooded pits and poorly drained areas of the cutaway landscape.

Drier habitats included Pioneer Dry Grassland communities (gAn-H-Eq and gCal), Purple Moor-grass vegetation (gMol), Heather dominated vegetation (dHeath) and areas of Disturbed Pioneer Vegetation (DisCF and DisWil) associated with exposed peat, gravel spoil and former extraction areas. Localised areas of gravel and mineral substrates within the former gravel extraction area supported early successional vegetation communities and extensive populations of the notable plant species Blue Fleabane.

Additional habitats identified within the bog included a substantial area of Alder plantation (WS2) established as a biomass trial, localised areas of Birch Woodland (WN7), a former gravel extraction area containing open water and spoil habitats, and a significant area of remnant Raised Bog (PB1) in the southern part of the site.

7.7.1.4.5 Toar Bog – February 2012

Ecological baseline surveys of Toar Bog by Bord na Móna on 24 February 2012 recorded the majority of the bog remained in industrial peat production and was therefore dominated by extensive areas of Bare Peat (BP). Habitat diversity within the former production area was limited.

Early stages of habitat development were evident across parts of the site, with small areas of Poor Fen vegetation dominated by Soft Rush (pJeff) and Bog Cotton (pEang), together with localised patches of Heather dominated vegetation (dHeath) and developing pioneer vegetation. These habitats represented the initial stages of natural colonisation on exposed peat surfaces.

Along the bog margins, more established habitats were present, including areas of Birch Woodland (WN7), Birch and Gorse scrub (WS1), Cutover Bog (PB4) and remnant Raised Bog (PB1). The cutover areas had largely revegetated with heather-dominated vegetation, while woodland habitats were dominated by Birch and Willow. Localised areas of Wet Grassland (GS4) were also recorded.



Additional habitat features within the bog included several Silt Ponds (Silt) with associated vegetation communities, including scrub, bracken, rank grassland and dry calcareous grassland, together with a former gravel extraction area and associated disturbed-ground habitats.

7.7.1.4.6 Corresponding Fossitt (2000) Codes

Habitat classification during the baseline ecological surveys was undertaken using the Bord na Móna habitat classification scheme, which was developed specifically to describe the pioneer, successional and transitional vegetation communities associated with cutaway peatlands. The scheme recognises a range of habitat types that are characteristic of former industrial peat extraction areas, including peatland, fen, wetland, woodland, scrub, heathland, grassland and disturbed-ground communities. Table 7-7 presents the Bord na Móna habitat classification scheme and the corresponding equivalent habitat classifications from the Heritage Council's A Guide to Habitats in Ireland (Fossitt, 2000), where applicable. As outlined above some Bord na Móna habitat classes represent pioneer or transitional vegetation communities that are unique to cutaway peatlands and do not have direct equivalents within the Fossitt classification system. Consequently, the Fossitt classifications provided should be regarded as indicative rather than exact habitat correlations.

Table 7-9: Bord na Mona habitat classification scheme.

	General	Vegetation community*	BnM habitat code	Equivalent Heritage Council codes**
Pioneer habitats of industrial cutaway	Peatland	Bare peat (0-50% cover)	BP	ED2
		Embryonic bog community (containing Sphagnum and Bog Cotton)	PBa	PB
		Embryonic bog community (Calluno-Sphagnion)	PBb	PB
	Flush and Fen	Pioneer Cumpylopus-dominated community	pCamp	PF2
		Pioneer Juncus effusus-dominated community (Soft Rush)	pJeff	PF2
		Pioneer Eriophorum angustifolium-dominated community (Bog Cotton)	pEang	PF2
		Pioneer Juncus bulbosus-dominated community (Bulbous Rush)	pJbulb	PF2
		Pioneer Triglochin palustris-dominated community (Marsh Arrowgrass)	pTrig	PF2
		Pioneer Caricion davallianae-Community with Cladium (rich fen)	pCladium	PF1
		pioneer Schoenus nigricans community (rich fen)	pSchon	PF1
		pioneer Carex viridula/brown moss community (rich fen)	pVir	PF1
	Emergent communities	Pioneer Carex rostrata-dominated community (Bottle Sedge)	pRos	PF2/FS1
		Pioneer Phragmites australis-dominated community (Common Reed)	pPhrag	FS1
		Pioneer Typha latifolia-dominated community (Reedmace)	pTyp	FS1

	General	Vegetation community*	BnM habitat code	Equivalent Heritage Council codes**
		Pioneer Schoenoplectus lacustris-dominated community (Bulrush)	pSch	FS1
	Open water	Charaphyte-dominated community	pChar	FL2
		Permanent pools and lakes	OW	FL2
		Temporary open water	tOW	
	Woodland and scrub	Emergent Betula/Salix-dominated community (A) (Birch/Willow)	eBir	WS1
		Open Betula/Salix-dominated community (B) (Birch/Willow)	oBir	WS1
		Closed Betula/Salix-scrub community (C) (Birch/Willow)	cBir	WS1
		Ulex europaeus-dominated community (Gorse)	eGor	WS1
		Betula/Salix-dominated woodland (Birch/Willow)	BirWD	WN7
	Heathland	Pioneer dry Calluna vulgaris-dominated community (Heather)	dHeath	PB
		Dense Pteridium aquilinum (Bracken)	dPter	HD1
	Grassland	Pioneer dry calcareous and neutral grassland (Centaureo-Cynosuretum)	gCal	GS1
		Dactylis-Anthoxanthum-dominated community (Cocksfoot-Sweet Vernalgrass)	gCo-An	GS2
		Anthoxanthum-Holcus-Equisetum community (Sweet Vernalgrass-Yorkshire Fog-Horsetail)	gAn-H-Eq	GS
		Molinia caerulea-dominated community (dry) (Purple Moorgrass)	gMol	GS4
		Marsh (Meadowsweet and other tall herbs) (Filipendulion ulmariae)	Mar	GM1
	Disturbed	Tussilago farfara-dominated community (vegetation > 50%) (Colt's Foot)	DisCF	ED3
		Epilobium-dominated community (vegetation > 50%) (Willowherb spp.)	DisWil	ED3
	General	Riparian areas (streams or drain with associated edge habitats (e.g. FW2/4 + WS1, GS2 etc)	Rip	FW2 +
		Silt Ponds (artificial ponds with associated bank habitats (e.g. FL8 + WS1, GS2, ED2, ED3)	Silt	FL8 +
		Access (tracks or railways with associated edge habitats (e.g. BL3 + gCal, gMol, eGor etc)	Acc	BL3 +
		Works areas (predominately built land but can include landscaped and brownfield habitats (e.g. GA2, WS3, WD4, ED2, ED3)	Works	BL3 +

* These are generally pioneer habitats of bare peat and the communities can contain a significant proportion of bare peat. Some habitats are more developed than others. They frequently occur in mosaic with each other.

** Not all these communities are equivalent to habitat classes used by The Heritage Council habitat classification scheme (Fossitt 2000) as some are quite rudimentary and undeveloped.



7.7.2 Current Phase (June 2020 – Present Day)

This section presents the findings of the ecological baseline surveys undertaken across the Application Site between 2023 and 2026. The surveys characterised the habitats, flora, fauna and bird communities present within and adjacent to the Application Site and provide the basis for the ecological and ornithological impact assessments.

7.7.2.1 Habitats and Flora and Fauna

7.7.2.2 Polygon Habitats

7.7.2.2.1 PB4 Cutover Bog

Cutover bog represents the dominant habitat type across the Application Site. These areas generally comprise former peat extraction surfaces that vary from largely unvegetated peat to well-established recolonising vegetation. Many areas are characterised by historic drainage, with extensive networks of drains occurring across the bog surface. Species recorded within peatland habitats include Common Bog Cotton (*Eriophorum angustifolium*), Purple Moor-grass (*Molinia caerulea*), Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Soft Rush (*Juncus effusus*), together with regenerating Downy Birch (*Betula pubescens*) and Willow (*Salix spp.*) scrub. Locally, wetter areas also supported species such as White-beaked Sedge (*Rhynchospora alba*), Round-leaved Sundew (*Drosera rotundifolia*), Bog Asphodel (*Narthecium ossifragum*) and Reindeer Lichen (*Cladonia portentosa*).

The habitat is assessed as **Local Importance (Lower Value)**.

7.7.2.2.2 WN7 Bog Woodland

Bog Woodland (WN7) is among the higher-value semi-natural habitats recorded within the Application Site. It occurs widely throughout the site, typically on former cutover bog surfaces where natural succession has facilitated the establishment of woodland communities. The habitat ranges from immature scrubby stands to more mature birch-dominated woodland and is generally characterised by an unmanaged structure, diverse age classes and a mosaic with adjacent scrub and cutover bog habitats.

Species recorded within WN7 habitats include Downy Birch, Grey Willow (*Salix cinerea*), Eared Willow (*Salix aurita*), Lodgepole Pine (*Pinus contorta*), Scots Pine (*Pinus sylvestris*), Ling Heather, Purple Moor-grass, Bramble (*Rubus fruticosus agg.*), Holly (*Ilex aquifolium*), Broad Buckler-fern (*Dryopteris dilatata*) and Rowan (*Sorbus aucuparia*).

WN7 Bog Woodland provides a habitat resource within the Application Site and contributes to habitat connectivity across the wider peatland landscape. The habitat supports a range of ecological functions, including nesting, sheltering and foraging opportunities for fauna associated with woodland, scrub and peatland environments.

Given the above the habitat is assessed as **County Importance**.

7.7.2.2.3 WS1 Scrub

Scrub (WS1) occurs extensively throughout the Application Site. It is typically associated with former cutover peatlands and recolonising areas, where natural succession has facilitated the establishment of woody vegetation. The habitat commonly occurs as discrete stands or as part of a mosaic with cutover bog, heath, grassland and developing woodland habitats.

Characteristic species recorded within WS1 habitats include Gorse (*Ulex europaeus*), Willow species, Birch (*Betula* spp.), Hawthorn (*Crataegus monogyna*), Ling Heather and Purple Moor-grass (*Molinia caerulea*). Additional associated species recorded include Meadowsweet (*Filipendula ulmaria*), Knapweed (*Centaurea nigra*), Soft Rush, Ribwort Plantain (*Plantago lanceolata*) and Common Bent (*Agrostis capillaris*).

The habitat is generally characterised by structurally diverse vegetation ranging from low gorse-dominated scrub to denser willow and birch stands. Throughout the Application Site, scrub frequently occurs as a transitional habitat between cutover bog (PB4) and developing bog woodland (WN7), reflecting ongoing natural succession within formerly extracted peatland areas. Many scrub areas show evidence of progressive woodland colonisation, particularly along former drainage features and revegetated peat surfaces.

Scrub (WS1) contributes to diversity at the Application Site and provides habitat connectivity between peatland, woodland and wetland habitats. The habitat supports a range of ecological functions, including nesting, sheltering and foraging opportunities for fauna associated with scrub, woodland and peatland environments. As such, scrub habitats form an important component of the wider habitat mosaic present across the Application Site and contribute to the ongoing ecological regeneration of the former peatland landscape.

Given the above the habitat is assessed as **Local Importance (Higher Value)**.

7.7.2.2.4 FL8 Other Artificial Lakes and Ponds

Other Artificial Lakes and Ponds (FL8) are widespread throughout the Application Site and comprise a network of open waterbodies, shallow pools and wetland features associated with historical peat extraction activity. Many of these waterbodies have developed through localised subsidence and the accumulation of water within former cutover bog areas. As a result, they vary considerably in size, depth, and vegetation cover, ranging from open water habitats to vegetated wetland.

Characteristic vegetation recorded within FL8 habitats includes Common Bog Cotton, Bulrush (*Typha latifolia*), Common Reed (*Phragmites australis*), Jointed Rush (*Juncus articulatus*), Soft Rush, Bottle Sedge (*Carex rostrata*), Water Mint (*Mentha aquatica*), Pondweeds (*Potamogeton* spp.) and Water Plantain (*Alisma plantago-aquatica*). Additional species recorded around pond margins include Bog Asphodel, Willow species, Purple Moor-grass and various rush and sedge species.

The habitat contributes to ecological diversity within the Application Site, providing suitable habitat for amphibians, and gives opportunities for foraging birds, and habitat for aquatic invertebrates and other wetland-associated fauna.

Given the above the habitat is assessed as **Local Importance (Higher Value)**.

7.7.2.2.5 ED3 Recolonising Bare Ground

Recolonising Bare Ground (ED3) occurs throughout the Application Site in areas associated with former peat extraction, quarrying activities, rail infrastructure, spoil deposits and other previously disturbed ground. These habitats are characterised by ongoing natural revegetation of exposed substrates and typically represent an early stage of ecological succession. As a result, habitat structure and species composition vary considerably depending on the time of disturbance and the degree of vegetation establishment.

The habitat is assessed as **Local Importance (Lower Value)**.

7.7.2.2.6 WD1, WD2 and WD3 Woodlands

Additional woodland types at the Application Site include WD1 (Mixed) Broadleaved Woodland, WD2 Mixed Broadleaved/Conifer Woodland and WD3 (Mixed) Conifer Woodland. Conifer stands are generally considered to be of lower ecological value due to species uniformity and plantation management, whereas broadleaved woodland habitats support greater structural diversity and associated biodiversity value.

Characteristic canopy species include birch (*Betula* spp.), oak (*Quercus* spp.), alder (*Alnus glutinosa*), lodgepole pine (*Pinus contorta*), Sitka spruce (*Picea sitchensis*) and Scots pine (*Pinus sylvestris*). Understorey typically support bramble, holly, ferns and locally abundant bryophytes.

The habitats WD1, WD2, and WD3 are of **Local Importance (Higher Value)**.

7.7.2.2.7 FS1 Reed and Large Sedge Swamp

Reed and Large Sedge Swamp (FS1) occur locally within the Application Site, primarily in association with wet depressions, pond margins, and areas of standing water. These habitats typically comprise dense stands of emergent vegetation and are often associated with developing wetland features within former peat extraction areas. Characteristic species recorded within FS1 habitats include Common Reed, Bottle Sedge, Common Bog Cotton, Bulrush, Soft Rush and Willow species. In several locations, reedbed habitats occur as transitional communities between open water habitats (FL8), cutover bog (PB4) and scrub vegetation.

These habitats are generally associated with permanently or seasonally wet conditions and contribute to habitat diversity within the Application Site. Reedbeds and sedge-dominated wetlands provide structural complexity within the wider peatland landscape.

The habitat is of **Local Importance (Higher Value)**.

7.7.2.2.8 PB1 Raised Bog

Smaller areas of Raised Bog (PB1) were recorded within the Application Site. These areas support vegetation characteristic of relatively intact bog habitats, including Ling Heather, Cross-leaved Heath, Common Bog Cotton, Deergrass, White-beaked Sedge, Reindeer Lichen, Sphagnum mosses (*Sphagnum* spp.), Bog Asphodel (*Narthecium ossifragum*) and Round-leaved Sundew. These species are indicative of bog-forming and peatland communities and contrast with the more modified vegetation assemblages recorded within surrounding cutover bog habitats.

The raised bog habitats are assessed as being of comparatively higher ecological value than the surrounding cutover bog areas, reflecting the presence of characteristic peatland vegetation and, in places, features indicative of active peat-forming processes.

Given the above the habitat is assigned **Local Importance (Higher Value)**.

7.7.2.2.9 Wetland and Aquatic Habitats

Other Artificial Lakes and Ponds (FL8) are widespread throughout the Application Site and comprise a network of open waterbodies, shallow pools and wetland features associated with historical peat extraction and quarrying activity. Many of these waterbodies have developed through peatland rewetting, drain blocking, quarry excavation, local subsidence and the accumulation of water within former cutover bog areas. As a result, they vary considerably in size, depth, hydroperiod and vegetation cover, ranging from open water habitats to heavily vegetated wetland systems. The quarry areas are outside of the Application Site boundary and are not included for in the Substitute Consent.

Characteristic vegetation recorded within FL8 habitats includes Common Bog Cotton, Bulrush (*Typha latifolia*), Common Reed (*Phragmites australis*), Jointed Rush (*Juncus articulatus*), Soft Rush, Bottle Sedge (*Carex*), Water Mint (*Mentha aquatica*), Pondweeds (*Potamogeton spp.*) and Water Plantain (*Alisma plantago-aquatica*). Additional species recorded around pond margins include Bog Asphodel, Willow species, Purple Moor-grass and various rush and sedge species.

The habitat contributes to ecological diversity within the Application Site providing suitable habitat for amphibians, opportunities for foraging and nesting birds, and habitat for aquatic invertebrates and other wetland-associated fauna.

Given the above FL8 is assigned **Local Importance (Higher Value)**.

7.7.2.3 Linear Habitats

Multidisciplinary surveys were undertaken identified linear habitat features at the Application Site including drainage ditches, modified watercourses, treelines and hedgerows. These features are strongly influenced by historic peat extraction and associated land drainage activities. The linear habitat features include FW4 Drainage Ditches, which occur extensively throughout the cutover peatland areas and form an interconnected network of drainage channels. Other commonly recorded linear habitats include FW2 Depositing/Lowland Rivers, WL2 Treelines and WL1 Hedgerows. Smaller linear sections of scrub, grassland, woodland and artificial habitats were also recorded as secondary habitat types associated with these linear features.

7.7.2.3.1 FW4 Drainage Ditches

Drainage Ditches (FW4) represent the most widespread linear habitat recorded within the Application Site. These features are largely associated with historical peat extraction and comprise a network of drainage channels extending throughout the cutover bog landscape. The ditches range from narrow shallow drains to larger channels with steep peat banks, and vary considerably in terms of water levels, flow conditions and vegetation cover. Many drains remain permanently wet, while others are partially infilled, stagnant or heavily revegetated.

Characteristic species recorded within FW4 habitats include Common Reed, Bulrush, Common Bog Cotton, Purple Moor-grass, Soft Rush, Bottle Sedge, Water Mint, Fools Watercress (*Apium nodiflorum*), Pondweeds, Water Starwort (*Callitriche* spp.), Grey Willow (*Salix cinerea*), Willow species and Downy Birch.

Many drainage ditches support emergent and aquatic vegetation and have undergone varying levels of natural colonisation following reductions in drainage maintenance. Several drains are support wetland vegetation characteristic of developing peatland wetlands. The drainage ditches are an important resource for amphibians, birds and mammals.

Although FW4 may support aquatic and marginal vegetation, they are largely artificial and modified habitats and are therefore assessed as being of **Local Importance (Lower Value)**.

7.7.2.3.2 FW2 Depositing/Lowland Rivers

Depositing/Lowland Rivers (FW2) were recorded at several locations within and adjacent to the Application Site. These habitats comprise modified watercourses and larger drainage channels associated with the wider drainage network. While many channels exhibit evidence of historic modification, culverting and bank reinforcement, they continue to support aquatic and riparian vegetation communities.

Species recorded within FW2 habitats include Bulrush, Common Reed, Flag Iris (*Iris pseudacorus*), Watercress (*Nasturtium officinale*), Water Mint, and Pondweeds.

Given the above the habitat is assigned **Local Importance (Higher Value)**.

7.7.2.3.3 WL2 Treelines

Treelines (WL2) occur throughout the Application Site, typically along drainage corridors, field boundaries, access routes and margins of former peat extraction areas. These features comprise both naturally regenerating and established tree lines and vary from narrow linear stands to wider woodland edge habitats. They are generally composed of Hawthorn, Willow, Gorse, Ash (*Fraxinus excelsior*), Bramble, Blackthorn (*Prunus spinosa*) and Ivy (*Hedera helix*). These features provide structural connectivity across the site and are noted as potential foraging and nesting habitat for fauna.

Given the above the habitat is assigned **Local Importance (Higher Value)**.

7.7.2.3.4 WL1 Hedgerows

Hedgerows (WL1) occur principally along roads, agricultural field boundaries and access routes within and adjacent to the Application Site. The majority comprise mixed native shrub communities and vary from dense continuous features to more fragmented and gappy sections. Characteristic species recorded within WL1 habitats include Hawthorn, Willow, Ash, Gorse (*Ulex europaeus*), Bramble, Blackthorn (*Prunus spinosa*), Holly and Birch. Other species associated with hedgerows include Ivy (*Hedera helix*), Bracken (*Pteridium aquilinum*), Knapweed and various grass species.

Given the above the habitat is assigned **Local Importance (Higher Value)**.



Legend

Application Site Boundaries

HABITAT

BL3 - Buildings and artificial surfaces

FL8 - Other artificial lakes and ponds

FW2 - Depositing/ lowland rivers

FW4 - Drainage ditches

WL1 - Hedgerows

WL2 - Treelines

WS1 - Scrub

HABITAT

BC2 - Horticultural land

BL3 - Buildings and artificial surfaces

ED3 - Recolonising bare ground

ED4 - Active quarries and mines

FL8 - Other artificial lakes and ponds

FS1 - Reed and large sedge swamps

GA1 - Improved agricultural grassland

GS2 - Dry meadows and grassy verges

GS4 - Wet grassland

HD1 - Dense bracken

HH1 - Dry siliceous heath

HH3 - Wet heath

PB1 - Raised bog

PB4 - Cutover bog

WD2 - Mixed broadleaved/ conifer woodland

WD4 - Conifer plantation

WN7 - Bog woodland

WS1 - Scrub

WS1 - Scrub / PB4 - Cutover bog

WS2 - Immature woodland

0 500 1,000
Meters

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Client:

Project:

Derrygreenagh Substitute Consent

Title:

Figure 7-7:
Habitats Recorded within
the Application Site
Sheet 1 of 3

Scale @ A3: 1:35,000

Prepared by: S.Pezzetta

Checked by: B.Kasonde

Date: September 2026

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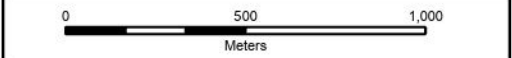
Tel: +353-(0)1-8030406
Email: info@tobin.ie
www.tobin.ie

Map Ref: 12334-006..AASr-HAB-P.App.BO-TOB-A

Draft: A



- Legend**
- Application Site Boundaries
- HABITAT**
- FW2 - Depositing/ lowland rivers
 - FW4 - Drainage ditches
 - WL1 - Hedgerows
 - WL2 - Treelines
- HABITAT**
- BL3 - Buildings and artifical surfaces
 - ED3 - Recolonising bare ground
 - ED4 - Active quarries and mines
 - FL8 - Other artifical lakes and ponds
 - FS1 - Reed and large sedge swamps
 - GA1 - Improved agricultural grassland
 - GS2 - Dry meadows and grassy verges
 - HD1 - Dense bracken
 - HH1 - Dry siliceous heath
 - PB1 - Raised bog
 - PB4 - Cutover bog
 - WD1 - (Mixed) broadleaved woodland
 - WN6 - Wet willow-alder-ash woodland
 - WN7 - Bog woodland
 - WS1 - Scrub
 - WS2 - Immature woodland



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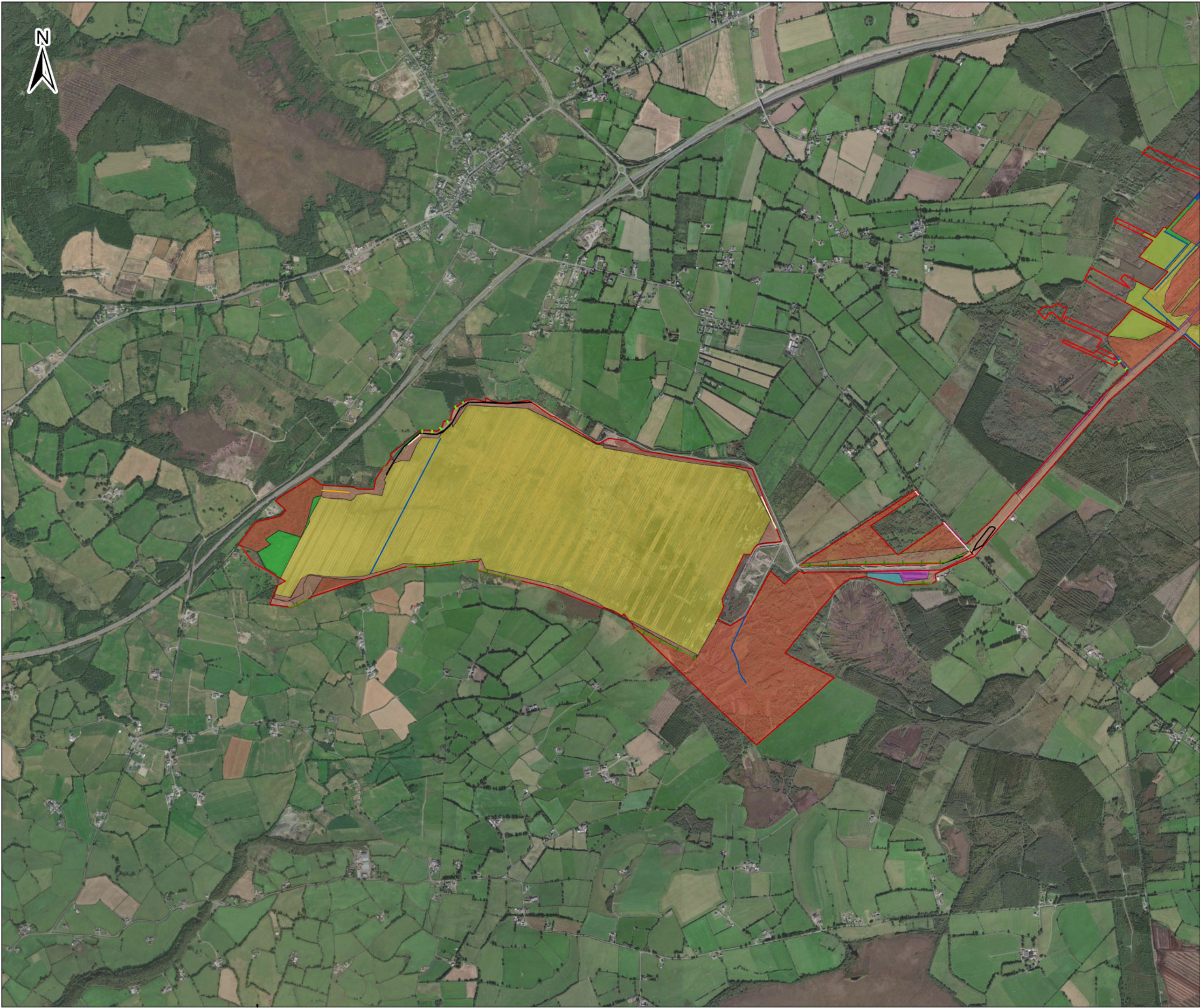
Title:
**Figure 7-8:
Habitats Recorded within
the Application Site
Sheet 2 of 3**

Scale @ A3:	1:21,000	
Prepared by:	Checked by:	Date:
S.Pezzetta	B.Kasonde	September 2026

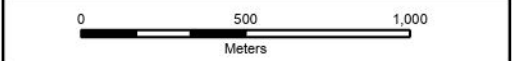
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Map Ref: 12334-006..AASr-HAB-P.App.BO-TOB-A	Draft: A
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- Legend**
- Application Site Boundaries
- HABITAT**
- <Null>
 - BL2 - Earth banks
 - BL3 - Buildings and artificial surfaces
 - FW4 - Drainage ditches
 - GS2 - Dry meadows and grassy verges
 - WL1 - Hedgerows
 - WL2 - Treelines
 - WN7 - Bog woodland
 - WS2 - Immature woodland
- HABITAT**
- BL3 - Buildings and artificial surfaces
 - ED1 - Exposed sand, gravel or till
 - FL8 - Other artificial lakes and ponds
 - GA1 - Improved agricultural grassland
 - HH1 - Dry siliceous heath
 - PB1 - Raised bog
 - PB4 - Cutover bog
 - WD1 - (Mixed) broadleaved woodland
 - WN7 - Bog woodland
 - WS1 - Scrub



Spatial Reference
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Client: **BnM**

Project: **Derrygreenagh Substitute Consent**

Title: **Figure 7-9:
Habitats Recorded within
the Application Site
Sheet 3 of 3**

Scale @ A3: 1:23,000

Prepared by: S.Pezzetta Checked by: B.Kasonde Date: September 2026

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Map Ref: 12334-006..AASr-HAB-P.App.BO-TOB-A Draft: **A**

Table 7-10: Summary of Polygon Habitats (Fossitt, 2000) and their Ecological Valuation

Code	Habitat Name	Ecological Valuation	Rationale
PB4	Cutover Bog	Local Importance (Lower Value)	Dominant habitat within the Application Site. Extensively modified by historical peat extraction and drainage, although many areas are undergoing natural revegetation and succession.
WN7	Bog Woodland	County Importance	Semi-natural woodland habitat of high structural diversity supporting habitat connectivity and a range of woodland and peatland species.
WS1	Scrub	Local Importance (Higher Value)	Structurally diverse successional habitat providing habitat connectivity and foraging, nesting and sheltering opportunities for fauna.
FL8	Other Artificial Lakes and Ponds	Local Importance (Higher Value)	Provides open water and wetland habitat supporting amphibians, aquatic invertebrates, wetland birds and diverse marginal vegetation.
ED3	Recolonising Bare Ground	Local Importance (Lower Value)	Early successional habitat associated with previously disturbed ground. Ecological value is limited by its artificial origin and transient nature.
WD1	(Mixed) Broadleaved Woodland	Local Importance (Higher Value)	Supports greater structural diversity and biodiversity than plantation woodland and provides habitat connectivity and ecological function.
WD2	Mixed Broadleaved/Conifer Woodland	Local Importance (Higher Value)	Structurally diverse woodland habitat supporting a mixture of native and coniferous tree species and associated fauna.
WD3	(Mixed) Conifer Woodland	Local Importance (Lower Value)	Plantation-type woodland typically characterised by lower species diversity and a more uniform structure than semi-natural woodland habitats.

Code	Habitat Name	Ecological Valuation	Rationale
FS1	Reed and Large Sedge Swamp	Local Importance (Higher Value)	Wetland habitat supporting emergent vegetation and contributing to habitat diversity within the wider peatland landscape.
PB1	Raised Bog	Local Importance (Higher Value)	Supports characteristic peatland vegetation including sphagnum mosses and bog specialist species and represents the natural peatland habitat within the Application Site

Table 7-11: Summary of Summary of Linear Habitats (Fossitt, 2000) and their Ecological Valuation.

Code	Habitat Name	Ecological Valuation	Rationale
FW4	Drainage Ditches	Local Importance (Lower Value)	Artificial drainage network associated with historical peat extraction. Although many support wetland vegetation and fauna, their origin and function are primarily anthropogenic.
FW2	Depositing/Lowland Rivers	Local Importance (Higher Value)	Provides aquatic and riparian habitat, supports species such as otter and amphibians, and contributes to hydrological and ecological connectivity beyond the Application Site.
WL2	Treelines	Local Importance (Higher Value)	Provides nesting habitat and foraging, mammal movement corridors and significant habitat connectivity across the site.
WL1	Hedgerows	Local Importance (Higher Value)	Supports nesting birds and mammal movement, while providing shelter, screening and connectivity within the wider landscape

7.7.2.4 Aquatic Surveys

7.7.2.4.1 Overview

Aquatic surveys were undertaken at 14 locations within and downstream of the Application Site and included biological water quality assessment, fisheries habitat assessment, electrofishing, white-clawed crayfish surveys, freshwater pearl mussel habitat appraisal and eDNA sampling sites (see Figure 7-10).

The surveyed watercourses are representative of a modified peatland drainage network influenced by historical peat extraction and drainage activities. Watercourses generally exhibited channel modification, low-gradient flow conditions and evidence of sedimentation. Macroinvertebrate assessments indicated poor to moderate ecological conditions, with pollution-tolerant taxa predominating and no watercourses achieving unpolluted status.

Despite these conditions, suitable habitat for salmonid species and lamprey was identified in several watercourses. Atlantic Salmon and lamprey were recorded during surveys, while eDNA sampling confirmed their presence at a number of locations. No White-clawed Crayfish or Freshwater Pearl Mussel were recorded, and habitats were considered generally moderate for White-clawed Crayfish and unsuitable for Freshwater Pearl Mussel due to water quality and substrate conditions

7.7.2.4.2 Biological Water Quality

Macroinvertebrate sampling was undertaken at 12 out of the 14 aquatic survey sites. The macroinvertebrate communities recorded at survey sites comprised of a range of macroinvertebrate taxa and generally confirmed the local pressures to the aquatic environment, as well as the failure of the majority of the WFD river water bodies to achieve the WFD objectives. The macroinvertebrate assemblages were dominated by Group C taxa, with frequent assemblages of D were present, whereas only a limited number of sites supported Group A and B taxa in low abundance and an absence of E taxa.

Of the 12 sites sampled, the target of Q4 unpolluted water was not achieved at any of the sampling sites. Site 10 received a Q3-Q4 (moderate status), slightly polluted water. Site 4 received a Q2 bad status of seriously polluted, a site dominated by Group D taxa. All remaining sites achieved a Q3 poor status of moderately polluted water due to the paucity of pollution sensitive taxa, as well as the degree of siltation (considerable) and algal growth (luxuriant). The current survey results indicate that the overall biological water quality in the watercourses draining the application site is poor and moderately polluted. The sampled watercourses do not provide water of a quality adequate to support a range of pollution sensitive mayfly and stonefly larvae, as well as salmonids.

7.7.2.4.3 Fisheries Habitat

An appraisal of suitable salmonid spawning and nursery habitat was carried out at all aquatic survey sites (with the exception of site 2 and 9) whereby spawning gravels, riffles and holding pools providing suitable nursery and spawning habitat was noted. Suitable spawning and nursery habitat was recorded present at Sites 1, 3, 6, 10, 12 and 14, with young brown trout recorded present at all these sites.

There is an absence of heterogenous fluvial habitat at the remaining sites that would provide ideal rearing conditions for salmonids. The limited presence of riffle and complete absence of pool habitat, modified banks provide limited salmonid nursery habitat in these watercourses. The larger watercourses, such as Sites 2, 4, 7, 8 and 9 provided adequate deeper holding pools for adult salmonids. Based on the habitats present at the sites surveys, as well as the poor to moderate water quality, the watercourses draining the site are considered poor for the early life stages of salmonids. There was evident of substrate siltation at numerous sites. Silt clogs the interstices at the surface of the riverbed. This can prevent or disrupt alevin emergence and reduce the fitness of the fry and parr, and hence their ability to cope with the natural pressures faced within the riverine environment.

These sites were of poor quality salmonid nursery being degraded due to historical drainage, poor flow rates, heavy siltation and evident enrichment. The quality of spawning habitat was also poor (for salmonids) being reduced by the deterioration of the bed from algae and sedimentation.

Many sites were assessed as being of poor to moderate value for salmonid species. This was attributed to historical channel modification (e.g. straightening and deepening), reduced hydromorphological heterogeneity, low flow conditions, and widespread siltation. These pressures resulted in limited availability of clean gravels suitable for spawning habitat, nursery habitats, and deeper pools and refugia for use as holding habitat.

In many instances, spawning habitat quality was reduced due to sedimentation, with channel substrates dominated by fine material or compacted sediments. Additionally, the prevalence of slow-flowing, low-energy channel conditions and dense macrophyte growth further reduced habitat suitability for salmonids.

Suitable lamprey ammocete silt habitat was recorded within the application site, which is likely due to the modification of the watercourse channels creating low energy within the channel, as well as cattle access, causing bank tramping and siltation into the watercourse. The slow to moderate flowing low gradient nature of modified watercourses in the study area provided suitable conditions for lamprey larvae, which require soft substrates into which they can burrow.

Habitat suitability for lamprey was generally moderate across the survey area. Suitable clean gravel spawning habitat was sparse and frequently impacted by siltation, while peat-dominated sediments were often unsuitable for ammocoete burrowing due to their fine structure. Although some sites contained localised soft sediment deposits that could support ammocoetes, overall habitat quality for lamprey was limited by low flows, poor hydromorphology, and the dominance of peat-derived substrates.

Spawning habitat for lamprey was recorded present at a number of sites, 1, 3, 6, 10, 12 and 14.

7.7.2.4.4 Fish Species

Sampling sites 2, 4 and 9 returned no electrofishing results, as sites 2 and 9 were unsuitable for electrofishing due to been excessive deep heavily modified channels. Site 4 was dry at the time of survey.

Two Annex II fish species, Atlantic Salmon and Lampetra sp, was recorded during the electrofishing surveys, Salmon (n=1), and lamprey (Lampetra sp,) (n=24) across all 11 sampled



sites. One Salmon was captured at one site (site 14) and 24 River/Brook lamprey ammocetes were captured at five sites.

The salmon was 13.5cm in length, a 2+ aged fish. Its present this far up into the midlands is an indication there is limited barriers upstream for this fish species to migrate from the sea.

The River/Brook lamprey ammocetes length frequency ranged from 2.5-15cm in length (0+ to 4+ years) indicating ongoing recruitment in these watercourses, suitable spawning habitat and silts and well as no barrier to migration through these watercourses.

Given the above, and protection afforded to the species by the Wildlife Act 1976 (as amended), and Habitat Directive these fish species are considered a KER of Local Importance (Higher Value).

7.7.2.4.5 White-clawed Crayfish

Crayfish traps were set and collected at all 14 sites. No crayfish were captured in the traps during the survey. A habitat assessment and manual search was carried out at all accessible sites for the presence of white-clawed crayfish (with exception of Sites 2, 8 and 9 due to deep unwadable waters). No white-clawed crayfish were recorded present at any of the sites, nor were any captured during kick sampling or electrofishing surveys. No evidence of white-clawed crayfish carapace or claw remains were recorded on the riverbanks or bridge ledges in the form of Otter scat or remains from predation.

Potential suitable habitat to support crayfish was assessed as moderate at several sites, particularly where suitable refugia and calcareous influences were present.

Given the above, and protection afforded to the species by the Wildlife Act 1976 (as amended), and Habitat Directive these fish species are considered a KER of Local Importance (Higher Value).

7.7.2.4.6 Freshwater Pearl Mussel

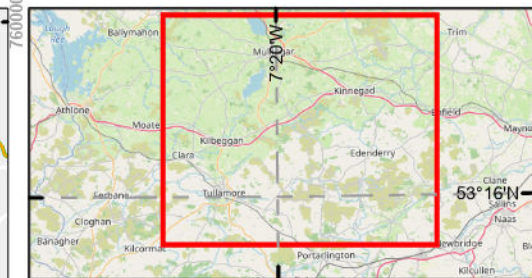
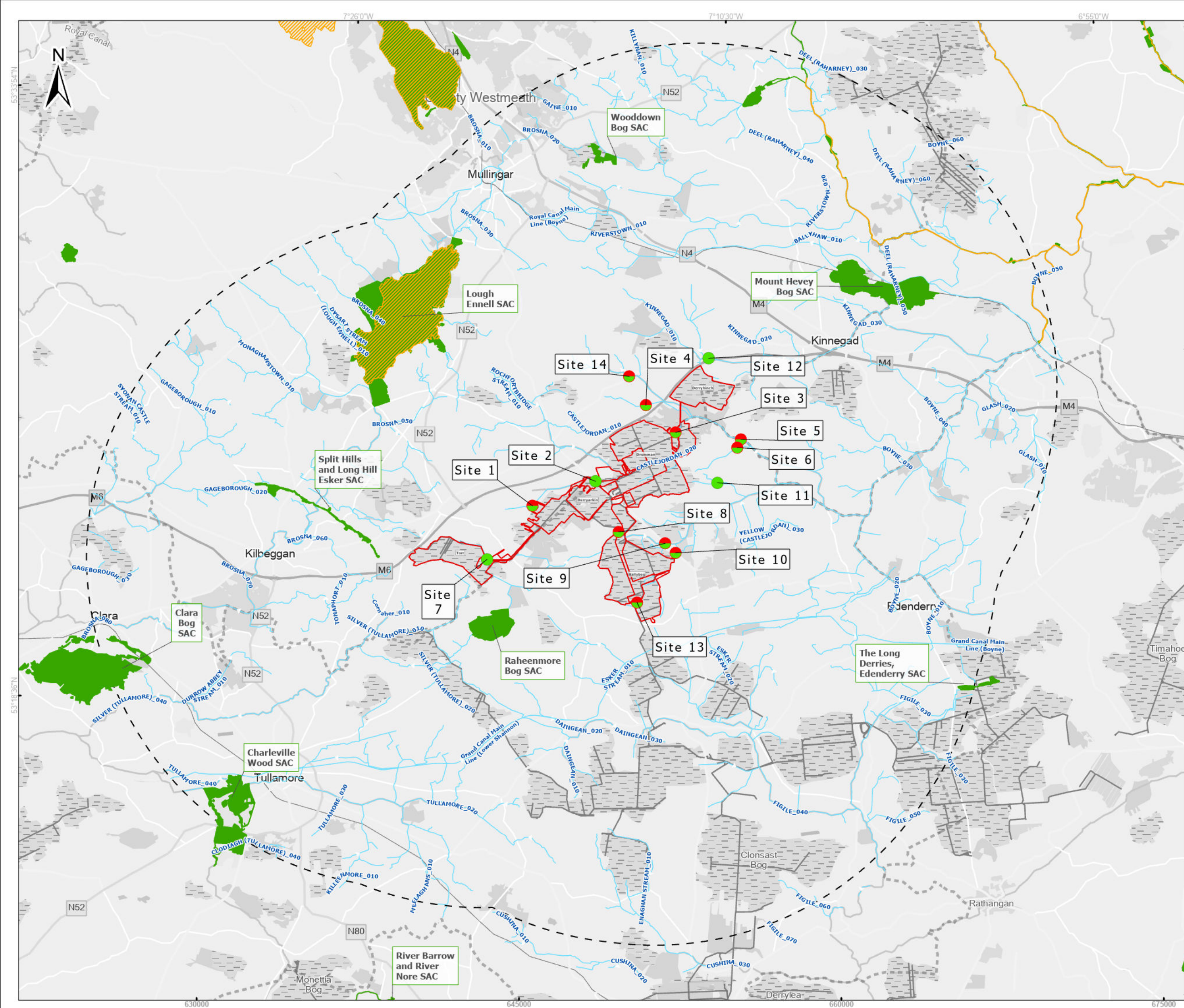
A broad appraisal/overview of the upstream and downstream habitat at each aquatic survey site was undertaken to evaluate the wider contribution to FWPM and the potential for this species to be present within the Application site. Based on the general riverine habitat, topography, low gradient, substrate, water quality and surrounding habitat, it was determined that the watercourses within the site and downstream do not contain suitable habitat. No FWPM were recorded during aquatic surveys for the proposed project and no FWPM were recorded present within the eDNA samples collected from sites 2, 5, 10 and 13.

7.7.2.4.7 Environmental DNA

An eDNA sampling survey was carried out to detect the presence of River/Brook lamprey, Salmon and FWPM presence out at four survey sites within the study area of the Application site.

The number of replicates that show a positive result may indicate a lower or higher amount of eDNA presence in the water body. However, even a score as low as 1/12 is a positive result indicating species present. A negative result, where eDNA is not detected or is present below the threshold of detection, should be interpreted with caution.

A negative result does not necessarily confirm species absence, as the species may still be present below the limit of detection. Note there is no evidence FWPM is present within the study site. Lamprey DNA was collected at sites 2, 5 and 10. This corresponds with their presence at these sites were electrofished (with exception to site 2 which could not be electrofished due to depths). A very low eDNA presence of Salmon has shown this species to be present at sites 2 and 5.



Legend

- Site Boundary
- Designated Sites
- Special Protected Areas (SPAs)
- Special Areas of Conservations (SACs)
- WFD - Rivers
- Electrofishing
- eDNA, Crayfish, Electrofishing, Kick sampling, and RHAT
- Crayfish, Electrofishing, Kick sampling and RHAT

0 1.5 3 Kilometers

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EPSG: 2157			
A	24/09/2026	First issue	K.K. B.K.
Rev	Date	Description	By Chkd.

Client: **BnM**

Project: **Derrygreenagh Substitue Consent**

Title: **Figure 7-10: Aquatic Survey Sites**

Scale @ A3: 1:160,000

Prepared by: K.Kale Checked by: B.Kasonde Date: September 2026

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Map Ref: 12334-003-E.FISH-AE-AA-TOB-A Draft: A

7.7.2.5 Bird Surveys

The ornithological baseline has been informed by detailed surveys undertaken across the Application Site as part of the wider Derrygreenagh Wind and Solar Farm Project, the results of which are presented in Appendix 7.1 through Appendix 7.4. As Toar Bog was incorporated into the Application Site boundary at a later stage, supplementary ornithological surveys were undertaken between December 2025 and June 2026 to characterise bird assemblages and habitat use within this additional area, the results of which are also presented in Appendix 7.5. Collectively, these surveys provide a comprehensive and representative baseline of ornithological conditions across the full Application Site and its surrounding receiving environment. Maps showing locations of ornithology surveys are included in Appendix 7.1 through Appendix 7.5.

7.7.2.5.1 Overview

Section 7.7.2.5.2 through Section 7.7.2.5.4 presents summary findings of the field studies conducted at the Application Site between October 2024 and May 2026, focusing on the bird activity recorded during multiple survey types undertaken across breeding and winter seasons, including:

- I-WeBS (Wetland Bird Survey),
- Breeding Waterbird (Wader) Surveys,
- Breeding Bird Transect Surveys (CBS-based),
- Woodcock Transect Surveys,
- Vantage Point Surveys,
- Winter Bird Transect Surveys, and
- Hen Harrier Roost Surveys.

The species recorded during the surveys illustrate the significant ecological importance of the Application Site for bird activity and its role in supporting biodiversity. In accordance with CIEEM (2018) guidance, bird species are treated as ecological receptors, with their importance determined based on conservation status, legal protection, population status, and the scale and regularity of site usage. Survey results identified a variety of bird species across the study area, including between 38 and 46 target species recorded during individual survey periods, with variation reflecting seasonal differences in site usage. Habitats within the site, particularly wetlands and cutover bog systems, support both breeding and wintering bird populations, including species of high conservation concern.

The designations applicable to the species are presented in Table 7-12. Several of the species recorded are protected under the EU Birds Directive (2009/147/EC) and/or the Wildlife Acts 1976–2023 (as amended). Species recorded include multiple Annex I species (e.g. European Golden Plover, Whooper Swan, Hen Harrier, Peregrine Falcon, Merlin, Little Egret and Great Egret), as well as a number of Red-listed and Amber-listed species (Gilbert et al., 2021), including Northern Lapwing, Common Snipe, Eurasian Woodcock and Meadow Pipit.

The designations applicable to the species are presented in Table 7-12. Ecological valuations have been informed by the conservation status of each species and its likely importance within the Application Site and its environs.

Under the NRA methodology, valuations of International or National Importance are typically assigned where a site supports populations of international or national significance. Bearing this in mind, and taking into account the survey results, a conservative approach to valuation has been adopted. Accordingly, all species listed on Annex I of the Birds Directive and all species included on the BoCCI Red and Amber Lists have been assigned a valuation of County Importance. Species not included within these designations have generally been assigned a valuation of Local Importance (Lower Value).

Table 7-12: Conservation Status of Bird Species Recorded During Ornithological Surveys (2024–2026)

Designation	Species
Annex I (EU Birds Directive)	Golden Plover (<i>Pluvialis apricaria</i>) Whooper Swan (<i>Cygnus cygnus</i>) Hen Harrier (<i>Circus cyaneus</i>) Peregrine Falcon (<i>Falco peregrinus</i>) Merlin (<i>Falco columbarius</i>) Little Egret (<i>Egretta garzetta</i>) Great Egret (<i>Ardea alba</i>) Common Kingfisher (<i>Alcedo atthis</i>) Smew (<i>Mergellus albellus</i>) Western Marsh Harrier (<i>Circus aeruginosus</i>) White-tailed Eagle (<i>Haliaeetus albicilla</i>) Short-eared Owl (<i>Asio flammeus</i>) Dunlin (<i>Calidris alpina</i>)
Red-listed (BoCCI)	Northern Lapwing (<i>Vanellus vanellus</i>) Common Snipe (<i>Gallinago gallinago</i>) Eurasian Curlew (<i>Numenius arquata</i>) Eurasian Woodcock (<i>Scolopax rusticola</i>) Kestrel (<i>Falco tinnunculus</i>) Goldeneye (<i>Bucephala clangula</i>) Northern Shoveler (<i>Spatula clypeata</i>) Common Pochard (<i>Aythya ferina</i>) Yellowhammer (<i>Emberiza citrinella</i>) Redwing (<i>Turdus iliacus</i>) Meadow Pipit (<i>Anthus pratensis</i>) Common Redshank (<i>Tringa totanus</i>) Black-headed Gull (<i>Larus ridibundus</i>)
Amber-listed (BoCCI)	Common Ringed Plover (<i>Charadrius hiaticula</i>) Mute Swan (<i>Cygnus olor</i>) Mallard (<i>Anas platyrhynchos</i>) Tufted Duck (<i>Aythya fuligula</i>) Eurasian Teal (<i>Anas crecca</i>) Eurasian Wigeon (<i>Mareca penelope</i>) Black-headed Gull (<i>Larus ridibundus</i>) Lesser Black-backed Gull (<i>Larus fuscus</i>) Great Cormorant (<i>Phalacrocorax carbo</i>) Great Crested Grebe (<i>Podiceps cristatus</i>) Eurasian Coot (<i>Fulica atra</i>) Common Gull (<i>Larus canus</i>) Sand Martin (<i>Riparia riparia</i>) Skylark (<i>Alauda arvensis</i>) Linnet (<i>Linaria cannabina</i>) Starling (<i>Sturnus vulgaris</i>) House Sparrow (<i>Passer domesticus</i>) Goldcrest (<i>Regulus regulus</i>)



Designation	Species
	Greylag Goose (<i>Anser anser</i>) Common Kingfisher (<i>Alcedo atthis</i>) Smew (<i>Mergellus albellus</i>) Western Marsh Harrier (<i>Circus aeruginosus</i>) Short-eared Owl (<i>Asio flammeus</i>) Northern Wheatear (<i>Oenanthe oenanthe</i>) Black-headed Gull (<i>Larus ridibundus</i>) Gadwall (<i>Mareca streper</i>)
Not listed	Common Buzzard (<i>Buteo buteo</i>) Eurasian Sparrowhawk (<i>Accipiter nisus</i>) Grey Heron (<i>Ardea cinerea</i>) Water Rail (<i>Rallus aquaticus</i>) Common Moorhen (<i>Gallinula chloropus</i>) Common Greenshank (<i>Tringa nebularia</i>) Common Woodpigeon (<i>Columba palumbus</i>) Common Blackbird (<i>Turdus merula</i>) European Robin (<i>Erithacus rubecula</i>) Dunnock (<i>Prunella modularis</i>) Eurasian Wren (<i>Troglodytes troglodytes</i>) Eurasian Blue Tit (<i>Cyanistes caeruleus</i>) Great Tit (<i>Parus major</i>) Coal Tit (<i>Periparus ater</i>) Long-tailed Tit (<i>Aegithalos caudatus</i>) Eurasian Chaffinch (<i>Fringilla coelebs</i>) European Goldfinch (<i>Carduelis carduelis</i>) Eurasian Siskin (<i>Spinus spinus</i>) Eurasian Bullfinch (<i>Pyrrhula pyrrhula</i>) Lesser Redpoll (<i>Acanthis cabaret</i>) Eurasian Jay (<i>Garrulus glandarius</i>) Eurasian Magpie (<i>Pica pica</i>) Hooded Crow (<i>Corvus cornix</i>) Rook (<i>Corvus frugilegus</i>) Western Jackdaw (<i>Corvus monedula</i>) Northern Raven (<i>Corvus corax</i>) Fieldfare (<i>Turdus pilaris</i>) Song Thrush (<i>Turdus philomelos</i>) Mistle Thrush (<i>Turdus viscivorus</i>) European Stonechat (<i>Saxicola rubicola</i>) Pied Wagtail (<i>Motacilla alba</i>)

7.7.2.5.2 Winter Bird Activity (2025-2026)

For this section, the most recent winter survey data (2025–2026) will be assessed, with earlier survey data (2024–2025) used to provide temporal context and demonstrating consistency in site usage. This approach aligns with CIEEM (2018) guidance, where conditions are established using recent, relevant, and reliable data, and survey results are used to characterise current site conditions, species distribution, and activity.

During the winter season of 2025–2026, 46 bird species were recorded, including 12 Red-listed species, 14 Amber-listed species, and 10 species protected under Annex I of the EU Birds Directive. Winter surveys revealed frequent observations of species such as:

- Golden Plover (Annex I, Red-listed) – Seen on many occasions, often in flocks up to 650 individuals.

- Lapwing (Red-listed) – Recorded many times, with groups up to 400 individuals or more.
- Whooper Swan (Annex I, Amber-listed) – Frequently observed in flight and foraging.
- Hen Harrier (Annex I, Amber-listed) – Observed regularly throughout the survey period, displaying hunting and other behaviours.
- Snipe (Red-listed) – Recorded many times, either flushed, or flying low in wetland habitats.
- Buzzard – Observed frequently across multiple surveys.
- Other species: Kestrel, Peregrine, Merlin, Sparrowhawk, Curlew, Shoveler, Teal, Wigeon, Gadwall, Lesser Black-backed Gull, Black headed Gull, and Mute Swan.

7.7.2.5.3 *Breeding Bird Activity (Summer 2025)*

During the breeding season of 2025, 39 verified bird species were recorded within the Study Area, including 8 Annex I species, 12 Red-listed species, 13 Amber-listed species, and 6 Green-listed species. Breeding-season surveys recorded a strong assemblage of waders, waterbirds and raptors. No Annex I species were confirmed as breeding or identified as probable breeders on-site during the core Breeding Season 2025 surveys.

The following species were recorded as confirmed breeding on-site:

- Northern Lapwing – Red-listed
- Meadow Pipit – Red-listed
- Common Ringed Plover – Amber-listed
- Black-headed Gull – Amber-listed
- Mallard – Amber-listed
- Mute Swan – Amber-listed
- Little Grebe – Amber-listed
- Great Crested Grebe – Amber-listed
- Tufted Duck – Amber-listed
- Common Buzzard – Green-listed
- Common Moorhen – Green-listed
- Eurasian Sparrowhawk – Green-listed

Probable/likely breeding activity on-site was also identified for:

- Eurasian Woodcock – Red-listed, based on roding males recorded during dedicated surveys
- Common Snipe – Red-listed, based on repeated breeding-season records in suitable wetland habitat

Annex I species recorded during the breeding season within the wider survey area, but not confirmed as breeding within the core site, included:

- Common Kingfisher
- European Golden Plover
- Great Egret
- Hen Harrier
- Little Egret
- Peregrine Falcon
- Smew

- Whooper Swan
- Dunlin

Additional Red-listed species recorded during the breeding season included:

- Common Kestrel
- Common Pochard
- Common Redshank
- Common Swift
- Eurasian Curlew
- Black-tailed Godwit
- Yellowhammer

While these species were recorded during surveys, no evidence of confirmed breeding within the Application Site was identified.

Additional Amber-listed species recorded during the breeding season included:

- Common Gull
- Common Sandpiper
- Eurasian Teal
- Great Cormorant
- Greylag Goose
- Lesser Black-backed Gull

These species were recorded within the study area; however, no evidence of confirmed breeding within the Application Site was identified.

Additional Green-listed species recorded during the breeding season included:

- Grey Heron
- Water Rail
- Green Sandpiper

7.7.2.5.4 Migratory and Hinterland Bird Surveys

European Golden Plover (Annex I, Red-listed) and Northern Lapwing (Red-listed) were recorded as significant wintering and migratory visitors, with large flocks using the site and wider hinterland during the winter period. The 2025–2026 winter surveys recorded European Golden Plover in flocks of up to 650 individuals and Northern Lapwing in flocks of up to 400 individuals, indicating the importance of the site and surrounding bog/wetland habitats for wintering waders.

Redwing (Red-listed) and Common Linnet and Common Starling (both Amber-listed) were also recorded during the winter surveys, indicating use of the wider landscape by migratory and wintering passerines.

The hinterland and wider-area surveys highlighted species such as Common Kingfisher, Great Cormorant, Greylag Goose, Eurasian Teal, Whooper Swan, Little Egret and Great Egret,

indicating the importance of adjacent quarry ponds, wetlands and other waterbodies for both resident and migratory species. These species were recorded during the Winter 2025–2026 I-WeBS / Wetland Bird Surveys and the Summer 2025 breeding waterbird surveys, demonstrating consistent use of the wider landscape by wetland-associated birds.

Overall, the site demonstrates significant ecological value for bird species, serving as an important habitat for breeding waders, migratory waterfowl, and wintering raptors. The mixture of open peatland, regenerating scrub, quarry ponds, drainage features, and nearby wetland habitats provide a range of ecological niches that support diverse bird communities year-round.

7.7.2.6 Non-Volant Mammals

7.7.2.6.1 Badger

Badger and its breeding/resting sites (setts) are legally protected under the Wildlife Act 1976 (as amended). The presence of the species was confirmed during the multidisciplinary walkover surveys by the identification of secondary evidence. No Badger individuals were observed, but tracks, scat, used latrines, and snuffle holes were observed throughout the Application Site. A total of 11 potential Badger setts (i.e. 'D'-shaped burrows) were identified throughout Application Site (see Figure 7-11). Six setts exhibited evidence of recent use, including fresh spoil, well-worn paths and active entrances. Four setts were considered inactive, based on the presence of cobwebs, debris and the absence of fresh field signs. One additional sett exhibited mixed evidence, with debris and spider webs at the entrance but a fresh latrine nearby and was therefore considered of uncertain status. The widespread occurrence of tracks, latrines and snuffle holes indicates that the site forms part of an actively used badger territory. Given the above, and protection afforded to the species by the Wildlife Act 1976 (as amended), Badger is considered a KER of **Local Importance (Higher Value)**.

7.7.2.6.2 Otter

Otter and its breeding/resting sites (holts, couches) are protected under the Wildlife Act 1976 to 2023 (as amended) and listed on the Annex II and Annex IV of the Habitats Directive (Council Directive 92/43/EEC). A single potential Otter feature was recorded during the multidisciplinary surveys on 28 April 2026. The was identified above a stagnant stream/drainage channel and was likely inactive. Considering its status as an Annex II species and the presence of SACs designated for Otter that are hydrologically connected to the Application Site (including the River Barrow and River Nore SAC), Otter is considered a KER of **International Importance**.

7.7.2.6.3 Irish Hare

Irish Hare was one of the most frequently recorded species during surveys undertaken in April 2026. Records included live sightings, tracks and scat distributed throughout bog, cutover bog, recolonising cutover bog, scrub and exposed peat habitats. A live individual was observed running from cutover bog towards adjacent woodland, while a further live sighting was recorded within recolonising cutover bog habitat.

Numerous tracks were recorded across wet peat surfaces, including fresh paw prints extending along cutover bog areas and around water features. Several observations indicated regular

movement between habitats, while fresh droppings were recorded in scrub, bog and cutover peat habitats. The widespread distribution of records across the survey area indicates that Irish Hare regularly utilises the site for foraging, shelter and movement between suitable habitat areas. The widespread distribution of observations suggests that the site supports regular foraging and commuting activity by Hare. Considering protection under the Wildlife Act 1976 to 2023 (as amended) to the Irish Hare, it is considered a KER of **Local Importance (Higher Value)**.

7.7.2.6.4 Other Non-volant Mammals

Several records of unidentified mammal activity were recorded during the April 2026 surveys. Tracks were observed within scrub, bog woodland and riparian habitats, including routes extending from dense vegetation towards watercourses. In addition, mammal corridors were noted within scrub and bog woodland habitats. These tracks indicate mammal use of the site and indicates that scrub, woodland and watercourse margins provide important movement corridors through the peatland landscape. Species protected under the Wildlife Act 1976 to 2023 (as amended), such as Hedgehog, Pygmy Shrew, and Pine Marten, could occur around woodlands and their fringing habitats at Bord na Móna Site.

Pine Marten (*Martes martes*)

Pine Marten was confirmed through four separate scat records recorded during surveys undertaken between 27 and 28 April 2026. Evidence was obtained from cutover bog, bog woodland, grassy verge and scrub habitats distributed across the site.

Although no individuals were directly observed, the repeated occurrence of fresh scat in several locations indicates regular use of the site by Pine Marten. The distribution of records across both peatland and woodland-associated habitats suggests that the site forms part of a wider foraging and movement area for the species. The presence of bog woodland, scrub and habitat edges is likely to provide suitable cover and connectivity for Pine Marten movement through the landscape. The species are assigned **Local Importance (Higher value)**.

Shrew (*Sorex* sp.)

A single shrew record was obtained on 30 April 2026 within cutover bog habitat. The observation comprised a dead individual, which was noted by surveyors as potentially having been dropped by a predator such as a Fox or a bird species. No live individuals, feeding signs or breeding evidence were recorded. While limited, the record confirms the occurrence of small mammal species within the survey area and their role within the local food web. These species are assigned Local Importance (Lower value).

Fox (*Vulpes vulpes*) Evidence included a den within woodland habitat, tracks in bog and scrub habitats, multiple scat records, and numerous snuffle holes associated with foraging activity. Fox scat was recorded in bog, scrub, cutover bog and scrub/bog woodland habitats. Tracks were observed in exposed peat and within scrub vegetation, including tracks leading into bog woodland habitats. Repeated observations of snuffle holes, with up to thirteen recorded in one area, indicate active foraging behaviour across the peatland. The woodland den provides further evidence that the site forms part of a regularly utilised territory.

Collectively, these observations demonstrate extensive use of the site by Fox for foraging, commuting and sheltering.



The species is valued as of Local Importance (Lower Value).



Legend

Application Site Boundaries

Badger Activity

- ▲ Sett
- ▲ Snuffle hole
- ▲ Track
- ▲ Scat

0 1.5 3

Kilometers

Spatial Reference
Datum: IRENET95
EPSG: 2157

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Project:

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Title:

Figure 7-11:
Badger Activity within
the Application Site

Scale @ A3: 1:50,000

Prepared by: S.Pezzetta Checked by: J.Forde Date: September 2026

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Map Ref:

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Legend

Application Site Boundaries

Otter Holt (Inactive)

01.53

Kilometers

Spatial Reference

Datum: IRENET95

EPSG: 2157

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Figure 7-12:
Otter Activity within
the Application Site

Scale @ A3:

1:50,000

Prepared by:

Checked by:

Date:

S.Pezzetta

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September 2026

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Legend

Application Site Boundaries

Other Species

Hare

01.53

0

1.5

3

Kilometers

Spatial Reference

Datum: IRENET95

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Figure 7-13:
Hare Activity within the Application Site

Scale @ A3:

1:50,000

Prepared by:

Checked by:

Date:

K.Kale

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Legend

Application Site Boundaries

Other Species

- Fox
- Fox snuffle hole
- Hare and Fox
- Mammal
- Pine marten
- Possible fox
- Hare

0 1.5 3
Kilometers

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Figure 7-14:
Other Non-violent Mammals
within the Application Site

Scale @ A3: 1:50,000

Prepared by:	Checked by:	Date:
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7.7.2.7 Marsh Fritillary

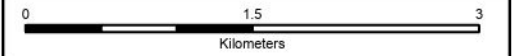
Areas supporting suitable Marsh Fritillary habitat, characterised by the presence of Devil's-bit Scabious, were identified during multidisciplinary surveys and subsequently surveyed for Marsh Fritillary in September 2023. Areas supporting the larval foodplant were systematically searched for the presence of Marsh Fritillary larval webs. Where webs were identified, their occupancy was assessed and the number of visible caterpillars was recorded. Additional information including web location, web abundance, sward structure and surrounding habitat was also collected. A total of eight larval webs were identified, supporting an estimated 270 caterpillars.

The occurrence of larval webs confirms that the Application Site currently supports breeding Marsh Fritillary within suitable habitat patches. Suitable habitat was associated with areas supporting Devil's-bit Scabious and a well-developed vegetation structure, principally within revegetated cutover peatland habitats and associated transitional vegetation. Although Devil's-bit Scabious was relatively widespread, Marsh Fritillary was only recorded in a subset of suitable habitat patches.

The survey results indicate that suitable habitat for the species has developed within parts of the site following peat extraction cessation. Given that peat extraction ceased at different times across the wider bog complex, including several areas that have been out of production for decades, there has been sufficient opportunity for revegetation and the establishment of habitat capable of supporting Marsh Fritillary. The presence of larval webs confirms that these habitats are currently being utilised by the species. The species is listed in the Annex II of the Habitats Directive (Council Directive 92/43/EEC) and is therefore considered to be of **County Importance**.



- Legend**
- Application Site Boundaries
 - Fertillary Points



Spatial Reference Datum: IRENET95 EPSG: 2157		Copyrights: Microsoft, Vantor, © OpenStreetMap (and) contributors, CC-BY-SA	
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Title:
Figure 7-15:
Marsh Fritillary Survey
Devil's-bit Scabious
Stands Locations and Survey Results

Scale @ A3: 1:50,000

Prepared by: K.Kale Checked by: J.Forde Date: September 2026

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7.7.2.8 Invasive Alien Plant Species

Multidisciplinary surveys undertaken in April and May 2026 recorded a small number of invasive non-native plant species within the Application Site. Surveys were undertaken across a range of habitat types including treelines, scrub, recolonising bare ground and river corridors.

Only three invasive plant species were recorded during the surveys:

- Cherry Laurel (*Prunus laurocerasus*)
- Japanese Knotweed (*Fallopia japonica*)
- Butterfly-bush (*Buddleja davidii*)

The limited number of records indicates that invasive non-native plant species are not widespread within the Application Site. Records were generally associated with disturbed habitats, treelines and areas adjacent to existing linear features.

Of these species above, only Japanese Knotweed is listed under Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). Cherry Laurel and Butterfly-bush, while recognised as invasive non-native plant species, are not currently included on the Third Schedule.

The spread of the species does not represent a potential significant impact pathway associated with the Project and can therefore be excluded from further consideration.



Legend

- Application Site Boundaries
- Cherry Laurel
- Cherry Laurel

0 1.5 3
Kilometers

Spatial Reference
Datum: IRENET95
EPSG: 2157

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Figure 7-16:
Location of Invasive Non-native Species

Scale @ A3: 1:50,000

Prepared by: S.Pezzetta

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7.8 DESK STUDY

7.8.1 National Biodiversity Data Centre Records

Table 7-13 below presents the results of a search for records (historical and current) from the Biodiversity Ireland website³⁷ of species from the area surrounding the Application Site, with a focus on the 10x10 km hectads N33, N43, N44, N53, and N54 within which the Application Site is located.

The table below provides a summary of species recorded within the study area, focusing on amphibians, birds, crustaceans, flowering plants, insects, lichens, and molluscs. The records include the species name, the hectad (10 km square) where the species was observed, the number of records, the most recent observation date, and the relevant legal or conservation designations. The designations referenced include protections under the Wildlife Acts, EU Habitats Directive, and EU Birds Directive.

For bird species, only those listed as Red or Amber under the Birds of Conservation Concern in Ireland (BoCCI) are included, as these categories indicate species of higher conservation priority. Species listed as Green are not included in this table, as they are not considered to be of immediate conservation concern. Birds designated as protected are also listed.

In addition to outlining records of protected species Table 7-13 also lists any species identified as invasive under the EU Invasive Alien Species Regulation or listed on the Third Schedule to the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) are included. The table also includes other non-native invasive species of recognised ecological concern which, although not listed under either legislative instrument, are widely recognised as having the potential to adversely affect native biodiversity through competition, habitat modification and the displacement of native flora and fauna. Examples include Cherry Laurel (*Prunus laurocerasus*) and Butterfly-bush (*Buddleja davidii*) both which are recognised as invasive species of ecological concern in Ireland and were recorded at the Application Site.

³⁷ Available at: <https://maps.biodiversityireland.ie/Map>. Accessed March 2026.



Table 7-13: Biodiversity Records within N33, N43, N44, N53, and N54 10 kmX10 km Grid Squares

Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
Bird			
White-tailed Eagle	<i>Haliaeetus albicilla</i>	N44 (6) [10/02/2024]	Protected Species: Wildlife Acts
Bewick's Swan	<i>Cygnus columbianus bewickii</i>	N44 (1) [31/12/2001]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
Great Northern Diver	<i>Gavia immer</i>	N44 (5) [22/01/2021]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
Little Egret	<i>Egretta garzetta</i>	N44 (17) [27/02/2024]; N54 (4) [15/01/2021]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
Peregrine	<i>Falco peregrinus</i>	N43 (1) [29/02/1984]; N44 (7) [30/12/2024]; N53 (3) [15/03/2021]; N54 (1) [21/08/2016]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
Golden Plover	<i>Pluvialis apricaria</i>	N43 (5) [31/12/2011]; N44 (7) [30/10/2024]; N53 (2) [31/12/2011]; N54 (3) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
White-fronted Goose	<i>Anser albifrons</i>	N44 (2) [02/04/2018]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Tern	<i>Sterna hirundo</i>	N44 (6) [05/05/2021]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Corncrake	<i>Crex crex</i>	N43 (1) [31/07/1972]; N44 (1) [31/07/1972]; N53 (1) [31/07/1972]; N54 (1) [31/07/1972]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Dunlin	<i>Calidris alpina</i>	N44 (1) [31/07/1972]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
			Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Hen Harrier	<i>Circus cyaneus</i>	N53 (1) [31/07/1972]; N54 (1) [02/05/2018]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Kingfisher	<i>Alcedo atthis</i>	N44 (9) [03/03/2024]; N53 (7) [28/07/2024]; N54 (9) [14/05/2020]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Merlin	<i>Falco columbarius</i>	N43 (1) [29/02/1984]; N53 (1) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Nightjar	<i>Caprimulgus europaeus</i>	N43 (1) [31/07/1972]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Whooper Swan	<i>Cygnus cygnus</i>	N43 (20) [25/03/2024]; N44 (8) [09/10/2022]; N53 (5) [23/10/2019]; N54 (2) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Rock Dove	<i>Columba livia</i>	N43 (4) [31/12/2011]; N44 (6) [31/12/2011]; N53 (5) [31/12/2011]; N54 (4) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Mallard	<i>Anas platyrhynchos</i>	N43 (9) [05/05/2019]; N44 (39) [03/03/2024]; N53 (14) [14/04/2022]; N54 (12) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Pheasant	<i>Phasianus colchicus</i>	N43 (18) [31/12/2011]; N44 (28) [03/03/2024]; N53 (27) [19/05/2018]; N54 (21) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Woodpigeon	<i>Columba palumbus</i>	N43 (33) [18/04/2021]; N44 (45) [02/12/2024]; N53 (25)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
		[19/05/2018]; N54 (32) [20/06/2019]	
Grey Partridge	<i>Perdix perdix</i>	N43 (1) [31/07/1972]; N53 (1) [31/07/1991]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Red Grouse	<i>Lagopus lagopus</i>	N43 (3) [31/07/1991]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Coot	<i>Fulica atra</i>	N43 (4) [31/12/2011]; N44 (37) [29/06/2024]; N53 (1) [29/02/1984]; N54 (1) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Pintail	<i>Anas acuta</i>	N44 (3) [22/02/2019]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Pochard	<i>Aythya ferina</i>	N43 (1) [31/12/2011]; N44 (9) [10/02/2024]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Teal	<i>Anas crecca</i>	N43 (4) [31/12/2011]; N44 (10) [18/01/2024]; N53 (6) [31/12/2011]; N54 (5) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Tufted Duck	<i>Aythya fuligula</i>	N43 (5) [05/05/2019]; N44 (15) [10/02/2024]; N53 (2) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
Wigeon	<i>Mareca penelope</i>	N43 (3) [31/12/2011]; N44 (6) [31/12/2020]; N53 (1) [29/02/1984]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Jack Snipe	<i>Limnocryptes minimus</i>	N44 (2) [11/09/2019]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species
Snipe	<i>Gallinago gallinago</i>	N43 (15) [03/01/2024]; N44 (25) [19/05/2024]; N53 (17) [14/04/2023]; N54 (21) [15/04/2020]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Woodcock	<i>Scolopax rusticola</i>	N43 (3) [05/03/2022]; N44 (7) [27/05/2024]; N53 (6) [31/12/2011]; N54 (2) [29/02/1984]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Shoveler	<i>Spatula clypeata</i>	N44 (4) [22/02/2019]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Gadwall	<i>Mareca strepera</i>	N44 (1) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Red-breasted Merganser	<i>Mergus serrator</i>	N44 (1) [31/07/1972]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species
Common Scoter	<i>Melanitta nigra</i>	N44 (1) [31/07/1972]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Scaup	<i>Aythya marila</i>	N44 (4) [08/01/2024]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
			Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Curlew	<i>Numenius arquata</i>	N43 (11) [20/10/2019]; N44 (7) [26/01/2023]; N53 (9) [21/08/2015]; N54 (10) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Goldeneye	<i>Bucephala clangula</i>	N44 (14) [09/12/2024]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lapwing	<i>Vanellus vanellus</i>	N43 (22) [25/03/2024]; N44 (31) [30/12/2023]; N53 (20) [06/06/2021]; N54 (17) [31/12/2011]	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Brent Goose	<i>Branta bernicla</i>	N44 (1) [26/01/2023]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Gull	<i>Larus canus</i>	N44 (4) [18/01/2024]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Sandpiper	<i>Actitis hypoleucos</i>	N43 (2) [26/05/2021]; N44 (1) [31/07/1972]; N53 (4) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Cormorant	<i>Phalacrocorax carbo</i>	N43 (1) [25/03/2024]; N44 (21) [02/12/2024]; N53 (4) [12/03/2022]; N54 (1) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Grasshopper Warbler	<i>Locustella naevia</i>	N43 (9) [24/04/2021]; N44 (3) [31/07/1991]; N53 (4) [30/05/2019]; N54 (5) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Black-backed Gull	<i>Larus marinus</i>	N44 (8) [03/03/2024]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Crested Grebe	<i>Podiceps cristatus</i>	N43 (5) [26/05/2021]; N44 (36) [29/06/2024]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
House Martin	<i>Delichon urbicum</i>	N43 (18) [30/06/2012]; N44 (17) [15/04/2024]; N53 (9) [31/12/2011]; N54 (18) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow	<i>Passer domesticus</i>	N43 (28) [18/03/2019]; N44 (40) [16/02/2024]; N53 (15) [31/12/2011]; N54 (28) [20/06/2019]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Kestrel	<i>Falco tinnunculus</i>	N43 (20) [17/01/2024]; N44 (19) [12/10/2024]; N53 (16) [19/05/2018]; N54 (16) [15/04/2020]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lesser Black-backed Gull	<i>Larus fuscus</i>	N43 (7) [27/10/2009]; N44 (10) [19/01/2024]; N53 (1) [16/10/2010]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lesser Whitethroat	<i>Curruca curruca</i>	N44 (1) [03/07/2021]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Linnet	<i>Linaria cannabina</i>	N43 (14) [06/01/2018]; N44 (14) [05/01/2021]; N53 (13) [21/11/2017]; N54 (18) [14/05/2020]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Little Grebe	<i>Tachybaptus ruficollis</i>	N43 (4) [31/12/2011]; N44 (32) [10/02/2024]; N53 (1) [31/12/2011]; N54 (6) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mute Swan	<i>Cygnus olor</i>	N43 (8) [05/07/2024]; N44 (45) [29/06/2024]; N53 (11) [26/05/2021]; N54 (7) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Ringed Plover	<i>Charadrius hiaticula</i>	N43 (7) [05/07/2024]; N44 (1) [31/07/1972]; N53 (1) [17/06/2024]; N54 (2) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Sand Martin	<i>Riparia riparia</i>	N43 (12) [05/07/2024]; N44 (6) [07/05/2020]; N53 (7)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
		[18/10/2015]; N54 (11) [31/12/2011]	
Skylark	<i>Alauda arvensis</i>	N43 (18) [26/05/2021]; N44 (6) [08/01/2021]; N53 (17) [31/12/2011]; N54 (20) [15/04/2020]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Slavonian Grebe	<i>Podiceps auritus</i>	N44 (1) [31/12/2001]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Spotted Crake	<i>Porzana porzana</i>	N53 (1) [02/07/1993]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Spotted Flycatcher	<i>Muscicapa striata</i>	N43 (10) [31/12/2011]; N44 (10) [30/06/2024]; N53 (7) [31/12/2011]; N54 (9) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Starling	<i>Sturnus vulgaris</i>	N43 (32) [14/04/2021]; N44 (40) [02/12/2024]; N53 (18) [31/12/2011]; N54 (31) [03/03/2014]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Stock Dove	<i>Columba oenas</i>	N43 (6) [31/12/2011]; N44 (4) [31/07/1991]; N53 (5) [31/12/2011]; N54 (7) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Swallow	<i>Hirundo rustica</i>	N43 (25) [14/04/2021]; N44 (37) [06/10/2024]; N53 (23) [19/05/2018]; N54 (22) [20/06/2019]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Swift	<i>Apus apus</i>	N43 (7) [31/12/2011]; N44 (16) [07/05/2024]; N53 (13) [31/12/2011]; N54 (14) [18/05/2023]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Tree Sparrow	<i>Passer montanus</i>	N43 (2) [31/12/2011]; N44 (2) [31/12/2011]; N53 (1) [22/04/2018]; N54 (4) [07/06/2021]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
Water Rail	<i>Rallus aquaticus</i>	N44 (7) [19/01/2024]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Wheatear	<i>Oenanthe oenanthe</i>	N43 (2) [31/07/1991]; N53 (4) [07/05/2018]; N54 (2) [31/07/1991]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Whinchat	<i>Saxicola rubetra</i>	N43 (4) [31/07/1991]; N54 (1) [31/07/1972]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Greenshank	<i>Tringa nebularia</i>	N44 (1) [29/07/2017]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Shelduck	<i>Tadorna tadorna</i>	N44 (2) [26/01/2023]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Barn Owl	<i>Tyto alba</i>	N43 (5) [29/02/2024]; N44 (11) [28/06/2024]; N53 (1) [31/07/1972]; N54 (2) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	N43 (7) [31/12/2011]; N44 (34) [22/03/2024]; N53 (5) [19/05/2018]; N54 (11) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Herring Gull	<i>Larus argentatus</i>	N44 (7) [07/05/2020]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Quail	<i>Coturnix coturnix</i>	N53 (1) [31/12/2011]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Redshank	<i>Tringa totanus</i>	N44 (5) [26/01/2023]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Yellowhammer	<i>Emberiza citrinella</i>	N43 (17) [20/04/2023]; N44 (36) [29/06/2024]; N53 (13) [17/06/2024]; N54 (29) [02/05/2022]	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
Volant Mammal			
Brown Long-eared Bat	<i>Plecotus auritus</i>	N44 (6) [06/12/2023]; N53 (1) [18/05/2009]; N54 (3) [29/09/2018]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Daubenton's Bat	<i>Myotis daubentonii</i>	N43 (1) [18/05/2009]; N44 (1) [06/07/2006]; N53 (11) [12/07/2018]; N54 (57) [21/08/2021]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Leisler's Bat	<i>Nyctalus leisleri</i>	N43 (3) [11/07/2018]; N44 (24) [09/06/2016]; N53 (3) [12/07/2018]; N54 (1) [13/06/2000]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Natterer's Bat	<i>Myotis nattereri</i>	N44 (1) [06/12/2023]; N53 (1) [18/05/2009]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Common Pipistrelle	<i>Pipistrellus pipistrellus sensu stricto</i>	N43 (3) [11/07/2018]; N44 (26) [06/12/2023]; N53 (5) [18/05/2019]; N54 (7) [26/09/2018]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>	N44 (2) [29/05/2009]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	N43 (2) [18/05/2009]; N44 (28) [09/06/2016]; N53 (5) [12/07/2018]; N54 (5) [29/09/2018]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Non-volant Mammal			
Otter	<i>Lutra lutra</i>	N43 (19) [23/03/2015]; N44 (9) [28/10/2014]; N53 (17) [05/04/2015]; N54 (7) [23/03/2015]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
Pine Marten	<i>Martes martes</i>	N43 (12) [05/06/2018]; N44 (12) [11/12/2022]; N53 (6) [16/08/2018]; N54 (10) [17/06/2021]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Badger	<i>Meles meles</i>	N43 (46) [30/01/2015]; N44 (19) [12/12/2018]; N53 (74)	Protected Species: Wildlife Acts

Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
		[31/12/2015]; N54 (64) [20/01/2015]	
Hedgehog	<i>Erinaceus europaeus</i>	N43 (13) [23/03/2023]; N44 (10) [02/08/2022]; N53 (7) [03/09/2022]; N54 (15) [29/06/2023]	Protected Species: Wildlife Acts
Pygmy Shrew	<i>Sorex minutus</i>	N43 (3) [12/07/2018]; N44 (1) [05/04/2014]; N53 (1) [18/10/2016]	Protected Species: Wildlife Acts
Red Squirrel	<i>Sciurus vulgaris</i>	N43 (4) [31/12/2012]; N44 (6) [23/10/2016]; N53 (4) [18/10/2016]; N54 (1) [20/12/2014]	Protected Species: Wildlife Acts
Amphibian			
Smooth Newt	<i>Lissotriton vulgaris</i>	N44 (7) [22/05/2020]; N53 (1) [03/03/2013]	Protected Species: Wildlife Acts
Common Frog	<i>Rana temporaria</i>	N43 (10) [10/04/2020]; N44 (18) [08/09/2019]; N53 (4) [19/05/2018]; N54 (5) [25/03/2003]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Reptile			
Common Lizard	<i>Zootoca vivipara</i>	N53 (1) [27/06/2018]	Protected Species: Wildlife Acts
Vascular Plant			
Red Hemp-nettle	<i>Galeopsis angustifolia</i>	N53 (1) [31/12/1999]	Protected Species: Flora Protection Order Protected Species: Flora Protection Order >> Flora Protection Order Threatened Species: Endangered
Blue Fleabane	<i>Erigeron acris</i>	N43 (43) [30/09/2010]; N53 (13) [25/08/2018]; N54 (3) [29/10/2009]	Threatened Species: Least concern
Greater Knapweed	<i>Centaurea scabiosa</i>	N54 (1) [23/07/2012]	Threatened Species: Near threatened
Fibrous Tussock-sedge	<i>Carex appropinquata</i>	N44 (4) [31/12/1986]	Threatened Species: Near threatened
Slender Tufted-sedge	<i>Carex acuta</i>	N43 (2) [13/10/2001]; N53 (2) [04/10/2001]	Threatened Species: Near threatened
Irish Whitebeam	<i>Sorbus hibernica</i>	N44 (3) [31/12/2010]	Threatened Species: Vulnerable
Pyrola rotundifolia subsp. rotundifolia	<i>Pyrola rotundifolia subsp. rotundifolia</i>	N53 (2) [14/07/2022]	Threatened Species: Vulnerable
Crustacean			



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
White-clawed Crayfish	<i>Austropotamobius pallipes</i>	N43 (4) [28/06/2018]; N44 (1) [31/12/2005]; N53 (6) [11/08/2009]; N54 (21) [10/08/2009]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Butterfly			
Marsh Fritillary	<i>Euphydryas aurinia</i>	N43 (11) [22/05/2023]; N44 (16) [30/05/2020]; N53 (3) [31/12/1982]	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Threatened Species: Vulnerable
Wall	<i>Lasiommata megera</i>	N43 (1) [17/09/2015]; N44 (3) [31/12/1970]; N53 (2) [12/05/2023]; N54 (2) [31/08/1975]	Threatened Species: Endangered
Dingy Skipper	<i>Erynnis tages</i>	N43 (6) [16/05/2023]; N44 (4) [24/05/2020]; N53 (1) [23/05/2018]; N54 (3) [06/05/2020]	Threatened Species: Near threatened
Small Heath	<i>Coenonympha pamphilus</i>	N43 (2) [22/06/2023]; N44 (18) [03/07/2021]; N53 (1) [18/06/2011]; N54 (1) [03/07/2019]	Threatened Species: Near threatened
Dark Green Fritillary	<i>Speyeria aglaja</i>	N43 (1) [07/08/2017]	Threatened Species: Vulnerable
Large Heath	<i>Coenonympha tullia</i>	N43 (6) [20/06/2021]	Threatened Species: Vulnerable
Gastropod			
Glutinous Snail	<i>Myxas glutinosa</i>	N54 (1) [12/04/1968]	Threatened Species: Endangered
Plated Snail	<i>Spermodea lamellata</i>	N44 (1) [17/09/1977]	Threatened Species: Endangered
Common Whorl Snail	<i>Vertigo pygmaea</i>	N53 (1) [16/09/1977]	Threatened Species: Near threatened
Prickly Snail	<i>Acanthinula aculeata</i>	N44 (1) [17/09/1977]	Threatened Species: Near threatened
Ear Pond Snail	<i>Radix auricularia</i>	N44 (1) [31/12/1960]; N53 (1) [24/03/2003]	Threatened Species: Vulnerable
English Chrysalis Snail	<i>Leiostryla anglica</i>	N44 (1) [17/09/1977]	Threatened Species: Vulnerable
Heath Snail	<i>Helicella itala</i>	N43 (1) [17/09/1977]; N44 (1) [17/09/1977]; N53 (1) [16/09/1977]; N54 (1) [12/04/1968]	Threatened Species: Vulnerable
Marsh Whorl Snail	<i>Vertigo antivertigo</i>	N54 (1) [12/04/1968]	Threatened Species: Vulnerable
Point Snail	<i>Acicula fusca</i>	N44 (1) [17/09/1977]	Threatened Species: Vulnerable



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Smooth Grass Snail	<i>Vallonia pulchella</i>	N54 (1) [12/04/1968]	Threatened Species: Vulnerable
Tree Snail	<i>Balea perversa</i>	N43 (1) [17/09/1977]; N44 (1) [17/09/1977]	Threatened Species: Vulnerable
Whirlpool Ramshorn	<i>Disculifer vortex</i>	N54 (2) [12/04/1968]	Threatened Species: Vulnerable
Bivalve	<i>Bivalve</i>		
Euglesa pseudosphaerium	<i>Euglesa pseudosphaerium</i>	N54 (1) [12/04/1968]	Threatened Species: Endangered
Duck Mussel	<i>Anodonta anatina</i>	N54 (1) [16/04/2003]	Threatened Species: Vulnerable
Liverwort	<i>Liverwort</i>		
Scissors Pincerwort	<i>Cephalozia loitlesbergeri</i>	N43 (2) [06/05/2009]	Threatened Species: Vulnerable
Invasive Species			
Bird			
Canada Goose	<i>Branta canadensis</i>	N44 (1) [31/12/2001]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Greylag Goose	<i>Anser anser</i>	N44 (1) [22/03/2024]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mammal			
House Mouse	<i>Mus musculus</i>	N44 (1) [15/05/2018]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species
Grey Squirrel	<i>Sciurus carolinensis</i>	N43 (2) [31/12/2011]; N44 (5) [31/12/2010]; N53 (9) [31/12/1981]; N54 (2) [31/12/1981]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
American Mink	<i>Neovison vison</i>	N43 (4) [30/01/2015]; N44 (1) [21/10/2014]; N53 (6) [21/10/2014]; N54 (3) [23/10/2014]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Brown Rat	<i>Rattus norvegicus</i>	N43 (1) [29/10/2014]; N44 (4) [02/08/2017]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
Fallow Deer	<i>Dama dama</i>	N43 (4) [13/07/2017]; N44 (1) [23/10/2016]; N53 (6) [21/10/2014]; N54 (3) [20/01/2015]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) Protected Species: Wildlife Acts
Bank Vole	<i>Myodes glareolus</i>	N44 (2) [14/01/2018]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Greater White-toothed Shrew	<i>Crocidura russula</i>	N43 (1) [12/10/2020]; N44 (2) [05/01/2021]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Rabbit	<i>Oryctolagus cuniculus</i>	N43 (4) [26/08/2017]; N44 (5) [31/08/2015]; N53 (11) [29/10/2014]; N54 (5) [30/12/2013]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Vascular Plant			
Cherry Laurel	<i>Prunus laurocerasus</i>	N43 (1) [06/04/2016]; N44 (3) [23/05/2020]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species
Canadian Waterweed	<i>Elodea canadensis</i>	N54 (1) [31/12/1999]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Giant Hogweed	<i>Heracleum mantegazzianum</i>	N54 (1) [20/07/2014]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Japanese Knotweed	<i>Fallopia japonica</i>	N43 (10) [15/11/2022]; N44 (6) [15/07/2024]; N53 (2) [31/12/1999]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Rhododendron ponticum	<i>Rhododendron ponticum</i>	N43 (3) [22/11/2022]; N44 (1) [29/06/2005]; N53 (1) [18/06/2021]; N54 (1) [16/05/2020]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Butterfly-bush	<i>Buddleja davidii</i>	N44 (1) [08/09/2019]; N54 (1) [27/11/2022]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Himalayan Honeysuckle	<i>Leycesteria formosa</i>	N44 (1) [29/06/2005]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Sycamore	<i>Acer pseudoplatanus</i>	N43 (3) [13/05/2020]; N44 (10) [29/06/2024]; N53 (7) [12/10/2001]; N54 (2) [20/06/2019]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Gastropod	<i>Gastropod</i>		



Species common name	Species scientific name	Hectads (Number of Records) [Date of Last Record]	Designation
Budapest Keeled Slug	<i>Tandonia budapestensis</i>	N53 (1) [16/09/1977]; N54 (1) [12/04/1968]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Common Garden Snail	<i>Cornu aspersum</i>	N43 (1) [17/09/1977]; N44 (1) [17/09/1977]; N54 (2) [12/04/1968]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Jenkins' Spire Snail	<i>Potamopyrgus antipodarum</i>	N43 (1) [12/09/2012]; N44 (5) [26/06/2018]; N53 (11) [28/06/2018]; N54 (6) [18/07/2018]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Wrinkled Snail	<i>Xeroplexa intersecta</i>	N43 (1) [17/09/1977]; N53 (1) [16/09/1977]	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species



7.8.2 Water Framework Directive Water Body Status

To support the biodiversity impact assessment **Section 7.8.2.1** below summarises the hydrological and hydrogeological pathways outlined in Chapter 9, as well as providing details on WFD statuses of the connected waterbodies, while **Section 7.8.2.2** presents an overview of water quality across relevant water bodies.

7.8.2.1 Hydrological Pathway

7.8.2.1.1 WFD catchments Influence on Surface Water

As elaborated upon in Section 7.6.1, the Application Site is situated in three WFD catchments:

- The Boyne [07] WFD Catchment – Covers most of the site, with surface water primarily draining into this catchment.
- The Barrow [14] WFD Catchment – Extends to the south, receiving drainage from a small southern portion of Ballybeg Bog.
- Lower Shannon [25A] WFD Catchment – Extends to the west, receiving drainage from the western tip of Toar bog.

These catchments define the flow of surface water within and around the site, impacting local rivers, streams, and lakes. The WFD ensures that water quality in these catchments is regularly monitored and assessed against ecological and chemical standards.

7.8.2.1.1.1 River Water Bodies

There are ten WFD river water bodies either intersecting or flowing in the vicinity of the Application Site (in **bold** in Table 7-14), seven flowing within the Boyne WFD Catchment, one flowing south within the Barrow WFD Catchment, and two flowing west within the Lower Shannon 25A catchment. The tables below display the WFD river water bodies in the hydrological pathway from the Application Site until the first transitional water body, as well as the historical progress of their WFD water quality status.

No consistent spatial trend is evident from the WFD water quality status results in Table 7-14. While many water bodies have persistently remained at Moderate status throughout the monitoring period, several water bodies show localised improvements or declines over time. The widespread failure to achieve Good status is likely influenced by multiple catchment-scale pressures, including agriculture and historical hydromorphological modification, rather than any single pressure source.

The information in this section has been informed by Chapter 9 Hydrology, Hydrogeology and Water Quality of this remedial EIAR, and publicly available data found at EPA.ie and catchments.ie. Chapter 9 provides a detailed description of the hydrological, hydrogeological and water quality baseline environment of the Application Site and surrounding area.

Table 7-14: Summary of WFD Water Quality Status of River Water Bodies Hydrologically Connected to the Application Site (river water bodies that intersect/are in the immediate vicinity of the Application Site are in bold)

Unassigned  Bad  Poor  Moderate  Good  High 

Catchment	EU Code	WFD River Water Body	WFD Water Quality Status					
			2007-2009	2010-2012	2010-2015	2013-2018	2016-2021	2019-2024
Boyne	IE_EA_07Y020070	Yellow (Castlejordan)_010	M*	M*	M*	M*	M*	M*
	IE_EA_07C080190	Castletown Tara Stream_010	-	-	-	G	M*	M*
	IE_EA_07Y020100	Yellow (Castlejordan)_020	M*	M*	M*	M*	M*	M*
	IE_EA_07B040400	Boyne_030	M*	M*	M*	M*	M*	M*
	IE_EA_07C040100	Castlejordan_020	M*	M*	M*	M*	M*	M*
	IE_EA_07C040190	Castlejordan_030	M*	M*	M*	M*	M*	M*
	IE_EA_07Y020300	Yellow (Castlejordan)_030	M*	M*	M*	M*	M*	M*
	IE_EA_07K010060	Kinnegad_010	M*	M*	M*	M*	M*	M*
	IE_EA_07K010100	Kinnegad_020	-	M*	M*	M*	M*	M*
	IE_EA_07K010200	Kinnegad_030	M*	M*	M*	M*	M*	M*
	IE_EA_07B040600	Boyne_040	M*	M*	M*	M*	M*	M*
	IE_EA_07B040800	Boyne_050	M*	M*	M*	M*	M*	M*
	IE_EA_07B040900	Boyne_060	-	M*	M*	M*	M*	M*
	IE_EA_07B041000	Boyne_070	M*	M*	M*	M*	M*	M*
	IE_EA_07B041200	Boyne_080	M*	M*	M*	M*	M*	M*
	IE_EA_07B041400	Boyne_090	M*	M*	M*	M*	M*	M*
	IE_EA_07B041500	Boyne_100	M*	M*	M*	M*	M*	M*
	IE_EA_07B041600	Boyne_110	-	-	-	EJ	Md	Md
	IE_EA_07B041700	Boyne_120	M*	M*	M*	M*	M*	M*
	IE_EA_07B041810	Boyne_130	M*	M*	-	G	Md	Md
	IE_EA_07B041900	Boyne_140	-	-	-	EJ	Md	Md
	IE_EA_07B042010	Boyne_150	M*	M*	M*	M*	M*	M*
	IE_EA_07B042100	Boyne_160	M*	M*	M*	M*	M*	M*
	IE_EA_07B042150	Boyne_170	M*	M*	M*	M*	M*	M*
	IE_EA_07B042200	Boyne_180	M*	M*	M*	M*	M*	M*
Barrow	IE_SE_14E010100	Esker Stream_010	-	-	-	G	EJ	Md
	IE_SE_14E010200	Esker Stream_020	M*	M*	M*	M*	M*	M*
	IE_SE_14F010300	Figile_040	M*	M*	M*	M*	M*	M*

Catchment	EU Code	WFD River Water Body	WFD Water Quality Status					
			2007-2009	2010-2012	2010-2015	2013-2018	2016-2021	2019-2024
	IE_SE_14F010400	Figile_050	M*	M*	M*	M*	M*	M*
	IE_SE_14F010500	Figile_060	M*	M*	M*	M*	M*	M*
	IE_SE_14F010510	Figile_070	-	-	-	-	Md	Md
	IE_SE_14F010600	Figile_080	-	-	-	EJ	Md	Md
	IE_SE_14B011000	Barrow_090	M*	M*	M*	M*	M*	M*
	IE_SE_14B011130	Barrow_100	-	-	-	EJ	Md	Md
	IE_SE_14B011300	Barrow_110	M*	M*	M*	M*	M*	M*
	IE_SE_14B011500	Barrow_120	M*	M*	M*	M*	M*	M*
	IE_SE_14B011600	Barrow_130	-	-	-	G	Md	Md
	IE_SE_14B011900	Barrow_140	-	M*	M*	M*	M*	M*
	IE_SE_14B012000	Barrow_150	-	-	-	G	Md	Md
	IE_SE_14B012460	Barrow_160	M*	M*	M*	M*	M*	M*
	IE_SE_14B012600	Barrow_170	M*	M*	M*	M*	M*	M*
	IE_SE_14B012700	Barrow_180	M*	M*	M*	M*	M*	M*
	IE_SE_14B012820	Barrow_190	-	-	-	-	Md	Md
	IE_SE_14B012920	Barrow_200	M*	M*	M*	M*	M*	M*
	IE_SE_14B013100	Barrow_210	M*	M*	M*	M*	M*	M*
	IE_SE_14B013300	Barrow_220	M*	M*	M*	M*	M*	M*
	IE_SE_14B013514	Barrow_230	M*	M*	M*	M*	M*	M*
	IE_SE_14B013600	Barrow_240	-	-	-	G	EJ	EJ
Lower Shannon 25 (A - D)	IE_SH_25Y080860	Cornaher_010	-	-	-	Md	Md	Md
	IE_SH_25S030010	Silver (Tullamore)_010	-	-	-	M*	M*	Md
	IE_SH_25S030100	Silver (Tullamore)_020	-	-	-	M*	M*	M*
	IE_SH_25S030300	Silver (Tullamore)_030	-	-	-	M*	M*	M*
	IE_SH_25S030500	Silver (Tullamore)_040	-	-	-	M*	M*	M*
	IE_SH_25B090400	Brosna_060	-	-	-	M*	M*	M*
	IE_SH_25B090450	Brosna_070	-	-	-	M*	M*	M*
	IE_SH_25B090600	Brosna_080	-	-	-	M*	M*	M*
	IE_SH_25B090710	Brosna_090	-	-	-	M*	M*	M*
	IE_SH_25B090761	Brosna_100	-	-	-	M*	M*	M*
	IE_SH_25B090800	Brosna_110	-	-	-	M*	M*	M*
	IE_SH_25B090950	Brosna_120	-	-	-	M*	M*	M*



Catchment	EU Code	WFD River Water Body	WFD Water Quality Status					
			2007-2009	2010-2012	2010-2015	2013-2018	2016-2021	2019-2024
	IE_SH_25B091000	Brosna_130	-	-	-	M*	M*	M*
	IE_SH_25B091200	Brosna_140	-	-	-	M*	M*	M*
	IE_SH_25S012000	Shannon (Lower)_010	-	-	-	-	Md	Md
	IE_SH_25S012060	Shannon (Lower)_020	-	-	-	M*	M*	M*
	IE_SH_25S012350	Shannon (Lower)_030	-	-	-	G	Md	Md
	IE_SH_25A050100	Shannon (Lower)_040 (Lough Derg)	-	-	-	M*	M*	M*

* M – Monitoring; EJ – Expert Judgement; Md – Modelling; G - Grouping

7.8.2.1.1.2 Terminal Depositional Water Bodies

The downstream hydrological connectivity of the Application Site extends to three WFD transitional water bodies: the Boyne Estuary (IE_EA_010_0100) and the Upper Barrow Estuary (IE_SE_100_0300).

The transitional waterbodies are considered to be the final depositional waterbody associated with the Boyne Estuary (IE_EA_010_0100) and the Upper Barrow Estuary (IE_SE_100_0300), but for the western (Shannon) hydrological route, Lough Derg (IE_SH_25A050100) was determined to be final depositional waterbody. Although with dissimilar hydromorphological features, these are the water bodies beyond which any influences from the Application Site are considered insignificant/imperceptible due to their distance from the site and the proportionally inconsequential size of the site in the overall catchments.

All of the terminal depositional water bodies assessed as hydrological routes from the application site have failed the WFD objectives (i.e. *Good* water quality status) for the most recent period (Table 7-15).

The waterbodies also failed during and after the cessation of peat extraction on the Application Site, potentially indicating that the peat extraction had little sway over the outcome of the water quality assessment.

Table 7-15: WFD Water Quality Status of Transitional Water Bodies Hydrologically Connected to the Application Site

EU Code	Terminal Depositional WFD Water Body	WFD Water Quality Status					
		2007-2009	2010-2012	2010-2015	2013-2018	2016-2021	2019 - 2024
IE_EA_010_0100	Boyne Estuary (Transitional Waterbody)	M*	M*	M*	M*	M*	M*
IE_SE_100_0300	Upper Barrow Estuary (Transitional Waterbody)	M*	M*	M*	M*	M*	M*
IE_SH_25A050100	Lough Derg (Lake Waterbody)	-	-	-	M*	M*	M*

* M – Monitoring

7.8.2.1.1.3 Groundwater Bodies

Groundwater bodies (GWBs) play a critical role in sustaining surface water ecosystems, as they provide baseflow to rivers and lakes. The groundwater quality standards ensure that these aquifers remain protected from contamination and excessive abstraction, maintaining their ‘Good’ status and supporting overall water resource sustainability. The Application site lies on five WFD GWBs:

- Athboy (IE_EA_G_001),
- Daingean (IE_SE_G_049),
- Clara (IE_SH_G_240),
- Geashill (IE_SH_G_103), and
- Trim (IE_EA_G_002).

All GWBs have been consistently achieving the WFD objectives of a “Good” water quality status (Table 7-16).

Most of the Application Site lies on the Athboy WFD GWB, in which flow mainly occurs through the upper weathered zone of the aquifer, whereas the flow below this zone occurs along fractures, faults and karstic conduits. Therefore, it mostly discharges to the overlying rivers and streams, although it can also discharge to the adjacent Trim WFD GWB.

A small portion of the southern-most part of the Ballybeg Bog lies on the Daingean WFD GWB. Groundwater flows are short to the surface water bodies in the area, and to a greater extent around peatlands, where the deposits of peat may seal off the connectivity between the surface water and groundwater²⁸. The same hydrological process is likely to occur within the small portion of the Application Site that extends into the Trim WFD GWB (approximately 8.5 ha of Ballybeg Bog) and within the western end of Toar Bog, which lies entirely within the Clara WFD GWB, along with the small southern outcrop of Toar bog that lies in the Geashill WFD GWB.

In both areas, the depth and structure of the peat deposits are likely to isolate or significantly limit hydraulic connectivity between surface water and the underlying groundwater.

Table 7-16: WFD Water Quality Status of the Groundwater Bodies Intersected by the Application Site

Unassigned  Bad  Poor  Moderate  Good  High 

EU Code	WFD Groundwater Body	WFD Water Quality Status				
		2007-2012	2010-2015	2013-2018	2016-2021	2019-2024
IE_EA_G_001	Athboy					
IE_SE_G_049	Daingean					
IE_EA_G_002	Trim					
IE_SH_G_103	Geashill					
IE_SH_G_240	Clara					

7.8.2.2 Baseline Water Quality

7.8.2.2.1 Historic EPA Biological Q-Rating Monitoring and WFD Monitoring

The historical water quality at the Application Site is assessed using two key datasets:

1. **EPA Rivers Ecology Monitoring Results** – A 3-year rolling program evaluating biological water quality (Q Value System), based on national surveys dating back to 1971 (with publicly available data from 1992 onwards).
2. **WFD Monitoring** – Implemented in 2003 (S.I. 722/2003), replacing the EPA Rivers Ecology Monitoring program. The first WFD monitoring cycle (2010–2015) assessed all classified water bodies (rivers, lakes, groundwater, transitional, and coastal waters).

The Biological Q-Rating System evaluates river water quality under the WFD using biological surveys, classifying watercourses as follows:

- Class A – Unpolluted (Q5, 4-5, 4)
- Class B – Slightly Polluted (Q3-4)
- Class C – Moderately Polluted (Q3, 2-3)
- Class D – Seriously Polluted (Q2, 1-2, 1)

7.8.2.2.2 Historical Q-Rating Data

Three streams flowing from the Application Site were chosen for this study as Q-Rating Data representatives of the potential effects of the Extraction Phase. These monitoring sites indicate the nearest downstream monitored site, with the longest and most complete dataset, relative to the Application Site. The data represents the Boyne and Lower Shannon 25A catchments.

Regarding the Esker Stream in the Barrow catchment, the monitoring site of Newtown bridge (RS14E010100) lies in closer proximity to the Application Site which is the most representative location for Q-Rating monitoring, but data was only recorded up to 2003.

The next monitoring station downstream is approximately 3.5 km away at Esker Bridge (RS14E010200); however, the intervening reach of river receives drainage from the extensive cutover peatlands within the Newtown and Esker More townlands, which form part of the wider Ballybeg Bog complex. Consequently, water quality at this downstream monitoring station is likely to reflect influences from these closer peatland areas and may not be representative of conditions associated with the Application Site. For these reasons, this stream has not been included in the analysis presented below.

The earliest EPA Q-Ratings data available from monitoring sites on the three chosen streams (chosen based on dataset completeness & longevity, as well as proximity to the Application Site) is listed below:

- 1981 for the Castlejordan stream,
- 1981 for the Yellow (Castlejordan), and
- 1984 for the Silver River stream.

These monitoring efforts coincide with the peat extraction trends at the Application Site, leading up to its cessation in 2020.

Table 7-17 below presents the EPA Monitoring of Biological Quality of Waters at three key locations along the Silver (Tullamore), Yellow (Castlejordan), and Castlejordan/Monagh Rivers from 1981 to 2020. The locations include:

- Gormagh Bridge on the Silver River RS25S030100,
- Baltinoran Bridge on the Castlejordan/Monagh River RS07C040100, and
- Gar Bridge on the Yellow (Castlejordan) River RS07Y020100.

The water quality of these streams varies over time, with Q3-4 and Q4 ratings indicating slightly polluted to unpolluted conditions. Data availability was slightly less consistent in the earlier years. However, the monitoring results generally suggest that the water quality in these areas has fluctuated between slightly polluted and unpolluted states, with improvements in some years, such as 2015 and 2018.

Table 7-17: EPA Monitoring of Biological Quality of Waters

Location	Gormagh Bridge on N52 - North of Tullamore	Baltinoran Bridge	Gar Bridge 3km North of Rhode
River	Silver (Tullamore)	Castlejordan (Monagh River)	Yellow (Castlejordan)
Station Code	RS25S030100	RS07C040100	RS07Y020100
2018	Q4 (2017)	Q4	Q4
2015	Q4 (2014)	Q3-4	Q4
2012	Q4 (2011)	Q3-4	Q3-4
2009	Q3-4 (2008)	Q3-4	Q3-4
2006	Q3-4 (2005)	Q3-4	Q3-4

Location	Gormagh Bridge on N52 - North of Tullamore	Baltinoran Bridge	Gar Bridge 3km North of Rhode
2003	Q3 (2002)	Q3	Q3-4
2000	Q3 (1999)	Q4	Q3
1997	Q3 (1996)	Q3-4	Q3-4
1994	Q4 (1993)	Q3-4	Q4
1990	ND	Q4	Q3-4
1987	Q3-4	ND	ND
1985	Q4-5 (1984)	Q3-4	Q4
1981	ND	Q4-5	Q3-4

7.8.2.2.3 WFD Monitoring

EPA Biological Q-Value monitoring data postdates 2019, with Q-Values across the monitoring stations outlined in Table 7-18. No significant change in EPA Biological Q-values has been recorded since the cessation of peat extraction in 2020. Monitoring results remain within the range of Q3-Q4 (Slightly Polluted) to Q4 (Unpolluted), broadly consistent with conditions observed during the latter stages of the Peat Extraction Phase.

Table 7-18: Q-Values Current Phase (June2020- Present Day)

Location	Gormagh Bridge on N52 - North of Tullamore	Baltinoran Bridge	Gar Bridge 3km North of Rhode
River	Silver (Tullamore)	Castlejordan (Monagh River)	Yellow (Castlejordan)
Station Code	RS25S030100	RS07C040100	RS07Y020100
2024	Q4 (2023)	Q3-4	Q3-4
2020	Q4 (2021)	Q4	Q4

7.8.2.3 Conclusion

This section provides a clear overview of the hydrological, hydrogeological, and water quality conditions, utilising both historical and current data. Historically, water quality in the area has fluctuated between slightly polluted and unpolluted conditions. While improvements have been recorded at some monitoring locations over time, the overall dataset indicates relatively stable water quality conditions, with no clear evidence of widespread deterioration since monitoring commenced. Water quality monitoring indicates that conditions have remained broadly stable throughout the monitoring record, with biological and chemical indicators generally reflecting moderate to good water quality.

No substantial change in water quality has been observed following the cessation of peat extraction in 2020, suggesting that wider catchment pressures, including agriculture and hydromorphological modification, continue to influence waterbody status. Improvements in water quality are expected to be driven primarily by implementation of River Basin Management Plan measures and ongoing peatland rehabilitation.

7.8.3 Designated European Sites and Sites of National Importance within the Likely Zone of Influence

The following methodology was used to establish the designated sites that have the potential to be impacted by the peat extraction activities and all ancillary works:

- Initially the most up to date GIS spatial datasets for European sites and nationally designated sites and water catchments were downloaded from the NPWS website³⁸ and the EPA website³⁹ respectively at the time of preparing this report. The datasets were utilised to identify sites which could feasibly be affected by the peat extraction activities and all ancillary works.
- All European sites, National Heritage Areas (NHAs) and proposed (p)NHAs that could potentially be affected were identified using a source-pathway-receptor model.
- Review of Natura 2000 - Standard Data Form for relevant SAC and SPAs.
- The designation features of these sites, as per the NPWS website were consulted and reviewed at the time of preparing this report.
- All European sites and the QIs/SCIs for which the sites are designated, are fully described and assessed in the remedial AASR and the remedial NIS reports submitted as part of the Substitute Consent application.
- Where potential pathways for likely significant effects were identified, the site is included within the likely Zone of Influence and further assessment was undertaken.

7.8.3.1 European Sites

In national legislation SACs and SPAs, designated under the EU Habitats Directive and EU Birds Directive respectively, are known as 'European Sites'. To meet the provisions of Article 6(3) of the Habitats Directive the likely significant effects and/or adverse impacts of the Project on the integrity of SACs and SPAs is fully assessed in the remedial AASR and remedial NIS report that accompany the application for Substitute Consent. The EPA EIA Guidelines (2022) state:

- *“a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement” but should “incorporate their key findings as available and appropriate”.*

To comply with the above guidance, this Chapter takes into account the key findings of the remedial Appropriate Assessment Screening Report (remedial AASR) and remedial Natura Impact Statement (remedial NIS) prepared for the Project.

³⁸ Available at www.npws.ie/protected-sites. Accessed in April 2026.

³⁹ Available at <https://www.catchments.ie/>. Accessed in April 2026.



In summary, the remedial AASR identified the European sites with potential to have been, and to be, significantly affected by Project Activities at the Application Site from June 1994 to present, as well as the implementation of future proposed rehabilitation plans for the Application Site.

June 1994 is the date on which the Habitats Directive was required to be transposed into Irish law; however, it was not actually transposed until 1997 through the European Communities (Natural Habitats) Regulations 1997 (S.I. No. 94 of 1997). From that point onwards, Appropriate Assessment (AA) became a legal requirement. Consequently, the remedial AASR was required to consider activities undertaken at the Application Site from June 1994 onwards.

To this end, the remedial AASR considered the potential effect on European Sites due to activities that have been, and are to be, undertaken at the Application Site for the following distinct Project Phases:

1. **Peat Extraction Phase (June 1994 – June 2020)** - covers peat extraction and ancillary activities at the Application Site from June 1994, the date when the Habitats Directive was required to be transposed into Irish law until the cessation of peat extraction in June 2020.
2. **Current Phase (June 2020 – Present Day)** – covers the decommissioning and site management action that have been ongoing at the since peat extraction ceased.
3. **Remedial Phase (Future)** - considers the planned implementation of rehabilitation measures for the Application Site, as required under Condition 10.2 of the Environmental Protection Agency (EPA) Integrated Pollution Control (IPC) Licence P0501-01, following the cessation of peat extraction.

Upon assessment using the SPR model, the remedial AASR concluded as follows:

- *Following a thorough examination, analysis, and evaluation of the relevant data concerning the Application Site and its surrounding area, this remedial AASR has concluded that, based on the best available scientific knowledge, objective information, and the conservation objectives of the relevant European sites, it cannot be excluded beyond reasonable scientific doubt that the peat extraction activities and ancillary works undertaken during the Peat Extraction Phase (June 1994 – June 2020), either individually or in combination with other plans and projects, may have had significant effects on the integrity of relevant European sites. Consequently, further assessment is required to determine the nature and extent of these potential effects. The European sites and their relevant QIs/SCIs for which a risk of likely significant effects has been identified are as follows:*
 - River Boyne and River Blackwater SAC [0002299] (Year Designated: 2003)
QIs brought forward to rNIS:
 - River Lamprey (*Lampetra fluviatilis*) [1099]
 - Salmon (*Salmo salar*) [1106]
 - Otter (*Lutra lutra*) [1355]
 - Alkaline fens [7230]
 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)*[91E0]



- River Barrow and River Nore SAC [0002162] (Year Designated: 1998)
QIs brought forward to rNIS:
 - Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016]
 - Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029]
 - White-clawed Crayfish (*Austropotamobius pallipes*) [1092]
 - Sea Lamprey (*Petromyzon marinus*) [1095]
 - Brook Lamprey (*Lampetra planeri*) [1096]
 - River Lamprey (*Lampetra fluviatilis*) [1099]
 - Twaite Shad (*Alosa fallax*) [1103]
 - Atlantic Salmon (*Salmo salar*) (only in fresh water) [1106]
 - Otter (*Lutra lutra*) [1355]
 - Killarney Fern (*Trichomanes speciosum*) [1421]
 - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation [3260]
 - Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
 - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) * [91E0]
- Lough Ennell SPA [0004044] (Year Designated: 1995)
SCIs brought forward to rNIS:
 - Pochard (*Aythya farina*) [A059]
 - Tufted Duck (*Aythya fuligula*) [A061]
 - Coot (*Fulica atra*) [A125]
- River Boyne and River Blackwater SPA [0004232] (Year Designated: 2010)
SCI brought forward to rNIS:
 - Kingfisher (*Alcedo atthis*) [A229]

In light of this, it was concluded that a remedial NIS is required to assess whether activities associated with the Peat Extraction Phase (from 1994 to 2020) at the Application Site either alone in isolation and/or in-combination with extractive, industrial, energy and infrastructure developments in the area could have had potentially likely adverse effects on the integrity of the above listed European sites.

The Current Phase and Remedial Phase were screened out for further assessment in the remedial NIS, as no SPR linkages were identified that would give rise to likely significant effects on any European site.

The remedial NIS concluded as follows:

After a thorough examination, evaluation, and analysis, conducted in accordance with the best scientific knowledge and the conservation objectives of the European Sites, it has been determined, based on objective information, that the peat extraction activities and all associated works at the Application Site during the Peat Extraction Phase have not adversely affected the integrity of any European Site. This conclusion holds true both in isolation and in combination with other plans or projects.



The findings of the remedial AASR and remedial NIS are considered in this chapter. However, to align with the timeline of activities at the Application Site and the requirement to assess the potential for significant effects since 1988, which is the date when the EIA Directive was transposed into Irish law, this assessment considers impacts on European sites from that year onward.

In addition to European sites, this Chapter considers effects on designated sites of national importance for biodiversity and conservation. As with European sites, the assessments of effects on national sites have considered both the timing of the Applicant's activities at the Application Site and the timing of the non-statutory listing of the sites.

The SPAs and SACs assessed in the remedial NIS are recognised as **Internationally Important KERs**.

7.8.3.2 National Sites – NHA and pNHAs

In 1995, over 1,200 proposed Natural Heritage Areas (pNHAs) were published on a non-statutory basis, covering approximately 750,000 hectares nationwide. These sites were identified as being of national importance for biodiversity and conservation. Since that time, a proportion of the originally proposed pNHAs have been formally designated as Natural Heritage Areas (NHAs) and afforded statutory protection under the Wildlife (Amendment) Act 2000.

The formal designation process commenced in 2002, with a series of sites proposed for statutory designation. These sites were subsequently designated by Statutory Instrument in 2003/2004, receiving full legal protection then. pNHAs that have not been formally designated remain non-statutory; however, they continue to be considered material constraints in planning decisions and environmental impact assessment.

The nearest NHAs to the Application Site are Milltownpass Bog NHA, located approximately 1.6 km north of the Application Site, and Black Castle Bog NHA, located approximately 5.3 km east of the Application Site. The nearest pNHAs to the Application Site are Raheenmore Bog pNHA, located approximately 0.8 km to the southwest, and Rahugh Ridge (Kiltober Esker) pNHA, located approximately 1.5 km southwest of the Application Site.

The Grand Canal pNHA is located approximately 0.7km south of the southernmost tip of the Application Site at Ballybeg Bog. The Grand Canal is a man-made waterway constructed in the 1800s, linking the River Liffey in Dublin with the River Shannon at Shannon Harbour. The Yellow River canal feeder, constructed in the 1810s, historically traversed Ballybeg Bog but has been defunct since the 1950s. No sections of the canal feeder remain on the bog. No hydrological connectivity relevant to potential effects was identified; consequently, potential effects on this site have also been screened out.

Source–pathway–receptor linkages were examined for NHAs and pNHAs within the initial 15 km Zol, as well as for more distant sites where hydrological connectivity provides a plausible pathway for potential effects. The following NHAs and pNHAs are located within, or intersect with, the 15 km buffer Zol of the Application Site. In total, the initial 15 km Zol contains twenty-six nationally designated sites, comprising seven NHAs and nineteen pNHAs.

- **NHAs:**
 - Black Castle Bog NHA (000570)



- Cloncrow Bog (New Forest) NHA (000677)
- Wooddown Bog NHA (000694)
- Molerick Bog NHA (001582)
- Nure Bog NHA (001725)
- Daingean Bog NHA (002033)
- Milltownpass Bog NHA (002323)
- **pNHAs:**
 - Ballina Bog (000390)
 - Charleville Wood (000571)
 - Clara Bog (000572)
 - Raheenmore Bog (000582)
 - Woodfield Bog (000586)
 - Lough Ennell (000685)
 - Lough Sheever Fen / Slevin's Lough Complex (000690)
 - Ballyduff Esker (000885)
 - Derrygolan Esker (000896)
 - Rahugh Ridge (Kiltober Esker) (000918)
 - The Long Derries, Edenderry (000925)
 - Ballynabarny Fen (001573)
 - Mount Hevey Bog (001584)
 - Ardan Wood (001711)
 - Murphy's Bridge Esker (001775)
 - Ballyduff Wood (001777)
 - Split Hills and Long Hill Esker (001831)
 - Royal Canal (002103)
 - Grand Canal (002104)

These sites are either located upstream of potential hydrological effects or are fully disconnected from any relevant surface water pathway associated with the Application Site. Consequently, no viable source–pathway–receptor linkage has been identified, and these sites within the 15 km Zol are screened out of further consideration.

Hydrologically Connected Designated Sites beyond the 15 km Zol

As noted previously, hydrological pathways associated with the Application Site extend beyond the initial 15 km Zol. In accordance with the methodology for defining the Zol set out in the remedial AASR, the nationally designated sites for this project located beyond 15 km were examined where a downstream hydrological connection exists. These sites are grouped below according to their respective hydrological corridors and WFD catchments.

Downstream along the potential hydrological connection corridor of the **Boyne catchment**:

- Trim pNHA [0001357]
- Boyne Woods pNHA [0001592]
- Slane Riverbank pNHA [0001591]
- Crewbane Marsh pNHA [0000553]
- Dowth Wetland pNHA [0001861]
- King William's Glen pNHA [0001804]



- Boyne River Islands pNHA [0001862]
- Rosnaree Riverbank pNHA [001589]
- Boyne Coast and Estuary pNHA [0001957]

All of the above sites are located on the Boyne main stem or estuary and are therefore potentially hydrologically connected. These sites are screened in at this stage pending further distance- and relevance-based assessment.

Downstream along the potential hydrological connection corridor of the **Barrow catchment**:

- Barrow Valley at Tankardstown Bridge pNHA [0000858]
- Clohastia pNHA [0000830]
- Barrow River Estuary pNHA [0000698]
- Cloghrick Wood pNHA [0000806]

All of the above sites are situated on the Barrow main stem or estuary and are therefore potentially hydrologically connected. These sites are screened in at this stage pending further SPR linkage assessment.

Downstream along the potential hydrological connection corridor of the **Shannon and Brosna catchments**:

- River Shannon Callows pNHA [000216]
- River Little Brosna Callows NHA [000564]
- Ballymacegan Bog NHA [000642]
- Meeneen Bog NHA [000310]
- Lough Derg pNHA [000011]

These sites are located on the Shannon and Brosna main stems and are therefore potentially hydrologically connected. They are screened in at this stage pending further SPR linkage assessment.

Summary of Nationally Designated Sites Considered

As described above and in Section 7.4.1, the adjusted ZOI defined on the basis of a 15 km buffer and the presence of hydrological connectivity includes twenty-six nationally designated sites within the 15 km buffer and eighteen nationally designated sites beyond the 15 km buffer. All designated sites of national importance are described in Table 7-19.

Table 7-19: National Sites within the 15 km Initial Zol and those hydrologically connected to the Application Site

Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
Grand Canal pNHA [0002104]	-	-	5.3km N	The Grand Canal is a man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy. It also includes a number of different habitats within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods (NPWS, 2009f).	No. The Grand Canal pNHA is located approximately 5.3km north of the Application Site, and the existing local drainage features preclude hydrological connectivity between the Application Site and the Grand Canal pNHA.
Milltownpass Bog NHA [0002323]	S.I. No. 609/2003	2003	1.6 km N	Milltownpass Bog NHA comprises a raised bog that includes both areas of high bog and cutover bog. This site supports a good diversity of raised bog microhabitats, including hummocks and pools and due to its easterly location, is of biogeographical importance (NPWS, 2002d).	Yes. The Milltownpass Bog NHA lies within the Athboy WFD groundwater body (IE_EA_G_001), at enough distance to be considered hydrogeologically connected with the Application Site.
Raheenmore Bog pNHA [0000582]	-	-	0.8 km SW	This pNHA coincides with Raheenmore Bog SAC comprises active raised bog comprises areas of high bog that are wet and actively peatforming.	No. No source-pathway-receptor (SPR) linkage exists between the Application Site and Raheenmore Bog. Although a surface water connection occurs within the wider catchment, the bog is located upstream of the Application Site and



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
					is situated within a separate groundwater body.
Cloncrow Bog (New Forest) NHA [0000677]	S.I. No. 3/2005	2005	1.3km NW	Cloncrow Bog (New Forest) NHA comprises a raised bog that includes both areas of high bog and cutover bog. The site supports a good diversity of raised bog microhabitats, including pools, quaking areas, hummock/hollow complexes, a swallow hole and a small flush, as well as a number of scarce plant species (NPWS, 2002b).	No. The Cloncrow Bog NHA is located upstream from any hydrological influence from the Application Site. Also, the National site lies within the Clara WFD groundwater body (IE_SH_G_240), thus not hydrogeologically connected with the Application Site.
Rahugh Ridge (Kiltober Esker) pNHA [0000918]	-	-	1.5 km SW	Rahugh Ridge (Kiltober Esker) pNHA is a particularly fine esker ridge covered for almost its entire length in woodland. There has been some quarrying of gravel in the past, which created small pits that got recolonised by protected species, including the Red Hemp-nettle (<i>Galeopsis angustifolia</i>) (NPWS, 2009j).	No. The separation distance between the Rahugh Ridge (Kiltober Esker) pNHA and the Application Site would preclude any connectivity between the nationally important site and the Application Site.
Royal Canal pNHA [0002103]	-	-	4.5 km N	The Royal Canal pNHA is a man-made waterway, which was closed to navigation in 1961. The section of canal west of Mullingar was allowed to dry out, and the eastern section silted up and became overgrown. Restoration began in 1988 and is still in progress. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species (NPWS, 2009k).	No. The Royal Canal pNHA is located approximately 4.5 km from the Application Site. There is no hydrological connection between the Application Site and the Royal Canal pNHA, and therefore no pathway for impact to the site
Black Castle Bog NHA [0000570]	S.I. No. 575/2003	2003	5.3 km E	Black Castle Bog NHA is a raised bog that includes both areas of high bog and cutover bog,	No.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
				bounded by roads and, by scrub and woodland. The site is especially important because of its eastern location and because it supports a wide range of habitats, especially associated with the cutover areas (NPWS, 2002a).	Beyond being located upstream from any potential hydrological influence from the Application Site, the nationally designated site lies on the Trim WFD groundwater body (IE_EA_G_002), at a sufficient distance to devoid any potential hydrogeological connectivity of significance.
Daingean Bog NHA [0002033]	S.I. No. 6/2005	2005	6.1 km SW	Daingean Bog NHA is a raised bog that includes both areas of high bog and cutover bog, bounded by roads and agricultural fields. Current land use consists of a small coniferous plantation on cutover at the south-easterly margin of the high bog, while most of the cutover areas around the bog have been reclaimed for agriculture. Drainage associated with these activities and with old areas of peat-cutting, are severely drying out the bog, and have resulted in loss of habitat and damage to the hydrological status of the site, and pose a continuing threat to its viability (NPWS, 2002c).	No. The Daingean Bog NHA is located upstream from any hydrological influence from the Application Site. Also, the National site lies within the Daingean WFD groundwater body (IE_SE_G_049), thus not hydrogeologically connected with the Application Site.
Mount Hevey Bog pNHA [0001584]	-	-	6.2 km NE	This pNHA coincides with the Mount Hevey Bog which comprises a raised bog complex supporting both active and degraded raised bog habitats, together with areas of regenerating cutover bog. The bog supports a diverse range of raised bog microhabitats, including hummock-hollow complexes, pools, wet flats, flushes and quaking	No. Mount Hevey Bog is located upstream of the Application Site and occupies a separate WFD groundwater body (IE_EA_G_072) from the Athboy groundwater body (IE_EA_G_001) that encompasses most of the Application Site.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
				areas, which collectively maintain a variety of peatland plant communities.	Consequently, the SAC is hydrologically independent and lacks a direct surface water or groundwater connection with the Application Site. As no impact pathway exists
Split Hills And Long Hill Esker pNHA [0001831]	-	-	1.4 km NW	This pNHA coincide with the Split Hills and Long Hill Esker SAC which is a nationally important esker system designated primarily for Orchid-rich Calcareous Grassland. The site comprises a prominent glacial esker supporting a mosaic of semi-natural woodland, species-rich calcareous grassland, scrub and wetland habitats	No. Split Hills and Long Hill Esker SAC is separated from the Application Site by approximately 1.35 km and there is no established source-pathway-receptor linkage between the two sites. Although both sites partially overlie the Clara Groundwater Body, the SAC's qualifying habitats occur on elevated esker landforms, are primarily rainfall-fed, and are not hydrologically connected to the Application Site. Consequently, no significant effects are predicted.
Ardan Wood pNHA [0001711]	-	-	2.3 km W	Ardan Wood is a crescent shaped woodland on a steep slope, forming an important part of the series of woodlands in the east of the country (NPWS, 2009).	No. Beyond being located upstream from any potential hydrological influence from the Application Site, the nationally important site lies at a sufficient distance to devoid any potential ecological connectivity of significance.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
Murphy's Bridge Esker pNHA [0001775]	-	-	3.8 km SW	The Murphy's Bridge Esker pNHA is an elongated gravel ridge, supporting patches of dry calcareous grassland vegetation, which is remarkably species-rich. This site is of particular interest as it harbours rich calcicole flora on exposed gravel slopes, which includes two rare species: Blue Fleabane (<i>Erigeron acer</i>) and Red Hemp-nettle (NPWS, 2009h).	No. Beyond being located upstream from any potential hydrological influence from the Application Site, the nationally designated site lies at a sufficient distance to devoid any potential ecological connectivity of significance.
Lough Ennell pNHA [0000685]	-	-	6.7 km NW	This pNHA coincide with the Lough Ennell SAC which is Lough Ennell SAC is an internationally important marl lake designated for Hard Water Lakes and Alkaline Fens. Its conservation value derives from its species-rich stonewort communities, extensive marl-forming cyanobacterial crusts, and lakeshore alkaline fen habitats, all of which are dependent on maintaining high water quality and appropriate hydrological conditions.	No. Lough Ennell SAC is located approximately 6.72 km from the Application Site and lies within a different WFD sub-catchment. Although a small portion of the Application Site overlies the Clara Groundwater Body, no direct hydrogeological or hydrological connection to the SAC has been identified. The separation distance, limited groundwater body overlap and presence of intervening groundwater units mean that no source-pathway-receptor linkage exists. Consequently, no likely significant effects on the SAC's qualifying interests are predicted during the Peat Extraction, Current or Remedial Phases, and no further assessment is required.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
Nure Bog NHA [0001725]	S.I. No. 589/2005	2005	7.9 km NW	Nure Bog NHA comprises a raised bog that includes both areas of high bog and cutover bog and adjoins Lough Ennell. This raised bog was originally part of a larger area that has now been mostly cutover and reclaimed for agriculture. Although this bog has no pools there are hummocks throughout the high bog. Cutover is found all around the high bog and there is an area of coniferous forestry on the cutover in the south of the site. This site supports a good diversity of raised bog microhabitats, including hummocks, and directly adjoins Lough Ennell SAC (NPWS, 2002f).	No. This nationally designated site is located within the Lower Shannon WFD Catchment (25A), not hydrologically nor hydrogeologically connected with the Application Site.
Wooddown Bog NHA [0000694]	S.I. No. 583/2003	2003	10.1 km N	Wooddown Bog NHA comprises a raised bog that includes both areas of high bog and cutover bog. This site supports a good diversity of raised bog microhabitats, including hummock/hollow complexes, a soak system and flushes, as well as a number of scarce plant species (NPWS, 2002g).	No. Beyond being located upstream from any potential hydrological influence from the Application Site, the nationally designated site lies at a sufficient distance to devoid any potential ecological connectivity of significance.
Molerick Bog NHA [0001582]	S.I. No. 601/2003	2003	10.7 km NE	Molerick Bog NHA comprises a raised bog that includes both areas of high bog and cutover bog, bounded by the Dublin-Sligo railway line and local roads. This site is located in Co. Meath at the eastern extreme of raised bogs in Ireland and is one of only four raised bogs in the county (NPWS, 2002e).	No. This nationally designated site is located upstream any potential hydrological influence from the Application Site.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
Derrygolan Esker pNHA [0000896]	-	-	7 km SW	Derrygolan Esker pNHA contains one of the largest known populations of the rare Green-winged Orchid (<i>Orchis morio</i>). This site is also of conservation importance because it is one of the few remaining examples of an unexploited esker, a habitat which is becoming increasingly rare due to the extraction of glacial sands and gravel. Part of the western side near the county border has been quarried for gravel, but the eastern half is intact and supports herb- rich calcareous grassland with thorn scrub on the lower banks (NPWS, 2009e).	No. This nationally important site is located within the Lower Shannon WFD Catchment (25A), not hydrologically nor hydrogeologically connected with the Application Site.
Lough Sheever Fen/Slevin's Lough Complex pNHA [0000690]	-	-	12.9 km N	This site comprises two medium-sized lakes and their associated woodland and grassland habitats. While Lough Sheever is covered by semi-native woodland, with spreading Rhododendron (<i>Rhododendron ponticum</i>). The woodland at Slevin's Lough is notable for the presence of two rare species of Myxomycete fungus, namely <i>Echinostelium brooksii</i> and <i>Physarum oblatum</i> . Both the woodland and lakes provide a very good habitat for a variety of bird species, with badgers, foxes and squirrels common in the woodland (NPWS, 2009g).	No. This nationally important site is mostly located within the Lower Shannon WFD Catchment (25A), not hydrologically nor hydrogeologically connected with the Application Site.
Raheen Lough pNHA [0000917]	-	-	13.1 km S	Raheen Lough pNHA is set in pasture grazed by cattle and sheep, with an inflowing surface stream, but no surface outfall, which indicates underground drainage. The lake is stoney bottomed and shallow, supporting the pollution	No. This nationally important site is mostly located upstream any hydrological influence from the Application Site.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
				intolerant Alternate Water-milfoil (<i>Myriophyllum alterniflorum</i>). The site is of local importance, at a minimum, as Whooper Swan, Goldeneye (<i>Bucephala clangula</i>), Pochard (<i>Aythya ferina</i>), Mallard (<i>Anas platyrhynchos</i>), Shoveler (<i>Anas clypeata</i>), Pintail (<i>Anas acuta</i>), Greenshank (<i>Tringa nebularia</i>), Jack Snipe (<i>Lymnocryptes minimus</i>), Purple Sandpipers (<i>Calidris maritima</i>), Heron (<i>Ardea cinerea</i>), Kingfisher (<i>Alcedo atthis</i>) and Grebes (e.g. Little Grebe, <i>Tachybaptus ruficollis</i>) (NPWS, 2009i).	
Ballynabarny Fen pNHA [0001573]	-	-	13.2 km E	The Ballynabarny Fen pNHA lies in a small, deep, artificially-created valley between the embankments of the Royal Canal and the nearby railway. The level of human activities within the site is low. Dredging of the Royal Canal is a threat if the spoil is dumped onto the site. Moreover, the water level within the canal may impact on the wetness of adjoining lands and hence the quality of the fen site. Ballynabarny Fen contains a good floral representation of a fen community. This habitat is relatively uncommon, and the presence of Variegated Horsetail is a bonus. The adjacent canal adds habitat diversity to the site (NPWS, 2009d).	No. The nationally important site is located along the Royal Canal, separated from any potential hydrological influence from the Application Site.
The Long Derries, Edenderry pNHA [0000925]	-	-	14.2 km SE	This pNHA coincide with The Long Derries, Edenderry SAC The Long Derries SAC is a low esker ridge designated for Orchid-rich Calcareous Grassland (6210), supporting high-quality dry calcareous grassland, species-rich	No. Long Derries, Edenderry SAC is located approximately 14.26 km from the Application Site and lies



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
				gravel pit habitats and an important transition zone between esker grassland and peatland.	within a different WFD sub-catchment. As the qualifying habitat is not groundwater-dependent and no hydrological or ecological connectivity exists between the sites, no source-pathway-receptor linkage can be established. Consequently, no likely significant effects are predicted from the Peat Extraction, Current or Remedial Phases, and no further assessment is required.
Ballina Bog pNHA [0000390]	-	-	14.8 km E	Most of the Ballina bog is of good quality and quite wet, in spite of the presence of many drains. In particular, two deep drains were inserted in the early 1980s and may cause more long-term damage to the bog. Marginal peat cutting has been carried out at the northern and eastern ends of the bog. Despite the presence of many drains, the condition of the vegetation and surface makes this bog of considerable scientific importance. It is one of the most easterly raised bogs which are relatively intact (NPWS, 2009).	No. The nationally important site is located upstream from any potential hydrological influence from the Application Site.
Trim pNHA [0001357]	-	-	30.6 km NE	Wetland periodically flooded, creating a habitat for marshland and dry grassland (Meath County Council, 2021b).	Yes. The nationally important site is located along the Boyne_100 WFD river water body (IE_EA_07B041500), i.e. within the hydrological pathway from the Application Site.

Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
Boyne Woods pNHA [0001592]	-	-	44.3 km NE	This site consists of a variety of wetland habitats along the banks of the Boyne, and include broad-leaved woodland, freshwater marsh and canal. The site is particularly important for Swamp Meadow-grass (<i>Poa palustris</i>) – a Red Data listed species and known from only one other location in Ireland (Meath County Council, 2010).	Yes. The nationally important site is located along the Boyne_150 WFD river water body (IE_EA_07B042010), at its nearest location, i.e. within the hydrological pathway from the Application Site.
Barrow Valley At Tankardstown Bridge pNHA [0000858]	-	-	45.3 km S	Barrow Valley At Tankardstown Bridge pNHA is describe has holding important habitats for the local biodiversity, such as river, canal, grassland and marsh (Laois County Council, 2021)	Yes. The nationally important site is located along the Barrow_140 WFD river water body (IE_SE_14B011900), at its nearest location, i.e. within the hydrological pathway from the Application Site.
Slane Riverbank pNHA [0001591]	-	-	50.7 km NE	This small area of wet grassland along the banks of the Boyne harbours the Round-fruited Rush (<i>Juncus compressus</i>), known from only two other counties in Ireland (Meath County Council, 2010).	Yes. The nationally important site is located along the Boyne_160 WFD river water body (IE_EA_07B042100), at its nearest location, i.e. within the hydrological pathway from the Application Site.
Crewbane Marsh pNHA [0000553]	-	-	51.8 km NE	This site consists of one of the last remaining flood-plain marshes on the banks of the Boyne and, along with the adjacent woodland, is an important habitat for a variety of protected species such as Otter (<i>Lutra lutra</i>), Pine Marten (<i>Martes martes</i>), Stoat (<i>Mustela erminea hibernica</i>) and Badger (<i>Meles meles</i>) (Meath County Council, 2010).	Yes. The nationally important site is located along the Boyne_170 WFD river water body (IE_EA_07B042150), at its nearest location, i.e. within the hydrological pathway from the Application Site.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
Dowth Wetland pNHA [0001861]	-	-	57.0 km NE	This is an area of floodplain marsh along the banks of the Boyne that is augmented by a stand of deciduous woodland, and a regularly occurring small herd of Red Deer (<i>Cervus elaphus</i>) (Meath County Council, 2010).	Yes. These two nationally important sites are located along the Boyne_180 WFD river water body (IE_EA_07B042200), i.e. within the hydrological pathway from the Application Site.
King William's Glen pNHA [0001804]	-	-	57.6 km NE	Perhaps originally planted, this is an area of mature deciduous woodland on the steeper slopes of the Boyne above the floodplain marsh or wet woodland vegetation (NPWS, 2014).	
Boyne River Islands pNHA [0001862]	-	-	58.9 km NE	The Boyne River Islands are a small chain of three islands formed by the build-up of alluvial sediment where water movement is sluggish. All of the islands are covered by dense thickets of wet, Willow (<i>Salix</i> spp.) woodland along a highly diverse flora composition (NPWS, 2014).	Yes. The nationally important site is located along the Boyne Estuary WFD transitional water body (IE_EA_010_0100), i.e. within the hydrological pathway from the Application Site.
Cloghrystick Wood pNHA [0000806]	-	-	63.3 km S	No description available for the Cloghrystick Wood pNHA.	Yes. The nationally important site is located along the Barrow_180 WFD river water body (IE_SE_14B012700), i.e. within the hydrological pathway from the Application Site.
Boyne Coast And Estuary pNHA [0001957]	-	-	64.9 km NE	This pNHA site coincide with the Boyne Coast and Estuary SAC. The SAC supports a range of coastal habitats of high ecological value, including habitats associated with intertidal, saltmarsh, dune and coastal wetland environments.	No. Although a hydrological connection exists via the wider catchment, the Application Site is located a considerable distance upstream of the SACs and any runoff would be



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
					substantially attenuated through dilution, dispersion and natural settling processes. Accordingly, no mechanism has been identified by which activities at the Application Site could affect the qualifying interests or conservation objectives of these European sites.
Ballymoon Esker pNHA [0000797]	-	-	71.3 km S	Ballymoon is an esker, a long hill of sand and gravel, which has been impacted by quarrying, with only the northernmost section, occupied by conifers, being intact. Beyond the site's diversity, it is also of geomorphological interest as part of an esker well separated from the larger esker systems of the midlands, a rare phenomenon in the county (NPWS, 2009c)	No. Although the Ballymoon Esker pNHA intersects the Barrow_200 WFD river water body (IE_SE_14B012920), which is part of the hydrological pathway from the Application Site, the nationally important site is located in the upper reaches of the river water body, upstream from any hydrological influence from the Application Site.
Clohastia pNHA [0000830]	-	-	87.8 km S	Clohastia pNHA is a sand pit in the valley of the Barrow where glacial meltwater laid down an extensive deposit. It is impacted by many excavations and presents grassland and scrub habitats with high diversity (CAAS, 2008)	Yes. The nationally important site is located along the Barrow_230 WFD river water body (IE_SE_14B013514), i.e. within the hydrological pathway from the Application Site.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
Barrow River Estuary pNHA [0000698]	-	-	98.2 km S	There is no specific description available for the Barrow River Estuary pNHA, but information from other studies refers to the presence of two Annex I habitats, Atlantic salt meadows and Mediterranean salt meadows (NPWS, 2011b).	Yes. The nationally important site is partially located along the Upper Barrow Estuary WFD transitional water body (IE_SE_100_0300), within the hydrological pathway from the Application Site.
Charleville Wood pNHA (000571)	-	-	13.4 km SW	Charleville Wood pNHA comprises an extensive area of ancient semi-natural woodland, dominated by oak, ash and hazel, with a well-developed understorey and ground flora. The site includes alluvial woodland, wet woodland and calcareous grassland, and supports a rich assemblage of flora and fauna, including rare and legally protected invertebrate species. The woodland has remained largely undisturbed for several centuries and represents one of the most important examples of ancient woodland in Ireland.	No. Charleville Wood SAC is separated from the Application Site by approximately 13 km. It lies within a different WFD sub-catchment than the Application Site. Any changes to the local hydrology or water quality due to peat extraction would not affect this site due to the lack of hydrological connectivity. Given this information, the nationally important site Charleville Wood pNHA is located away from any hydrological influence from the Application Site.
Clara Bog pNHA (000572)	-	-	12.8 km W	Clara Bog pNHA comprises an extensive raised bog complex, including areas of active raised bog, degraded raised bog capable of regeneration, Rhynchosporion depressions and bog woodland. The site supports well-developed hummock and	No. The Clara Bog pNHA is located upstream from any hydrological influence from the Application Site and inhabits its own WDF GWB



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
				hollow systems, soak areas, pools and flushes, and is regarded as the finest remaining example of a true midland raised bog in Ireland. The site supports a high diversity of specialist bog flora and fauna, including a number of rare and protected species.	(GWDTE-Clara Bog (SAC000572)), so is completely separated from the Application Site hydrologically. Given the above information, the Clara Bog pNHA cannot be linked to the Application Site with the SPR method and therefore falls outside of the likely Zone of Influence of the Application Site.
Woodfield Bog pNHA (000586)	-	-	12.8 km W	Woodfield Bog pNHA comprises a lowland raised bog that includes areas of high bog and cutover bog. The site supports typical raised bog vegetation including cottongrasses, heather, bog mosses and sundews, together with small areas of scrub and wet grassland. Despite historic peat extraction, the site retains ecological value as part of the wider midlands raised bog landscape.	No. Woodfield Bog pNHA is located upstream from any hydrological influence from the Application Site, so is completely separated from the Application Site hydrologically. Given the above information, the pNHA cannot be linked to the Application Site with the SPR method and therefore falls outside of the likely Zone of Influence of the Application Site.
Ballyduff Esker pNHA (000885)	-	-	12.4 km SW	Ballyduff Esker pNHA comprises a prominent sand and gravel esker ridge formed during the last glacial period. The site supports species-rich dry calcareous grassland, scrub and scattered woodland and contains a number of plant species characteristic of limestone and esker habitats, some of which are scarce or locally uncommon.	No. This pNHA is located upstream from any hydrological influence from the Application Site, so is completely separated from the Application Site hydrologically. Given the above



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
				The esker represents an important geomorphological and ecological feature within the midlands	information, the pNHA cannot be linked to the Application Site with the SPR method and therefore falls outside of the likely Zone of Influence of the Application Site.
Ballyduff Wood pNHA (001777)	-	-	10.7 km SW	Ballyduff Wood pNHA comprises semi-natural deciduous woodland dominated by oak, ash and hazel, with areas of scrub, hedgerow and grassland habitats. The site supports a diverse ground flora typical of long-established woodland and provides habitat for a range of woodland birds and invertebrates. The woodland represents an ecologically important remnant within a largely agricultural landscape.	No. This pNHA is located upstream from any hydrological influence from the Application Site, so is completely separated from the Application Site hydrologically. Given the above information, the pNHA cannot be linked to the Application Site with the SPR method and therefore falls outside of the likely Zone of Influence of the Application Site.
Rosnaree Riverbank pNHA [001589]	-	-	52.6 km NE	Rosnaree Riverbank pNHA comprises sections of wooded and grassy riverbank along the River Boyne, including wet woodland, scrub, reed fringe and species-rich grassland habitats. The site supports diverse flora and fauna associated with river corridors and floodplain environments and forms part of an ecologically important network of riparian habitats along the lower River Boyne.	Yes. The nationally important site is located along the Boyne River, within the hydrological pathway from the Application Site.



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
River Shannon Callows pNHA [000216]	-	-	33.6 km SW	River Shannon Callows pNHA comprises extensive areas of seasonally flooded, semi-natural lowland grassland along the floodplain of the River Shannon. The site includes calcareous hay meadows, wet grasslands, marsh, reedbeds and riparian woodland and supports extremely diverse flora. The callows are of national and international importance for wintering waterfowl, breeding waders and migratory birds and represent the largest area of semi-natural floodplain grassland in Ireland.	No. The Application Site is located well upstream and at a substantial remove from the sites. Given the distance involved and the attenuation of any potential pollutants during downstream transport, no mechanism has been identified through which site activities could give rise to effects. s
River Little Brosna Callows NHA [000564]	S.I. No. 573 / 2003	2003	46 km SW	River Little Brosna Callows NHA comprises extensive areas of seasonally flooded wet grassland along the floodplains of the River Little Brosna and the River Shannon. The site includes species-rich callow pasture, small remnants of raised bog, wet woodland and freshwater marsh, supporting a wide range of plant communities influenced by flooding regime and soil type. The callows are of particular importance for wintering waterfowl and wading birds, as well as supporting high-quality wet grassland habitats.	Yes. The nationally important site is located adjacent to and can be flooded by the Shannon River, so lies within the hydrological pathway from the Application Site.
Ballymacegan Bog NHA [000642]	S.I. No. 580 / 2003	2003	52.6 km SW	Ballymacegan Bog NHA comprises a raised bog that includes both areas of high bog and cutover bog, situated within the Shannon floodplain. The site supports characteristic midlands raised bog vegetation, including hummock and hollow systems, pools and flushes, together with scrub	Yes. The nationally important site is located adjacent to and can be flooded by the Shannon River, so lies



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
				and humid grassland on cutover areas. The bog supports a range of specialist bog plant species and contributes to the ecological diversity of the wider Shannon callows landscape.	within the hydrological pathway from the Application Site.
Meeneen Bog NHA [000310]	S.I. No. 569 / 2003	2003	54.4 km SW	Meeneen Bog NHA comprises a medium-sized raised bog with areas of high bog, cutover bog and associated flushes and wet woodland. The site supports typical raised bog vegetation dominated by bog mosses, heather and cottongrasses, with well-developed hummock and hollow features. Despite historic drainage and cutting, the bog retains high ecological value as a rare and threatened habitat within the Shannon catchment.	Yes. The nationally important site is located adjacent to and can be flooded by the Shannon River, so lies within the hydrological pathway from the Application Site.
Lough Derg pNHA [000011]	-	-	59.7km SW	Lough Derg pNHA comprises a large freshwater lake on the River Shannon, together with associated shoreline habitats including reedbeds, marsh, wet grassland, woodland and rocky shores. The site supports diverse aquatic and marginal vegetation and is of major importance for breeding, wintering and migratory waterfowl, as well as supporting otter and a range of fish species. Lough Derg represents a key ecological component of the Shannon river system.	No. While a hydrological linkage is present within the broader catchment, the Application Site is situated a substantial distance upstream of the SACs. Any surface water discharge originating from the site would be subject to significant dilution, dispersion and sediment settlement during downstream transit. Consequently, no pathway has been identified through which activities at the Application Site could adversely affect the qualifying



Site Name [Code]	Statutory Instrument	Designation Year	Straight Line Distance from Application Site and Relative Position	Brief Description	Connectivity
					interests or undermine the conservation objectives of these European sites
Nature Reserves					
Raheenmore Bog	S.I. No. 280/1987	1987	0.8 km S	<i>"A well-developed and exceptional example of deep midland raised bog, which is regarded as being of national importance"</i> ⁴⁰	No Same appraisal as for Raheenmore Bog SAC [0000582].

⁴⁰ Available at <https://www.npws.ie/nature-reserves/offaly/raheenmore-bog-nature-reserve>. Accessed in May 2026



Following review of Table 7-19 and appraisal of source–pathway–receptor linkages, **sixteen sites** were ultimately considered to be potentially connected with the Application Site and were carried forward for assessment.

Of the sixteen sites carried forward:

- Twelve are non-statutory pNHAs, and
- Four are statutory NHAs designated prior to the Current Phase.

Since the above listed pNHAs were listed on a non-statutory basis in 1995, they are included in the assessment of effects for the Peat Extraction Phase (July 1988 – June 2020), the Current Phase (June 2020 to Present) and the Remedial Phase (Future). A summary of the effects for the Peat Extraction Phase is presented in Section 7.10.4.4, the Current Phase in Section 7.10.4.4, and the Remedial Phase (Future) in Section 7.10.5.4.

All sixteen sites are considered Nationally Important KERs.

7.9 KEY ECOLOGICAL RECEPTORS

A consolidated table of KER is presented below for all phases of the Project, comprising the Peat Extraction Phase (1988-2020), the Current Phase (2020-Present), and the Remedial Phase (Future).

The majority of KERs are relevant across all Project phases due to the continuous presence of the receptors themselves and/or the persistence of hydrological and ecological pathways throughout the Peat Extraction Phase (1988-2020), Current Phase (2020-Present) and Remedial Phase (Future). Receptors identified only within the Current Phase and Remedial Phase would generally comprise habitats and species that have become more widespread, established, or ecologically significant under reduced extraction activities.

As peat extraction progressively ceased across different parts of the Application Site between approximately 1988 and 2020 (see Section 7.1 above), opportunities for natural regeneration and ecological succession increased. This was particularly evident at bogs where extraction ceased earlier, such as Derryarkin Bog, while succession processes also became established over time at Drumman, Derryhinch, Toar and Ballybeg bogs following the cessation of extraction activities. Consequently, habitats such as scrub, immature woodland, bog woodland, reed swamp and open-water features are likely to have increased in extent, distribution and ecological value throughout the latter part of the Peat Extraction Phase and into the Current Phase. Similarly, species associated with these habitats, including Marsh Fritillary, and certain wetland bird species, may have become increasingly prevalent as habitat availability, structural diversity and habitat quality improved. Consequently, some receptors are identified as KERs only for the later Project phases where sufficient evidence exists to demonstrate that they had become established, sufficiently widespread, or of ecological significance within the Application Site.

Table 7-20: Key Ecological Receptors Across Project Phase

Receptor Category	Ecological Receptor	Ecological Importance	Reason for Inclusion as KER	Peat Extraction Phase (1988-2020)	Current Phase (2020-Present)	Remedial Phase (Future)
Designated Sites	European Sites (screened into the NIS)	International	Hydrological and/or ecological pathways identified	✓	✓	✓
Designated Sites	pNHAs / NHAs	National	Downstream designated biodiversity sites	✓	✓	✓
Habitats	Raised Bog (PB1)	International	Potential Annex I peatland habitat of high ecological value	✓	✓	✓
Habitats	Cutover Bog (PB4)	Local (Higher Value)	Dominant habitat supporting protected species	✓	✓	✓
Habitats	Bog Woodland (WN7)	County Importance	Diverse peatland woodland habitat	✓	✓	✓
Habitats	Immature Woodland (WS2)	Local (Higher Value)	Foraging and connectivity		✓	✓
Habitats	Scrub (WS1)	Local (Higher Value)	Important habitat for protected fauna and ecological connectivity.		✓	✓
Habitats	Ponds and wetland habitats (FL8 and FS1)	Local (Higher Value)	Supports wetland species and increases habitat diversity.	✓	✓	✓
Habitats	Reed and Large Sedge Swamp (FS1)	Local (Higher Value)	Important habitat for wetland flora and fauna		✓	✓
Habitats	Depositing/ Lowland Rivers (FW2)	Local (Higher Value)	Important aquatic and riparian habitat and connectivity corrido	✓	✓	✓



Receptor Category	Ecological Receptor	Ecological Importance	Reason for Inclusion as KER	Peat Extraction Phase (1988-2020)	Current Phase (2020-Present)	Remedial Phase (Future)
Habitats	Treelines (WL2)	Local (Higher Value)	Ecological corridor and foraging, nesting and commuting habitat	✓	✓	✓
Habitats	Hedgerow (WL1)	Local (Higher Value)	Important corridor supporting protected species and habitat connectivity.	✓	✓	✓
Watercourses	Surface Water Bodies	International	Hydrological pathway to designated sites	✓	✓	✓
Watercourses	FW1/FW2 Rivers	Local (Higher Value)	Important aquatic and riparian habitats	✓	✓	✓
Watercourses	FW4 Drainage Ditches	Local (Lower Value)	Habitat connectivity and aquatic habitat	✓	✓	✓
Mammals	Otter	International	Annex II species	✓	✓	✓
Mammals	Badger	Local (Higher Value)	Protected species	✓	✓	✓
Mammals	Irish Hare	Local (Higher Value)	Protected species	✓	✓	✓
Invertebrates	Marsh Fritillary	International	Annex II species		✓	✓
Aquatic Fauna	White-clawed Crayfish	International	Annex II and Annex V species	✓	✓	✓
Birds	Annex I / Red-listed species	County to International	Protected and notable bird assemblage	✓	✓	✓

7.10 ASSESSMENT OF SIGNIFICANT EFFECTS ON BIODIVERSITY

7.10.1 'Do-Nothing' Effect

As outlined in the EPA EIA Guidelines (2022), the 'Do-Nothing Effects' refer to the projected environmental conditions if a project was not carried out.

In this context, the 'Do-Nothing' scenario assesses the potential environmental outcomes if the Project were not implemented, and the site remained in its current state without further active intervention. This scenario helps illustrate the potential consequences for overall ecological health at the site if peat extraction activities and associated rehabilitation measures had not taken place. It compares the environmental trajectory of the site under these conditions to the proposed rehabilitation and management strategies.

This 'Do-Nothing' scenario assumes that the Project, as described in Section 4.2 of Chapter 4 – Project Description, ceased in 1988. By that time, the majority of the Application Site consisted of cutover bog and bare peat, with extensive drainage and peat extraction infrastructure already established. Peat extraction had commenced in 1958 (Section 4.3.1) and, by 1988, the landscape had been significantly modified through the development of drainage networks, extraction fields, rail infrastructure, workshops, and associated operational facilities.

Under this 'Do-Nothing' scenario, industrial peat extraction and ancillary activities would have ceased as of July 1988 (the baseline year). Drainage features would not have been deepened, maintained or upgraded, and pumping operations at Ballybeg would also have ceased. Over time, drains and settlement ponds would have progressively silted up and become increasingly colonised by vegetation, reducing their hydraulic efficiency and resulting in a gradual decline in drainage effectiveness across the Application Site.

Historical mapping indicates that, by 1988, approximately 2,285 ha of the Application Site was subject to peat extraction. Approximately 83 ha of the Application Site was drained but not subjected to extraction. In the absence of ongoing drainage maintenance, water levels would be expected to have gradually increased across extensive areas of the site, particularly within low-lying former extraction fields and hydrological depressions where drainage function would have deteriorated most rapidly. Although the extent of rewetting cannot be quantified directly from the available historical land-use data, wetter conditions would likely have become established across substantial portions of the drained bog landscape.

As water levels increased and drainage effectiveness declined, areas of open water, marsh, fen, swamp and wet grassland would likely have developed within lower-lying basins and poorly drained sections of the site. Natural recolonisation by wetland vegetation would have occurred progressively, with early successional communities establishing on abandoned peat surfaces and around ponded areas.

Across much of the remaining Application Site, natural succession would have continued following the cessation of peat extraction and associated disturbance. Formerly worked peat surfaces would be expected to have become colonised by pioneer vegetation, including rushes (*Juncus* spp.) and other herbaceous species, followed by the gradual establishment of scrub and woodland communities, particularly birch (*Betula* spp.) woodland and scrub.

Consistent with the limited extent of intact bog habitat remaining by 1988, only a relatively small proportion of the Application Site would be expected to have retained or redeveloped characteristics of raised bog habitat, with much of the landscape continuing to transition towards a mosaic of wetland, scrub and woodland habitats in the absence of management intervention.

However, consideration must be given to the following:

- The legislative mandate given to Bord na Móna in the form of the Turf Development Act 1946, as amended) to acquire and develop peatlands; and
- The uncertainty with respect to the planning status of the activity did not arise until 2019 and was not evident in 1988.

Therefore, this 'Do-Nothing' option was not the chosen option. Peat extraction and ancillary activities have occurred at the Application Site from July 1988 onwards. A decision to cease peat extraction at the Application Site was taken in 2020. However, the Applicant's ongoing obligations under the IPC Licence still apply, requiring the implementation of the Cutaway Bog Decommissioning and Rehabilitation Plans. These obligations remain in effect regardless of the outcome of the Substitute Consent process.

As peat extraction has already ceased, the site is currently characterised by areas of cutover bog and bare peat, and areas of naturally established scrub, woodland and wetland habitat. Hydrological modifications from past drainage and extraction activities still influencing site conditions. Under this scenario, while no further development would proceed, Bord na Móna would remain responsible for decommissioning and rehabilitation measures in accordance with the IPC Licence.

These rehabilitation efforts would focus on stabilising peatland habitats, aiming to stabilise hydrology, promote the recolonisation of native vegetation, and enhance biodiversity. The decommissioning process would also involve ensuring that former operational infrastructure is appropriately managed or removed where necessary to support long-term site rehabilitation. Under Rehabilitation Plans, rehabilitation works would involve blocking drains, raising water levels, and encouraging natural recolonisation of the bog surface.

The areas of the Application Site that were less affected by past drainage and extraction activities would likely continue to support relatively intact raised bog habitats, including sphagnum moss communities. Rehabilitation measures will further improve these areas by improving water quality emissions from the Application Site and expanding suitable habitat conditions. Under the IPC Licence, ongoing rehabilitation works would involve blocking drains, raising water levels, and encouraging natural recolonisation of the bog surface.

7.10.2 Likely Significant Effects

7.10.2.1 Overview of Effects

The primary consequences of the Project on biodiversity can be categorised as follows:

- **Habitats:** impacts on habitats including habitat loss, fragmentation, and degradation.
- **Species:** impact on biodiversity on species populations due to disturbance and habitat loss.
- **Water Quality and Aquatic Fauna and Habitats:** effects on water quality, particularly through sedimentation and altered hydrological conditions, impacting aquatic species and habitats by disrupting natural environment.

Habitats:

From the 1950s, drainage activities began at the bogs leading to significant alterations in bog structure and hydrology.

Industrial peat extraction had commenced at all bogs by 1958 and by 1988 was well-established across the majority of the Application Site. The drainage and active peat extraction activity would have caused significant habitat loss, fragmentation, and degradation. The habitat was originally raised bog, but by 1988, it had predominantly become cutover bog with significant areas of bare peat.

During the Peat Extraction Phase (July 1988 – June 2020), continued peat extraction would have hindered the natural functioning of raised bog habitats, while the altered hydrological conditions limited the habitats' capacity for recovery. The reduction in extraction activity from a peak level in 1995 (as described in Section 7.6.6) would have allowed some limited revegetation of cutover bog and development of secondary habitats to occur in the following years.

Between 2009 and 2026, habitat and species at the Application Site were surveyed, showing the predominant habitat at the bogs comprised bare peat and cutover bog, with faunal species such as small mammals, and certain bird species present. These findings, documented between 2013 and 2026, have likely remained largely unchanged into the Current Phase.

During the Remedial Phase (Future), rehabilitation measures will be implemented with the aim of improving ecological condition at the site and supporting biodiversity recovery. However, as noted in the Cutaway Bog Decommissioning and Rehabilitation Plans, the rehabilitation of the site will take time (estimated to in the order of 50 years) with ongoing management efforts.

Species:

Before the commencement of the installation of drainage at the Application Site, the site likely supported a variety of species typical of raised bog ecosystems, including specialised flora and fauna adapted to wet, acidic, and nutrient-poor conditions, along with fauna like invertebrates, birds, and mammals, all relying on the unique conditions of the raised bog.

Peat extraction from the 1950s onward would have led to declines in species populations, particularly those dependent on specialised habitats like bogs and wetlands.

As a result, species would have experienced losses, reductions in population sizes, and disruptions to their behaviour, including possible effects on breeding, feeding, and migration due to the modified conditions and the reduction of suitable habitat.

By 1988 during the Peat Extraction Phase (1988–2020), habitat loss and fragmentation would have significantly altered the natural structure of the raised bog habitats, replacing the original environment with large expanses of bare peat and cutover bog that supported relatively impoverished flora and faunal communities.

Peat extraction ceased at the Application Site in June 2020. Since the cessation of peat extraction, the Current Phase (2020–Present Day) would have allowed slow establishment of species populations, with transitional habitats becoming more prevalent. However, the legacy effects of peat extraction activities would have continued to impede the site's capacity for rehabilitation.

During the Remedial Phase, ongoing rehabilitation efforts aim to improve ecological condition at the site and supporting biodiversity recovery. However, as noted above, the rehabilitation of the site will take time (estimated to in the order of 50 years) with ongoing management efforts.

Water Quality and Aquatic Fauna:

The drainage and associated activities at the Application Site altered hydrological conditions, inducing changes to water flow patterns, which likely led to increased sediment runoff, degraded water quality, and negatively impacted aquatic fauna.

It is possible that increased sediment runoff reduced sunlight availability to aquatic plants and smothered habitats of aquatic species. Nutrient pollution could have facilitated eutrophication leading to oxygen depletion, which may have further impacted the environments. Aquatic species that depend on stable wetland conditions would have faced significant changes, with poor habitat and water quality leading to population declines and reduced biodiversity.

These potential negative impacts on hydrology and water quality would have continued to the start of peat extraction and beyond. The altered hydrological conditions could also have restricted access to critical breeding and feeding areas for aquatic species during the Peat Extraction Phase, and in the Current Phase. During the Remedial Phase, efforts to improve water quality will be implemented.

7.10.2.2 Assessment Approach

Sections 7.10.3 and 7.10.4.4.3 assess the likely significant effects of the Peat Extraction Phase, Current Phase, and Remedial Phase, respectively, on biodiversity. The assessment of likely significant effects examines the KERs classified as:

- International Importance
- National Importance
- County
- Local Importance (Higher Value)

Likely significant effects are considered with respect to the following ecological aspects:

1. Habitats
2. Species

3. Water Quality and Aquatic Fauna
4. Designated Sites

Control measures implemented pre- and post- the IPC licence in 2000 are outlined in Section 7.11.

Residual effects (i.e. the remaining impacts after implementation of controls measures) are assessed in Section 7.10 below. These effects are evaluated in relation to the likely significant effects, with consideration given to the ecological aspects outlined above.

7.10.3 Peat Extraction Phase (July 1988 – June 2020)

The following sections examine the potential likely significant effects of peat extraction and associated activities on KERs during the Peat Extraction Phase, which lasted from July 1988 until the cessation of extraction in June 2020.

By 1988, the Application Site had undergone extensive peat extraction and associated activities. Extensive drainage networks had been established across the bog, together with a network of railway infrastructure serving the peat extraction operations throughout the Application Site. From 1988 to June 2020, activities at the Application Site primarily involved peat extraction and drainage, and the establishment and removal of stockpiles. Peat was transported across the site, and there was ongoing maintenance of drainage systems, machinery, and pumping equipment.

7.10.3.1 Effects on Habitats

The following section provides an overview of the likely significant effects of peat extraction activities and all ancillary works during the Peat Extraction Phase (July 1988 to June 2020) on the remnant uncut raised bog and associated cutaway bog habitats at the Application Site.

7.10.3.1.1 Description of Effects

During the Peat Extraction Phase (July 1988 – June 2020) the main activities at the Application Site included installation of drainage, vegetation clearance/stripping and peat extraction. These activities have largely been confined to the area already affected by the original drainage activities.

At the commencement of this period, the Application Site was already substantially altered from its original condition as a raised bog system. Habitats within the site were predominantly associated with cutover peatland, areas of bare peat and limited remnants of raised bog habitat. The ecological character of the site reflected the extensive drainage and peat extraction activities that had taken place prior to 1988.

The principal effects on habitats and the terrestrial environment during the Peat Extraction Phase related to the continued modification and loss of peatland habitats associated with peat extraction and ongoing drainage maintenance. However, the majority of habitat loss and hydrological alteration had already occurred prior to 1988. Consequently, the additional habitat loss attributable to the period between 1988 and the cessation of extraction in 2020 was limited relative to the extensive habitat changes that had already taken place.

Although peat extraction continued after 1988, the area actively subject to extraction progressively declined as individual bog units reached the end of their operational life and were removed from production. Derryarkin Bog ceased peat extraction between 1988 and 1991, followed by Derryhinch in 2017, Drumman and Toar in 2018, and Ballybeg in 2020. As a result, while peat extraction remained active within parts of the Application Site until 2020, the extent of lands subject to active extraction generally decreased over time.

Accordingly, the additional habitat effects arising during the period from 1988 to 2020 are considered to have been of lesser magnitude than those associated with the original drainage and development of the bogs. The overall effect on habitats and the terrestrial environment during the Peat Extraction Phase is therefore considered to be Moderate, negative, likely and long-term.

Table 7-21: Summary Description of Potential Effects on Habitats and Terrestrial Environment during the Operational Phase

KER	Descriptor	Effect
Habitats and Terrestrial Environment	<i>Quality of Effects</i>	Negative
	<i>Significance</i>	Moderate
	<i>Extent and Context</i>	Whole Application Site
	<i>Probability</i>	Likely
	<i>Duration</i>	Long Term

As shown in Section 7.6.6, peat extraction within the Application Site reached its greatest extent during the operational period and subsequently declined as individual bog units progressively ceased production. Derryarkin Bog ceased peat extraction between 1988 and 1991, followed by Derryhinch in 2017, Drumman and Toar in 2018, and Ballybeg in 2020. Consequently, while peat extraction remained active within parts of the Application Site until 2020, the area subject to active extraction generally decreased over time, resulting in an increasing extent of lands that were no longer in production. This transition from active peat extraction to post-extraction conditions facilitated natural revegetation and ecological succession across previously worked areas. By 2020, substantial areas of cutover peatland supported developing secondary habitats, including pioneer vegetation, scrub and wetland communities. In particular, areas of Drumman and Derryarkin Bogs had developed notable wetland and scrub habitats, reflecting the progressive naturalisation of former peat extraction areas.

7.10.3.1.2 Assessment of Significance Prior to Control Measures

As outlined above, ongoing peat extraction activities during the Peat Extraction Phase hindered the natural regeneration of habitats, while altered hydrological conditions further limited their ability to regenerate. However, the decrease in extraction activities from the peak levels seen in 1988 (see Section 7.6.6) potentially allowed for some limited recovery of habitats, somewhat in line with natural vegetation succession in the years leading up to the cessation of extraction in 2020.

The environmental conditions at the site and the peat extraction activities continued to impede the recovery of habitats. While some species may have gradually recolonised the area (e.g. early-stage revegetation and pioneer habitats), the overall potential for habitat rehabilitation remained constrained.

These findings highlight the importance of targeted rehabilitation measures to support the recovery of sensitive habitats. This has been assessed as **Long-term, Moderate, Negative Effects**.

7.10.3.1.3 Control Measures

Up to 2000 when the IPC Licence was issued, Bord na Móna implemented standard operation control measures (see Section 7.11.1). While these standard operation control measures were primarily focused on managing risk to water quality, they would have also indirectly benefited habitats.

7.10.3.2 Effects on Water Quality and Aquatic Fauna and Habitats

The AER monitoring results associated with the IPC licence P0501-01 at the monitoring locations related with the Application Site from 2000 to 2025 include marginal exceedances on the ELV condition for suspended solids (see Chapter 4 – Appendix 4.4). These exceedances, beyond marginal (maximum of 7mg/l above the ELV), were rare, and do not seem representative of the water quality of the surface water discharges from the Application Site during the Peat Extraction Phase.

The following sections assess the potential for likely significant effects on water quality and aquatic receptors including aquatic habitats (i.e. watercourses) and species identified as occurring within or likely to occur downstream of the Application Site.

7.10.3.2.1 Description of Effects

The effects on water quality are fully described in Chapter 9 – Hydrology, Hydrogeology & Water Quality of this remedial EIAR and are described within this Chapter in relation specifically to ecology.

The Application Site is situated between key surface water bodies within the surrounding catchments. Flowing through the site and to the east, the site is connected to the Yellow (Castlejordan) River (tributaries of the Boyne river system), which flows north and east of the Application Site.

To the south of Ballybeg Bog, the Esker River flows southwards within the Figile catchment (a tributary of the River Barrow). A small area of the southern reaches of Ballybeg Bog lies within this catchment).

The existing drainage channels within the Application Site store water and transmit it to main drains and ultimately to silt settlement ponds. The majority of final settlement occurs in the ponds before discharging to the adjacent drains and streams.

The application site is also linked to the groundwater bodies of:

- IE_EA_G_001 Athboy
- IE_EA_G_002 Trim
- IE_SE_G_049 Daingean
- IE_SH_G_240 Clara
- IE_SH_G_103 Geashill

Suspended Solids

From July 1988 until peat extraction ceased in June 2020, activities at varying intensities across the Application Site likely caused indirect water pollution impacts on aquatic habitats both within and downstream of the area. These impacts would have primarily resulted from reduced water quality in connected watercourses, which could have degraded habitats essential for aquatic fauna.

The deterioration in water quality was likely due to the release of pollutants, particularly suspended solids. This would have been most significant during the construction of drainage channels, the removal of surface vegetation, and the continued risk of peat sediment erosion through the bog's drainage network, leading to elevated concentrations of suspended solids in downstream watercourses.

Additionally, the exposure of peat to air during extraction activities would have accelerated the decomposition of organic matter, releasing dissolved nutrients, mainly ammonia, into nearby watercourses. This nutrient release could have further contributed to the decline in water quality both within and downstream of the Application Site.

As detailed in Chapter 4, Bord na Móna records show that silt pond measures were introduced across all Bord na Móna bogs in the early to mid-1980's in response to the 1977 Water Pollution Act. All silt ponds were in place pre-1988. The use of silt ponds would have helped reduce the risk of significant deterioration in water quality due to the release of pollutants, particularly suspended solids.

No WFD data are available for the water bodies for 1988. As a result, the earliest available WFD status reports from 2007-2009 have been used to infer baseline conditions. During this monitoring period, the water quality assessments revealed varying conditions across the water bodies connected to the Application Site.

The Castlejordan_020 and Yellow (Castlejordan)_20 were both classified with moderate water quality, indicating some environmental stress in these river systems. Yellow (Castlejordan)_10 and Yellow (Castlejordan)_30 were both classified as good, while Esker Stream_10 and Silver (Tullamore)_10 were both unclassified.

The groundwater bodies associated with the Application Site achieved good status, indicating that the groundwater systems remained relatively unaffected by surface activities. Overall, the findings indicate some environmental stress in these river systems. While indirect effects cannot be definitively assigned to the works at the Application Site, there is potential that these works may have impacted both surface and groundwater resources. This impact has been assessed as a **Long-term, Moderate, Negative Effect**.

Since 2000, the Application Site has been regulated by the EPA under IPC Licence Registration No. P0501-01 and has been subject to the conditions of that licence which include emission limit values for suspended solids and other nutrients. The IPC Licence goes some way to provide for enhanced management and mitigation strategies.

Accidental Leakages and Spillage of Hydrocarbons

During the Peat Extraction Phase, there would also have been potential for pollution of surface water bodies and groundwater due to accidental hydrocarbon spillages during machinery refuelling and plant maintenance, discharges from wastewater systems (e.g., septic tanks) at office buildings, and potential leaks and spills at production centres and workshops, which could have resulted in surface water and groundwater contamination. This gave rise to potential **long-term, indirect, moderate, negative effects**.

7.10.3.2.2 Assessment of Significance Prior to IPC Licence Control Measures

Prior to regulation under IPC Licence No. P0501-01, peat extraction and associated activities had the potential to affect surface water and groundwater quality through the generation of suspended solids, nutrient releases, and accidental spillages associated with site operations. However, a range of operational and environmental control measures were already in place prior to the introduction of the IPC Licence, including drainage management measures, silt ponds, and procedures for the handling and storage of fuels and other materials. These measures would have reduced the potential for adverse effects on the receiving water environment. Notwithstanding these measures, peat extraction activities likely resulted in long-term, indirect, moderate negative effects on water quality and associated aquatic receptors.

The WFD status reports indicate a decline in water quality in surface water bodies connected to the site. Although the most pronounced negative impacts may have occurred before 1988, these issues continued throughout the peat extraction period from 1988 to 2020. However, while these timeframes coincide, it is important to note that a clear cause-and-effect relationship is not definitively established. In the absence of regulatory oversight or mitigation measures during this period, the scale of peat extraction almost certainly contributed to further degradation of water quality, affecting both surface and groundwater systems. The extraction activities likely intensified the release of pollutants, including suspended solids and nutrients, into the connected watercourses. This would have played a significant role in the persistent water quality issues observed over time, underscoring the need for better management practices to protect water resources.

While peat extraction and associated activities had the potential to affect surface water quality through the mobilisation of suspended solids, nutrients and other contaminants, a range of operational control measures were implemented throughout the extraction period to reduce these risks. These included drainage management measures, silt ponds, fuel handling procedures and environmental management practices, which were further formalised and regulated following the introduction of IPC Licence P0501-01 in 2000. Notwithstanding these measures, peat extraction and associated drainage activities are likely to have resulted in indirect, long-term negative effects on local water quality and aquatic habitats. However, available monitoring data indicate that water quality within receiving watercourses remained generally moderate to good and do not suggest substantial long-term deterioration attributable to the Application Site. Accordingly, the significance of effect is considered to be **moderate, indirect, long-term and negative**.

In the absence of control measures and regulation under IPC Licence No. P0501-01, peat extraction and associated activities would have had the potential to result in long-term, significant negative effects on water quality through the mobilisation of suspended solids, nutrients and other contaminants.



However, a range of environmental protection measures, including drainage management and silt pond systems, were in place throughout much of the extraction period and were formalised and strengthened following the introduction of IPC Licence No. P0501-01 in 2000. While most hydrological modification of the Application Site had occurred prior to 1988, the continuation of peat extraction and associated drainage maintenance between July 1988 and June 2020 is likely to have resulted in long-term, indirect, moderate negative effects on local water quality and aquatic ecosystems. Available monitoring data indicate that water quality in receiving watercourses remained generally moderate to good during this period and do not suggest substantial long-term deterioration attributable to the Application Site.

7.10.3.2.3 Control Measures

Between July 1988 and June 2020, Bord na Móna implemented standard operation control measures (see Section 7.11.1), including drainage maintenance, silt ponds, machinery management, spill response, and waste disposal, to minimise environmental risks and protect water quality during peat extraction.

7.10.3.3 Effects on Fauna

7.10.3.3.1 Description of Effect

Peat extraction and its associated activities likely led to some habitat disruption and loss for various faunal species, such as otters, badgers, and bird species. The impacts on these populations and their habitats are examined below in greater detail.

Bord na Mona baseline ecological surveys confirmed the presence of Otter, where several tracks were identified. Between 2009 and 2012 survey efforts, Otter tracks and spraints were recorded. Considering its international designation, and the connection to three SACs designated for Otter (i.e. River Boyne and River Blackwater SAC, River Shannon Callows SAC, and River Barrow and River Nore SAC), Otter is considered to be a KER of **International Importance**.

The primary impact of peat extraction and associated activities during the Peat Extraction Phase was the significant disruption of natural vegetation growth and habitat succession across the Application Site. Continuous peat extraction activities hindered the establishment and development of native plant communities, preventing the formation of stable ecosystems. However, as peat extraction ceased and the site underwent natural revegetation, a diverse mosaic of cutover habitats, including areas of wetland, scrub and peatland habitats, began to be established. This habitat regeneration provided suitable conditions for a range of bird species, such as meadow pipit, and snipe, which are known to thrive in open, early-succession landscapes. Birds are considered to be a KER of **International Importance**.

Bird species inhabiting the cutover bog habitats, such as meadow pipit, among others, likely experienced disturbance effects during the Peat Extraction Phase. These impacts would have primarily resulted from the operation of peat harvesting machinery, the construction and use of railway tracks, and the establishment of works areas. The presence of ongoing industrial activity may have led to temporary displacement of some individuals, although the extent of these effects would have been largely confined to species adapted to such open, disturbed environments.

With the cessation of peat extraction, disturbance levels have significantly reduced, allowing for a more stable and less disrupted habitat for avian species to recolonise and thrive.

The Marsh Fritillary butterfly, a recorded species present at the Application Site, has also benefited from these evolving habitats. The butterfly's primary food source, Devil's-bit Scabious, is beginning to recolonise areas of the site, though the availability of this plant remains limited as the habitats are still in a transitional phase since peat extraction ceased in 2020. The butterfly's survival heavily depends on the presence of this plant for its larvae, and while food sources are sparse, the habitats at the site's edges and in the cutover bog areas where Devil's-bit Scabious grows now provide some suitable conditions for the species. The peat extraction activities themselves have indirectly created environments that benefit the Marsh Fritillary, meaning that the extraction process is unlikely to have caused significant harm to the species. Considering its international designation the Marsh Fritillary is considered to be a KER of **County Importance**.

In summary, peat extraction and associated activities likely caused some habitat disruption, loss, and disturbance impacts for various faunal species, including Otter, Badger, bird species, and Marsh Fritillary. However, the overall effect on these populations since 1988 baseline, particularly protected species, appears to have been relatively limited in scope. Detailed assessments of these potential impacts are provided below.

7.10.3.3.2 Assessment of Significance Prior to Control Measures

Assessment of Potential Effects on Otter

Peat extraction and the associated activities likely resulted in indirect impacts on otters present within or downstream of the Application Site. The main concern was habitat degradation driven by declining water quality, with contaminants posing a significant threat to otters that rely on clean, undisturbed aquatic environments for foraging, breeding, and shelter. The potential impacts on water quality, and how these may have affected aquatic habitats, are discussed above to provide more detailed information on this issue.

In addition to water quality degradation, there was also the potential for disturbance to otters inhabiting or transiting through the Application Site during the peat extraction activities. Otters are generally crepuscular, meaning they are most active during dawn and dusk. Since most of the peat extraction and associated operations took place during daytime hours, the potential for significant disruption to otter activity was minimised. Their crepuscular habits meant they would likely avoid human activities during the daytime, reducing the likelihood of direct disturbance. However, the presence of machinery and other operations on-site still posed some risk, especially for otters moving through the area.

The likelihood of significant disturbance was further reduced over time since 1988 extraction activities, which were typically confined to specific operational areas. This focused approach would have reduced the extent of disturbance to otters within the site. Additionally, any temporary displacement caused by human activity would have been less severe compared to more widespread disruption during the earlier years of extraction.

The overall potential effect is deemed to be **Long-term, Moderate, Negative Effects** in the absence of control measures.

Assessment of Potential Effects on Badger

The Peat Extraction Phase likely had minimal direct effects on protected species such as badgers, as the habitats present at the baseline of 1988 and during the Peat Extraction Phase, such as bare peat, cutover bog, and remnants of raised bog, were not ideal for supporting many mammal species. These environments lack the structural diversity, food sources, and shelter necessary for larger populations of mammals like badgers, which generally require more complex habitats for foraging, breeding, and sheltering.

However, with the cessation of peat extraction, areas of the site have naturally regenerated into new habitats, such as bog woodland and scrub. These newly formed habitats have become more suitable for badgers. The regeneration of these linear landscape features, which resulted from the natural regrowth of vegetation on disturbed cutover bog areas, now offers more diverse and structurally complex habitats. These emerging habitats provide valuable resources for a variety of species, including food and shelter, which could support species like badgers that require more developed environments for foraging and denning.

Specifically, the bog woodland and scrub areas now forming in these sections of the site offer important foraging grounds for badgers, as well as potential areas for denning. As these habitats continue to develop and mature, they could increasingly provide the necessary conditions for badgers to establish territories, especially since badgers are known to thrive in areas with good food availability, such as earthworms, insects, and other small invertebrates, which are commonly found in woodland and scrub habitats.

Overall, the potential effect is deemed to be **Long-term, Moderate, Negative Effects**.

Assessment of Potential Effects on Irish Hare

Irish Hare was recorded within the Application Site during ecological surveys, indicating that the site provides suitable habitat for the species. During the Peat Extraction Phase, peat extraction and associated drainage activities resulted in the removal and modification of peatland habitats across large areas of the Application Site. These activities had the potential to reduce the availability of suitable foraging, sheltering and breeding habitat for Irish Hare and to increase levels of disturbance associated with machinery operation, vehicle movements and human activity. However, suitable habitat was retained within portions of the Application Site and surrounding landscape throughout the Peat Extraction Phase, including areas of cutaway bog, regenerating vegetation and marginal habitats. Consequently, while adverse effects on habitat availability and habitat quality may have occurred locally, impacts on the local Irish Hare population would have been indirect and limited to habitat modification and disturbance.

Overall, the potential effect on Irish Hare is assessed as **Long-term, Moderate, Negative**.

Overall, the potential effect is deemed to be **Long-term, Moderate, Negative Effects**.

Assessment of Potential Effects on Birds

During the Peat Extraction Phase, habitat loss occurred, which likely affected bird populations that used the Application

Site. In 1988, habitats at the Application Site would have been predominantly bare peat, cutover bog, and small sections of remnant raised bog. Extraction activity ceased at each bog at different times, with Derryarkin coming out of extraction between 1988-1991, Derryhinch in 2017, Drumman and Toar in 2018 in 2017/2018 with Ballybeg Bog being the final bog within the Application Site on which peat extraction ceased in 2020. Since the cessation of peat extraction, areas of cutover bog have shown some signs of revegetation, allowing for the development of suitable nesting/foraging habitat. The natural re-establishment of scrubland, peatland habitats, and early-stage vegetation has created new opportunities for nesting and foraging, although these habitats differ from the original raised bog environments.

In addition to habitat loss, the peat extraction process introduced some disturbances that likely affected bird populations, that despite the reduced value at that time, may have been present within the Application Site. The operation of heavy machinery, the construction of railway tracks for transporting peat, and the establishment of work areas led to ongoing noise and human activity. These disruptions would have displaced more sensitive bird species, particularly those reliant on quiet, undisturbed environments. However, some species, such as Meadow Pipit, are more adaptable to open landscapes and may have been more resilient. Nevertheless, disturbances could have negatively affected their ability to breed and forage successfully, particularly for ground-nesting birds vulnerable to disruption during the breeding season.

Despite these impacts, it is unlikely that the Peat Extraction Phase caused any significant long-term effects on bird populations due to habitat loss, disturbance, or direct mortality. While some birds may have been affected on a local scale, many species are capable of relocating to suitable habitats nearby or within part of the Application Site that came out of peat production earlier (e.g. Derryarkin), reducing the severity of the impact.

Peat extraction and associated activities may also have had an indirect effect on wetland bird species, particularly those that rely on aquatic habitats both within and downstream of the site. The degradation of water quality, caused by increased sedimentation and changes in hydrology, could have negatively affected wetland habitats used for feeding and breeding. These changes may have reduced the availability of food sources such as aquatic invertebrates and plant material, impacting the foraging success of waders and waterfowl.

The potential effects on water quality, and consequently on wetland bird populations, are further outlined in Section 7.8.3.2. These impacts highlight the wider ecological consequences of peat extraction beyond direct habitat loss and disturbance, reinforcing the need for effective rehabilitation measures to improve habitat quality and support bird biodiversity in the Long-term.

By 1988 historic peat extraction and alteration of site hydrography would have already resulted in significant loss of habitat. Only certain areas within the bogs remained in a relatively unaltered state, while some regeneration of cutover bog areas has potentially allowed for a partial recovery of bird biodiversity. Ecology surveys undertaken at the Application Site by Bord na Móna between 2010 and 2012 recorded a diverse assemblage consisting of several species typical of cutover bog habitats, including birds typically attracted to the wet, open areas, scrubby margins, and reedbeds found in cutover bogs, where they find food and shelter. Some species, like Golden Plover, were found to use the bogs, while others like Lapwing and Snipe nest in the more stable, wet conditions that bogs provide.



This diversity underlines the ecological significance of bogs as habitats for a variety of bird species. In particular, the recolonisation of scrubland, heath, and early successional vegetation has created new foraging and nesting opportunities, albeit different from those originally found in intact raised bog ecosystems.

The overall effect is deemed to be **Long-term, Moderate, Negative Effects**.

Assessment of Potential Effects on Marsh Fritillary

Desk study, ecological surveys, and targeted marsh fritillary surveys carried out within the Application Site identified areas of potentially suitable habitat for Marsh Fritillary on the Application Site. It should be noted that peat extraction activities themselves have indirectly created environments that benefit the Marsh Fritillary, as Devils Bit Scabious now has ecological niches to exploit in the altered landscape. This potentially means that the Peat Extraction Phase are likely to have caused different effects to the species.

The overall effect is deemed to be **Long-term, Moderate, Positive Effect**.

7.10.3.3.3 Control Measures

Between July 1988 and June 2020, no measures were implemented to prevent or mitigate impacts on Badgers, Irish Hares, Birds, or Marsh Fritillaries, including their habitats. While Otter terrestrial habitats also lacked specific protections, standard operation control measures set in place by Bord na Móna (see Section 7.11.1) such as silt ponds, machinery spill response, and waste disposal helped reduce impacts on aquatic habitats and the species they rely on.

7.10.3.4 Effects on European and National sites Prior to Control Measures

7.10.3.4.1 Effects on European sites (SACs and SPAs)

The European sites listed in Section 7.7.5 are recognised as Internationally Important KERs.

As a result, during the later years of the Peat Extraction Phase from 1994 onwards, there is potential for indirect effects on the integrity of the European Sites as a result of disturbance and deterioration of water quality in the watercourses within and downstream of the Application Site. The Application Site is hydrologically connected to the River Boyne and River Blackwater SAC, River Boyne and River Blackwater SPA and River Barrow and River Nore SAC through downstream watercourse networks. In addition, ecological connectivity exists with Lough Ennell SPA through the potential use of habitats within the Application Site as supporting habitat by mobile SCI bird species. These hydrological and ecological linkages establish potential pathways by which peat extraction activities could have affected water quality, habitat availability and habitat suitability for relevant QIs and SCIs, which in turn establishes the potential for impacts on habitat availability and water quality.

Changes in water quality, habitat structure, or hydrology at the Application Site could have consequences for QIs/SCIs for which SCAs/SPAs are designated, including SCI species such as the Pochard, Tufted Duck, Coot and Kingfisher, and QIs such as Otter. These changes could alter habitat suitability or affect the aquatic ecosystem that sustain these species. Therefore, both hydrological and habitat connectivity must be considered when assessing impacts on European Sites. Many European Sites are directly hydrologically connected to the Application Site via various river waterbodies.

Given the existing hydrological links, there is a risk, through waterborne pollution or hydrological changes, of similar impacts on all of these sites, including altered water quality, increased pollution or nutrient deposition, and habitat disturbance, potentially affecting sensitive species and habitats of national importance. Following the precautionary principle, the potential for indirect effects on the European Sites has therefore been considered where relevant.

The indirect potential impacts are assessed to have had **Long-term, Moderate, Negative Effect**.

7.10.3.4.2 Effects on National Sites (NHAs and pNHAs)

As illustrated in Section 7.8.3.2 and Table 7-19, the Application Site does not directly intersect any National Sites but has interactions with sites situated downstream. This hydrological connection presents a high potential for environmental impacts, particularly due to activities associated with peat extraction, land use changes, drainage modifications, hydrological alterations, and pollutant discharge. These activities can contribute to surface runoff, sedimentation, and contamination of nearby water bodies, leading to degraded water quality and habitat disruption within these National Sites.

As seen in Table 7-19, many National Sites are directly hydrologically connected to the Application Site via various river waterbodies. Given the existing hydrological links, there is a risk, through waterborne pollution or hydrological changes, of similar impacts on all of these sites, including altered water quality, increased pollution or nutrient deposition, and habitat disturbance, potentially affecting sensitive species and habitats of national importance.

Based on the above rationale and the information presented in Table 7-19, there is a clear potential for effects on fauna and habitats within national sites. In accordance with the precautionary principle, the potential for indirect effects on National sites has therefore been considered where relevant. The effect is assessed as a **Long-term, Moderate, Negative Effect**.

7.10.3.4.3 Control Measures

It should be noted, that standard operation control measures set in place by Bord na Móna helped reduce the risk of impacts on water hydrologically linked to European and National sites. Between July 1988 and June 2020, no measures were implemented to prevent or mitigate impacts on European sites and/or National Sites.

7.10.4 Current Phase (June 2020 – Present Day)

The Current Phase of the Project at the Application Site spans the period from the cessation of peat extraction in June 2020 to the Present Day. Once peat extraction ceased in 2020, activities focused on the decommissioning and rehabilitation of the site in line with Condition 10 of the IPC Licence.

In January 2021, Bord na Móna formally announced that peat extraction across all bogs within its landholding had ceased, although peat extraction at the Application Site had ceased prior to this in June 2020. Decommissioning of the peat extraction activities is currently underway across the Application Site in accordance with Condition No. 10 of the IPC Licence.

Ongoing decommissioning efforts at the Application Site currently focus on the removal of peat stockpiles, with decommissioning of other infrastructure, as outlined in Table 7-22, to follow at a later stage. As mentioned in Section 4.8.1 of Chapter 4 - Project Description, approximately 18.56 km of permanent rail track was located within the Application Site boundary. The rail infrastructure will be decommissioned as part of the wider decommissioning programme under the IPC Licence.

Table 7-22: Future Decommissioning for Application Site

Item	Description	Application Site Decommissioning Plan
1	Clean-up of remaining or unconsolidated waste or materials located in Bogs, Yards, Buildings and Offices	Relevant to All Bogs
2	Clean silt ponds	Relevant to All Bogs
3	Decommission peat stockpiles	Completed in 2021
4	Decommission or remove buildings and compounds	Relevant to All Bogs
5	Decommission fuel tanks and associated facilities	Not relevant
6	Decommission and removal of septic tanks	Not relevant
7	Decommissioning and removal of a number of existing bog pumps where suitable/necessary	Ballybeg Bog

The KERs are listed in Table 7-23.

Table 7-23: Summary Description of Potential Effects on Habitats and Terrestrial Environment during the Operational Phase

Valuation	Key Ecological Receptor
International Importance	Species Otter
National Importance	None
Local Importance (Higher Value)	Habitats WS1, FL8, WD1, WD2, FS1, PB4, FW2, FW4, WL1, WL2, WS2, GS4, GS2, WN6, HH3, WN7, PB1 Species Atlantic Salmon, Lamprey spp., White-clawed Crayfish, Badger, Irish Hare, Pine Marten,
County Importance	Habitats WN7 Bog Woodland Species Annex I birds, BoCCI Red-listed birds, BoCCI Amber-listed birds, Marsh Fritillary

7.10.4.1 Effects on Habitats

7.10.4.1.1 Description of Effects

Since peat extraction ended in June 2020, there has been no further degradation of the habitats at the Application Site including the remnant raised bog habitats. Some recovery has occurred, evident in the transitional habitats. No new drainage, vegetation clearing, or peat harvesting has occurred, allowing some recovery to occur as evident in the transitional habitats.

7.10.4.1.2 *Assessment of Significance Prior to Control Measures*

The removal of peat stockpiles has been carried out without contributing to further degradation, fragmentation, or loss of habitats. Access for machinery for the decommissioning activity is restricted to areas that were previously impacted by past peat extraction activities and associated works, ensuring that no new, undisturbed habitats are affected in this phase of the Project. Additionally, no further actions, such as clearing vegetation, or extracting peat, have been undertaken in conjunction with the removal of the stockpiles.

As a result, the Current Phase of the Project has not led to any additional significant negative effects on local habitats. There has been no further loss, degradation, or fragmentation of ecosystems. The careful approach to decommissioning has ensured minimal disruption to the surrounding environment, aligning with environmental protection goals. By restricting activities to already disturbed areas and refraining from any new harmful practices, the Project is minimising its ecological footprint while maintaining the integrity of the habitat and its surrounding ecosystem.

Considering the above, it is deemed that there have been no additional likely significant effects since cessation of extraction in June 2020. While the reduction in extraction activity may have allowed some habitat recovery, adopting a precautionary approach, the potential effect to habitats have been assigned to be **Long-term, Moderate, Positive** to reflect the likely rehabilitation of habitats in smaller area of the Application Site. This assessment of significance of effect considers the KERs listed below.

Multidisciplinary surveys conducted (see Section 7.4.3.1) identified habitats at the Application Site across various geographic levels of importance. In total, 17 habitats were recorded as KERs (see Table 7-23 above).

7.10.4.1.3 *Control Measures*

Based on the above considerations and the approach employed to minimise disturbance, including limiting machinery access to areas previously impacted by peat extraction and associated works, the ongoing work for the Current Phase activities is proceeding without any additional significant negative effects on the local habitats. In this regard, there is no risk of additional habitat loss, degradation, or fragmentation.

Bord na Móna standard operation control measures (see Section 7.11.1) which are primarily focused on managing risk to water quality would have also indirectly benefited habitats.

From June 2020 onwards, a suite of additional control measures were implemented to manage risks to water quality, which would also have indirectly benefited habitats. These measures complemented the environmental controls already in place under IPC Licence P0501-01, originally issued by the EPA in 2000 and subsequently amended in 2012 (see Section 7.11.2).

7.10.4.2 Effects on Water Quality, Aquatic Fauna, and Habitats

7.10.4.2.1 *Description of Effect*

Since the cessation of peat extraction at the Application Site in June 2020, the potential for the release of suspended sediments and the pollution of water quality, including both watercourses and groundwater, has been greatly reduced. With the cessation of peat extraction, there has been a noticeable decline in the overall disturbance to the bogs.



This reduced disturbance will have a positive knock-on effect reducing risk of suspended solids emissions in water runoff, and therefore water quality has likely improved. As well as reducing the risk of sediment pollution, the significant reduction in the machinery and plant operations on site lowers the chances of accidental spills or the discharge of pollutants into nearby water bodies. This reduction in operational activity ensures that there is a far lesser likelihood of contaminants being introduced to the environment compared to during the Peat Extraction Phase.

Throughout the Current Phase of the Project, the site continues to operate under the same existing drainage systems that were in use during the Peat Extraction Phase. These systems include field drains, main drains, silt ponds, discharge outlets and the pumped drainage infrastructure at Ballybeg. Together, these measures continue to regulate water levels and manage surface water runoff across the Application Site.

Although peat extraction has stopped, there are still some limited activities on site that involve the use of machinery and plant. These activities, while minimal, inherently carry a risk of accidental spillage, particularly of hydrocarbons. Such spills could potentially affect the water quality of nearby watercourses or groundwater. In addition, some office buildings are still occupied, and wastewater from the septic tanks remains a potential source of contamination. If not properly managed, these discharges could affect both surface water and groundwater, posing a risk to the surrounding aquatic environment. However, it is important to note that these risks are much lower in the Current Phase compared to the Peat Extraction Phase, due to the reduced scale of activities, fewer machines, and a smaller workforce on site.

The Application Site has been subject to regulatory oversight by the EPA since 2000, operating under the conditions outlined in the IPC Licence P0501-01. As noted above this licence includes specific emission limit values for various pollutants, including suspended solids and other nutrients, which are regularly monitored to ensure compliance. A review of the available AERs and associated monitoring data identified a limited number of exceedances of the suspended solids emission limit value recorded under IPC Licence P0501-01. However, these exceedances relate to the wider Derrygreenagh Group licence area and not exclusively to monitoring locations associated with the Application Site. Furthermore, the recorded exceedances were infrequent and generally minor in magnitude. Monitoring data associated with locations relevant to the Application Site indicate a generally high level of compliance with licence requirements and do not indicate a pattern of significant deterioration in surface water quality attributable to activities at the Application Site. This demonstrates that water quality was generally managed in accordance with the requirements of the licence and that the environmental control measures in place were effective in minimising environmental risks..

In addition to these water quality considerations, this impact assessment also considers the potential effects of the Project on aquatic species. The Project has been designed in such a way that it does not have any direct impact on the habitats of these species. This means there is minimal risk of disturbance to their ecosystems as a result of the ongoing activities. The only potential pathway for any effects to occur would be through water pollution, which could affect both the habitats and the species themselves. However, as outlined in this section, the measures in place to manage water quality ensure that the risk of pollution is minimised, and therefore the potential for negative impacts on aquatic species remains low.

Overall, while there are inherent risks associated with ongoing activities on site, such as the possibility of accidental spills or wastewater discharges, these risks are significantly lower in the Current Phase of the Project compared to previous Phases. Stringent ongoing regulatory compliance, coupled with the careful management of water and waste, has helped minimise the potential for additional negative environmental impacts, particularly concerning water quality and aquatic species.

7.10.4.2.2 *Assessment of Significance Prior to Control Measures*

Without the implementation of control measures and the regulation of activities at the Application Site under the IPC licence, there would be a potential for the Current Phase of the Project to result in a Long-Term, Significant, Negative Effect on water quality. These measures and regulations are crucial in preventing any significant deterioration of water quality, and their absence could have led to more severe environmental consequences. Regulation of activities at the Application Site is required under the IPC licence and is strictly adhered to by the Applicant. Although a reduction in extraction activity has likely resulted in reduced effects on aquatic ecosystems, there is potential that legacy effects on water quality persist. Considering this, and adopting a precautionary approach, the potential effect to habitats have been assigned to be **Long-term, Moderate, Negative**.

7.10.4.2.3 *Control Measures*

Collectively the Applicant's standard operation control measures (see Section 7.11.1) and IPC Licence control measures set in place under the IPC Licence in 2000 (see Section 7.11.2), which are primarily focused on managing risk to water quality, would have directly benefited aquatic habitats and fauna.

7.10.4.3 Effects on Fauna

7.10.4.3.1 *Description of Effects*

The effects on fauna during the Current Phase of the Project would primarily involve the potential reduction in the quality of aquatic habitat and associated supporting fauna, particularly in areas within and downstream of the Application Site. Additionally, the operation of plant and machinery on site could have caused disturbances to faunal species, including Otter and various bird species.

However, as outlined above with respect to the risk of likely significant effects on water quality and the habitats, the risk of effect on species are expected to be of a much lesser magnitude compared to the Peat Extraction Phase. This is due to the reduced levels of plant, machinery, and workers on site during the Current Phase, which has led to a decrease in the potential for significant environmental impacts.

Similarly, the likely significant effects on fauna, including Badger, birds, Irish Hare and Otter, as a result of disturbance and displacement are also anticipated to be of a smaller magnitude due to the reduced activity and concentration of plant, machinery, and workers operating on site.

7.10.4.3.2 *Assessment of Significance Prior to Control Measures*

The cessation of peat extraction would have reduced impact for the faunal KERs. The assessment of effects of fauna is presented below.

Assessment of Potential Effects on:

- Otter - **Long-term, Slight, Negative Effects**
- Badger - **Long-term, Slight, Negative Effects**
- Irish Hare - **Long-term, Slight, Negative Effects**
- Birds - **Long-term, Slight, Negative Effects.**
- Marsh Fritillary - **Long-term, Moderate, Positive Effects.**

7.10.4.3.3 Control Measures

Based on the above considerations and the approach employed to minimise disturbance, including limiting machinery access to areas previously impacted by peat extraction and associated works, the ongoing work for the Current Phase activities is proceeding without any additional significant negative effects on local fauna. In this regard, there is no increased risk of additional species disturbance or significant negative effects.

The Applicant's standard operation control measures (see Section 7.11.1) which are primarily focused on managing risk to water quality would have also indirectly benefited fauna by reducing overall ecosystem degradation and ill-health.

The IPC Licence (Ref: P0501-01), which was issued in 2000, included a suite of additional control measures to further manage risk to water quality would have also indirectly benefited fauna by reducing overall ecosystem degradation and ill-health.

7.10.4.4 Effects on European sites and National sites prior to Control Measures

7.10.4.4.1 Effects on European sites

The European sites identified in the remedial AASR as relevant to the assessment comprise the River Boyne and River Blackwater SAC [002299], River Boyne and River Blackwater SPA [004232], River Barrow and River Nore SAC [002162] and Lough Ennell SPA [004044]. These European sites are recognised as Internationally Important KERs.

The nature of potential impacts on European Sites during the Peat Extraction Phase shares similarities with those anticipated during the Current Phase. However, it is important to note that the overall level of impact has significantly decreased due to the cessation of peat extraction activities at the beginning of the Current Phase in 2020.

The cessation of peat extraction has led to a substantial reduction in the risk of likely significant effects on these European sites. This reduction is primarily attributed to the lower volume of site activity, including the absence of active peat extraction operations and a substantial reduction in heavy plant activity, vehicle movements and personnel on site, fewer operational heavy machinery, vehicles, and workers, which in turn has reduced the potential sources of disturbance and to QIs and SCIs associated with the SPAs and SACs that may be utilise the Application Site or connected habitats.

Furthermore, with the cessation of extraction, the input of suspended sediments, nutrients, and other pollutants into hydrologically connected watercourses has decreased, thereby lowering the likelihood of indirect effects on aquatic ecosystems and water-dependent habitats. Similarly, reduced on-site disturbances have helped mitigate ecological stressors on key avian species which may now or in the future rely on these sites for foraging and roosting.



As a result of these changes, the potential indirect impacts via hydrological and ecological pathways have declined. During the Peat Extraction Phase, the indirect potential impacts were assessed as Long-term, Moderate, Negative due to likely persistent nature of the habitat and water quality pressures.

The remedial AASR concluded that activities associated with the Current Phase (June 2020 - Present Day), including decommissioning, drainage maintenance, environmental monitoring and site management, do not give rise to source-pathway-receptor linkages capable of resulting in likely significant effects on any European site. Consequently, the Current Phase was screened out of further Appropriate Assessment and no likely significant effects on European sites were identified.

7.10.4.4.2 *Effects on National sites*

The potential impacts on nearby or downstream National Sites during the Peat Extraction Phase were largely driven by habitat disturbance, hydrological alteration and deterioration in water quality.

Since the cessation of peat extraction in 2020, activities within the Application Site have been limited to decommissioning, drainage maintenance, environmental monitoring and preparatory rehabilitation measures. These activities are substantially lower in intensity and geographical extent than those associated with active peat extraction and are not considered capable of resulting in significant adverse effects on National Sites.

With the removal of active extraction pressures, the risk of indirect effects such as sedimentation, nutrient enrichment and pollution of receiving waters has reduced significantly. Any residual effects are considered limited, localised and temporary in nature.

Accordingly, potential effects on National Sites during the Current Phase are considered to be limited to Long-term, Slight, Negative Effects, reflecting the continued presence of historic drainage infrastructure and modified habitats, while recognising the substantial reduction in environmental pressures since peat extraction ceased.

7.10.4.4.3 *Control Measures*

From 2000 onwards activities at the Application Site operated under IPC licence, which established a comprehensive framework for environmental management, monitoring and emission control. The control measures implemented to manage discharges are summarised in Section 7.11.2 below.

These measures are designed to ensure that all discharges meet the necessary environmental standards, minimising any potential additional negative impacts on surrounding watercourses and groundwater, thus limiting effects on connected European and National Sites and their respective KERs.

It should be noted that the Applicant's standard operational control measures—including drainage maintenance, silt-settlement ponds, machinery management, spill response, and waste disposal (see Section 7.11.1) were also maintained throughout the Current Phase to minimise environmental risks and protect water quality.

The continuation of these measures following the cessation of peat extraction has further reduced the potential for effects on downstream receiving environments and contributed to the conclusion of the remedial AASR that no likely significant effects arise from Current Phase activities.

7.10.5 Remedial Phase (Future)

To comply with Condition 10.2 of the IPC Licence (Ref. P0501-01), Bord na Móna is required to develop a Cutaway Bog Decommissioning and Rehabilitation Plan to facilitate the long-term rehabilitation of the licensed bogs. In response, Bord na Móna has prepared plans for the Application Site bogs, proposing a phased approach to rehabilitation in accordance with IPC Licence requirements.

These plans form Phase 3 of the Remedial Phase (Future) of the Project and set out the measures necessary to achieve permanent rehabilitation of the bogs in compliance with Condition 10.2. A summary of the key objectives and actions is provided in Chapter 4 – Project Description, with the full plans included in Chapter 4 – Project Description – Appendix 4.3.

The Remedial Phase will be a crucial stage in the transition of the former peat extraction areas toward ecological recovery, with a primary focus on implementing the rehabilitation strategies outlined in the Cutaway Bog Decommissioning and Rehabilitation Plans. The ultimate objective of these plans is to achieve environmental stabilisation, ensuring that the cutaway bogs are placed on a long-term trajectory toward becoming naturally functioning peatland ecosystems.

This transformation will involve a combination of active rehabilitation measures and natural colonisation processes, working in tandem to promote the gradual re-establishment of diverse peatland habitats. While environmental stabilisation is expected to be achieved in the short to medium term, achieving fully functional wetland and peatland ecosystems will be a long-term process, typically taking between 30 to 50 years. This extended timeframe accounts for the slow accumulation of organic material, the development of hydrological equilibrium, and the natural succession of plant communities toward species typically associated with peat-forming habitats.

A key component of the rehabilitation strategy will be natural colonisation, which involves allowing native vegetation to gradually establish itself on the exposed peat surfaces. This process is expected to play a vital role in stabilising bare peat areas, reducing the risk of erosion and surface runoff, and improving overall biodiversity. However, in some areas where natural colonisation is insufficient or too slow, targeted interventions such as re-vegetation with appropriate peatland species may be necessary to accelerate the process.

One of the central rehabilitation strategies will be re-wetting, which involves restoring the natural hydrology of the bog by blocking drainage channels and constructing cell bunds to retain water. This will help raise and maintain water levels closer to the peat surface, a critical factor in facilitating peat formation and reducing carbon losses from the exposed peat layers.

Before the rehabilitation plans are finalised and submitted to the EPA for approval, baseline ecological surveys will be conducted to assess:

- The current extent of natural colonisation across the site.
- The potential for targeted re-vegetation in areas where natural regeneration is limited.
- Opportunities for rewetting and hydrological restoration to enhance habitat conditions.



- Site-specific measures needed to ensure long-term environmental stabilisation.

The main hydrological objective of the rehabilitation process will be to maintain water levels as close as possible to the peat surface, while avoiding the formation of extensive open water bodies, which may be unsuitable for peatland vegetation. Re-wetting and controlled water level management will help accelerate the development of vegetation cover, enhancing biodiversity, reducing erosion, and ultimately supporting the re-establishment of a self-sustaining peatland ecosystem.

By implementing these rehabilitation strategies in a phased and adaptive manner, the Remedial Phase will ensure that the cutaway bogs can transition toward a sustainable and ecologically valuable state, contributing to broader conservation efforts, carbon sequestration, and ecosystem service enhancement.

According to the Cutaway Bog Decommissioning and Rehabilitation Plans, it is unlikely that the majority of the site will develop into active raised bog similar to the priority EU Habitats Directive Annex I habitat in the foreseeable future (approximately 50 years). Furthermore, only a small portion of the bog is expected to support *Sphagnum*-rich habitats in this timeframe. However, re-wetting across the entire site will improve overall habitat conditions, fostering a broader mosaic of peatland habitats suited to the local environmental conditions.

7.10.5.1 Effects on Habitats

7.10.5.1.1 Description of Effect

The Rehabilitation Plans for the Application Site aim to enhance the ecological integrity of the peatland by implementing a combination of active rehabilitation measures and facilitating natural colonisation. These efforts will focus on the cutaway and bare peat habitats within the Application Site, promoting long-term environmental stability and biodiversity recovery. The rehabilitation strategy will integrate a suite of techniques, including targeted re-wetting, drain-blocking, and passive ecological succession, to encourage the natural regeneration of peatland habitats.

Given the degraded state of certain areas within the site, the approach will prioritise stabilising bare peat, restoration of natural hydrological conditions, and fostering of vegetational succession. By carefully managing water levels and facilitating plant colonisation, the rehabilitation process will not only mitigate further environmental degradation but also create conditions that support the gradual recovery of a functional and diverse peatland ecosystem.

Natural Colonisation and Vegetational Succession

A key component of the rehabilitation strategy is natural colonisation, which will play a central role in the environmental stabilisation of bare peat areas. This process involves the spontaneous establishment of native plant species, which contribute to erosion control, nutrient cycling, and habitat formation. Vegetational succession will further support ecosystem recovery, as pioneering species establish themselves and create conditions that allow more complex plant communities to develop over time.

The gradual accumulation of organic material from plant growth will improve soil stability, increase carbon sequestration, and enhance overall habitat resilience.

While natural colonisation is expected to be the primary driver of vegetation recovery, it will be complemented by active interventions, particularly in areas where environmental degradation is more pronounced.

Re-Wetting Strategy and Hydrological Management

A major focus of the rehabilitation effort is the re-wetting of the cutaway peatland, where feasible, to restore natural hydrological conditions. The overarching goal is to maintain water levels as close as possible to the peat surface while preventing the formation of large open-water bodies. This approach is essential for accelerating the re-vegetation process, fostering the establishment of a protective vegetation cover, and reducing carbon emissions associated with peat oxidation.

Re-wetting will be achieved through a widespread targeted drain-blocking programme, which will be implemented strategically across the cutaway. Where feasible, field drains will be blocked to encourage water retention and create optimal conditions for peatland regeneration. The intensity of these measures will vary depending on the existing state of the habitat.

- **Targeted drain-blocking**
 - More intensive drain-blocking interventions will be carried out in areas of bare peat where natural regeneration is slow, as these locations require greater hydrological intervention to support the establishment of vegetation.
- **Selective drain-blocking:**
 - In regions where habitats have already started to establish, less intensive interventions will be employed to maintain hydrological stability without disrupting ongoing natural succession.

Additional wetland management techniques will be utilised to refine water control, including blocking outfalls to prevent excessive drainage and installing overflow pipes to regulate water levels. These measures will help prevent unintended flooding while ensuring that the peatland retains sufficient moisture to support ecological recovery.

7.10.5.1.2 Assessment of Significance Prior to Control Measures

The implementation of the proposed rehabilitation plans is expected to result in a **Long-term, Significant, Positive Effect** on the habitats currently within the Application Site. By enhancing hydrological conditions, encouraging vegetation recovery, and increasing habitat diversity, these efforts will play a crucial role in strengthening the ecological resilience of the site. While a complete transformation into an active raised bog is unlikely in the foreseeable future, the rehabilitation measures will set the stage for long-term habitat improvement and biodiversity enhancement.

A central aspect of the rehabilitation process is the continuation of natural vegetation succession, which will drive the gradual recolonisation of bare peat areas. Over time, this will lead to the establishment of a more diverse and structured habitat mosaic, supporting a greater variety of plant and animal species. The return of vegetation will not only enhance habitat quality but also contribute to ecosystem functions such as carbon sequestration, soil stabilisation, and hydrological regulation.

Re-wetting, where implemented, will further improve the ecological condition of the site by restoring natural water levels and creating conditions conducive to the development of wetland and peat-forming vegetation. The process of stabilising water levels will help reduce peat oxidation, limit carbon loss, and support the gradual formation of self-sustaining ecosystems. However, the transition to a fully functional, stable habitat will require time, as ecosystem recovery is a slow and complex process influenced by multiple environmental factors.

7.10.5.1.3 Control Measures

The proposed rehabilitation works at the Application Site will be carried by the overarching aim of achieving environmental stabilisation. Through careful planning, the use of appropriate machinery, the restriction of activities to designated zones, and ongoing environmental monitoring, the Project will ensure that no loss or degradation of habitat occurs. These best practice measures will facilitate the successful rehabilitation of the peatland while maintaining the ecological integrity of the site, ultimately supporting long-term sustainability and biodiversity enhancement.

7.10.5.2 Effects on Water Quality and Aquatic Fauna and Habitats

7.10.5.2.1 Description of Effect

The implementation of the rehabilitation plans for the Application Site represents a critical step in the long-term ecological improvement at the site. Through a combination of drain blocking, peat field reprofiling, targeted rewetting, and natural colonisation, the plans aim to stabilise degraded peatland areas while promoting significant water quality improvements.

By continuing the use of silt ponds during the early stages of rehabilitation and implementing robust environmental monitoring, the Project will ensure that water quality is safeguarded throughout the rehabilitation process. Scientific research confirms that rewetted peatlands contribute to long-term reductions in nutrient pollutants, and the strategies adopted at the Application Site align with best practices for peatland conservation.

Although minor risks remain, particularly concerning machinery-related hydrocarbon spills and wastewater discharges, these risks are substantially lower than those present during previous peat extraction activities. Stringent risk mitigation measures will be in place to prevent contamination, ensuring that the site transitions smoothly toward a self-sustaining, ecologically stable state.

Ultimately, the rehabilitation efforts at the Application Site will contribute to peatland conservation, biodiversity enhancement, and improved hydrological function, reinforcing the vital role of peatlands in climate regulation, carbon sequestration, and water purification.

7.10.5.2.2 Assessment of Significance prior to Control Measures

In the absence of appropriate mitigation measures, there is a potential for the rehabilitation operations at the Application Site to lead to a Long-Term Moderate Negative Effect on water quality. This risk arises from the nature of the rehabilitation activities, which may disturb the site's natural conditions. For example, the use of machinery for drain blocking, peatland reprofiling, and re-wetting could temporarily alter the site's hydrology and expose bare peat surfaces, leading to increased runoff of sediments and nutrients into nearby water systems.

These disturbances may result in elevated suspended solids in runoff, which could degrade water quality by affecting water clarity and harming aquatic ecosystems. Additionally, as the peatlands are re-wetted, the disturbance could lead to the release of stored nutrients, such as nitrogen and phosphorus, which might contribute to eutrophication in downstream water bodies if not effectively managed. However, all operation during the Remedial Phase will be subject to required control measures.

It is important to recognise that the rehabilitation efforts are focused on improving natural peatland processes. Over time, and with proper management, the long-term effect of the rehabilitation plan is expected to reverse these initial impacts. Once the bogs are fully re-wetted, they will have improved hydrological conditions, resulting in greater water retention. This will reduce the amount of runoff and the potential for sediment mobilisation. The process of vegetation recolonisation, although gradual, will further stabilise the peat surface and contribute to reducing the output of both nutrients and silt. As the site transitions into a naturally functioning peatland, it will be more efficient at sequestering carbon, filtering nutrients, and stabilising the surrounding ecosystem. Thus, the long-term outcome of the proposed rehabilitation plans has the potential to yield a **Long-Term, Significant, Positive Effect** on water quality, as the peatlands will gradually become self-regulating, reducing nutrient and sediment leaching into the surrounding environment.

Given the reduced scale and small-scale nature of the operations required for the rehabilitation plans, the likelihood of significant negative effects on water quality is minimal. The activities at the site will be carefully managed to ensure that any short-term disturbances are contained and minimised. Since the operations are not large in scale and are focused on rehabilitation of peatland function, there is a low risk of significant degradation of water quality. While there may be temporary increases in suspended solids and nutrient levels during the initial phases of rehabilitation, these impacts are expected to be short-lived and not lead to significant long-term effects on water quality. Therefore, no significant negative effects on water quality are anticipated in the absence of mitigation, particularly as the rehabilitation progresses and the site moves towards a more stable and self-sustaining ecological state.

7.10.5.2.3 Control Measures

The proposed rehabilitation works at the Application Site will be carried by the overarching aim of achieving environmental stabilisation. Through careful planning, the use of appropriate machinery, the restriction of activities to designated zones, and ongoing environmental monitoring, the Project will ensure that no loss or degradation of habitat occurs. These best practice measures will facilitate the successful rehabilitation of the peatland while maintaining the ecological integrity of the site, ultimately supporting long-term sustainability and biodiversity enhancement.

7.10.5.3 Effects on Fauna

7.10.5.3.1 Description of Effects

Habitat Creation

Natural recolonisation of the bogs will form the basis for the proposed rehabilitation plans.

The habitats which have developed on the cutaway bogs to date following cessation of peat extraction include heath, scrub and woodland habitats and it is likely these habitats will also establish with time on drier areas of the cutover bog where natural vegetation colonisation is allowed to proceed. These habitats provide cover and nesting habitat for a range of bird species. They also provide areas of linear habitat with connectivity to the wider landscape and therefore provide suitable foraging and commuting habitat for and other small mammals. Woodland and scrub also provide areas of potential Badger habitat within the Application Site.

Disturbance

The proposed rehabilitation activities for the site will primarily take place during daytime hours, which aligns with the general behaviour patterns of various bird species and mammals including otters, badgers, and hares. These species are either more active during dawn and dusk or have specific activity periods that are less likely to overlap with the daytime work. As such, the Project activities are expected to minimise potential disturbance to these species. Furthermore, rehabilitation works will occur as a phased approach located at different areas of the Application Site and at different times, therefore any disturbance would be localised and small scale.

Previous studies, including those by Green and Green (1997), as well as findings from the National Otter Survey of Ireland (2010/2012) (NPWS, 2013), have shown that while some level of disturbance may occur, it generally does not result in long-term harm to wildlife. This is also supported by other research, including work by Bailey and Rochford (2006), which suggests there is no consistent, significant impact of human disturbance on the occurrence of species.

The rehabilitation work will involve a short-term presence of machinery and personnel, which will be much lower in volume compared to the past peat extraction activities.

7.10.5.3.2 Assessment of Significance prior to Control Measures

While there may be some temporary disturbance to local wildlife, the impact is expected to be minimal. The site itself is primarily characterised by artificial drainage channels and other non-optimal habitats for many of the species in question. Therefore, while disturbance may cause slight, temporary disruption, it is unlikely to have significant effects on the species present.

Overall, the rehabilitation plan is not expected to lead to any significant, negative effects on the species utilising the site, and the potential for impacts during the Remedial Phase will be limited. Thus, the long-term outcome of the proposed rehabilitation plans has the potential to have **Long-Term, Moderate, Positive** effect on fauna.

7.10.5.3.3 Control Measures

The proposed rehabilitation works at the Application Site will be carried by the overarching aim of achieving environmental stabilisation. Through careful planning, the use of appropriate machinery, the restriction of activities to designated zones, and ongoing environmental monitoring, the Project will likely not cause substantial impact on the fauna present at the Application Site. These best practice measures will facilitate the successful rehabilitation of the peatland while maintaining the ecological integrity of the site, ultimately supporting long-term sustainability and biodiversity enhancement.

7.10.5.4 Effects on European sites and National sites prior to Control Measures

As the rehabilitation plans are implemented as outlined for the Remedial Phase, they are expected to restore more natural hydrological conditions, improve water retention and facilitate habitat recovery across the Application Site. Rewetting measures, including drain blocking and hydrological management, are intended to reduce peat erosion and the mobilisation of sediments and nutrients to receiving waters while promoting the development of wetland and peatland habitats. Existing silt ponds will continue to be maintained during the rehabilitation phase and will continue to provide sediment control.

The rehabilitation measures are not expected to result in habitat loss within European sites or National sites. Rather, the proposed measures are intended to support the establishment and enhancement of peatland, wetland and associated habitats within the Application Site through rewetting and natural colonisation processes. Over time, these degraded landscapes will transform into ecologically valuable habitats, supporting a wider range of plant and animal species, potentially including bird species. The rehabilitation works are therefore expected to enhance ecological resilience and support the transition of areas of bare peat towards more stable and naturally functioning habitats.

While minor and localised risks may arise during rehabilitation works, including temporary sediment mobilisation or accidental spillages associated with machinery use, any such effects would be short-term, localised and confined to the immediate vicinity of the works.

Consequently, the rehabilitation plans are expected to improve site hydrology, support habitat recovery and enhance ecological resilience within the Application Site, while reducing the potential for erosion and sediment export. Potential effects on European sites and National sites are therefore expected to be neutral to positive in nature.

7.10.5.4.1 Effects on European sites

Rehabilitated habitats may provide suitable foraging and resting opportunities for certain SCIs and mobile QI species associated with the River Boyne and River Blackwater SPA and SAC, Lough Ennell SPA, and the River Barrow and River Nore SAC. The improvement in hydrological conditions and water quality is expected to have beneficial effects on connected European sites. The residual effects of implementing the rehabilitation plans on European sites are therefore assessed as **Long-term, Moderate, Positive**, owing to the reduction in magnitude and frequency of polluting impacts and altered hydrology.

7.10.5.4.2 Effects on National sites

Similarly, the rehabilitation measures are expected to result in improved habitat conditions and enhanced ecological functionality within and downstream of National sites. Overall, the residual effects of implementing the rehabilitation plans on national sites are assessed as **Long-term, Moderate, Positive**, owing to the reduction in magnitude and frequency of polluting impacts and altered hydrology.

7.10.5.4.3 Control Measures

The existing drainage systems and silt control measures currently in place at the Application Site will remain operational during the initial stages of the rehabilitation plans.

While the existing silt ponds will remain operational throughout the rehabilitation works and will continue to provide an important sediment control function, there remains a residual risk of suspended solids being mobilised during the early phases of works, particularly during drain blocking and other earth-moving activities where peat and exposed soils are temporarily disturbed. Silt ponds are designed to intercept and settle suspended sediments before water is discharged from the site; however, they do not entirely eliminate the potential for sediment mobilisation at source. Accordingly, the assessment adopts a precautionary approach and recognises the potential for short-term increases in suspended solids during construction. This risk will be managed through the continued operation and maintenance of the existing silt ponds in combination with additional best-practice surface water protection measures, including careful programming of works, monitoring of water quality, and the implementation of site-specific sediment and erosion control measures where required.

To mitigate these potential effects, silt ponds will continue to operate throughout this period, effectively trapping and filtering any suspended solids before they can be released into the surrounding environment. These ponds will function as sediment retention basins, ensuring that runoff water is effectively treated before it leaves the site, reducing the risk of sedimentation and pollution in downstream aquatic systems. As stipulated in the IPC Licence, the silt ponds will be regularly inspected and maintained to ensure that they are operating at full efficiency. This includes routine cleaning, monitoring of storage capacity, and maintenance of inlet and outlet systems to prevent overflow or blockage. Furthermore, to prevent any risk of contamination, no remedial works will be carried out during periods of prolonged rainfall or when there are unfavourable weather conditions that could exacerbate the mobilisation of sediments or affect the effectiveness of the silt control measures.

7.11 CONTROL MEASURES

This section summarises the standard operation control measures and management strategies undertaken by Bord na Móna to reduce the risk of environmental impact during operations (Section 7.11.1). These actions and strategies are currently in place for the Current Phase and will continue as standard practice throughout the Remedial Phase.

This section also introduces the IPC Licence that was issued in 2000. The IPC Licence covers all emissions from the Project and its environmental management (see Section 7.11.2). The IPC Licence has been in effect during the Current Phase since 2000.

It should be noted that the control measures described here are not taken into account in the initial assessment of effects of the Project on biodiversity in Section 7.10 - Assessment of Significant Effects on Biodiversity; they are only considered when evaluating the Residual Impact on biodiversity (see Section 7.12 - Residual Effects).

7.11.1 Pre-IPC Licence

Prior to the imposition of EPA IPC licence in 2000, Bord na Móna set in place standard operating procedures and best practice during operations that managed the environmental risks associated with peat extraction, specifically in relation to suspended solids and potential contamination.

The company implemented a series of operational actions and strategies to minimise the environmental impact of their activities, ensuring that water quality in the surrounding areas remained protected.

One of the key measures involved the regular maintenance and cleaning of internal drainage systems across the Application Site. Bord na Móna employed draglines and excavators to clear the drains, ensuring they remained efficient in channelling water and preventing sediment buildup. This regular upkeep played a crucial role in maintaining the integrity of the drainage network and preventing blockages that could lead to water quality issues.

Additionally, silt ponds were strategically placed across the site to capture sediment from water discharge. Upgrades to the silt ponds were undertaken at the Application Site following a 1990 survey, with the aim of improving their capacity and sediment retention performance. To maintain their effectiveness and prevent excessive sediment accumulation, the ponds were routinely de-sludged, typically on at least a biannual basis, ensuring continued efficient operation of the sediment control system.

In terms of machinery management, Bord na Móna established robust maintenance procedures to minimise the risk of equipment-related contamination (see Chapter 4 Section 4.4.7). Machinery was stored, cleaned, and inspected regularly to ensure it operated in optimal condition. This not only helped prevent any malfunctions that could lead to contamination but also reduced the risk of pollutants being introduced into the environment.

Refuelling operations were primarily carried out suitable locations equipped with procedures to mitigate the risk of accidental spills. In the event of a spill, Bord na Móna had emergency response procedures in place, which included isolating the spill to prevent it from entering drains or watercourses. Absorbent materials were also used to soak up any spilled hydrocarbons, further reducing the potential for environmental damage.

Furthermore, Bord na Móna implemented rigorous waste management practices to ensure that all waste materials, including hydrocarbons and other potentially hazardous substances, were safely stored and disposed of. The company worked with licenced contractors to ensure that waste was handled and disposed of in accordance with environmental regulations, further minimising the risk of contamination.

Taken together, these measures helped to reduce the risk of environmental contamination from peat extraction activities. While there were still inherent risks associated with such operations, the Applicant's diligent efforts to manage water quality and mitigate potential contaminants played an essential role in protecting the surrounding ecosystem.

7.11.2 IPC Licence – Derrygreenagh Bog Group - P0501-01

The EPA issued an Integrated Pollution Control (IPC) Licence (P0501-01) in 2000, amended in 2012, to regulate peat extraction activities within the Derrygreenagh Bog Group. The IPC licence is included in Chapter 4 - Project Description – Appendix 4.3. The IPC licence primarily focuses on controlling and monitoring emissions to water. Given the nature of the activity, peat extraction has significant potential to increase suspended solids (SS) in surface water due to soil disturbance, drainage, and sediment runoff. The extraction process exposes bare peat surfaces, which are highly susceptible to erosion and washout, especially during heavy rainfall. This can lead to:

- **Increased turbidity**, reducing water quality and affecting aquatic life.
- **Deposition of fine sediments**, which can smother fish spawning areas and invertebrate habitats.
- **Potential transport of nutrients/contaminants**, contributing to downstream pollution

Given these environmental concerns, the IPC licence sets an emission limit value of 35 mg/l for suspended solids at all surface water outfalls to regulate and mitigate potential adverse effects.

The IPC licence requires the submission of an Annual Environmental Report (AER) detailing emissions to water, waste management, resource consumption, air emissions, surface water monitoring, de-silting programmes, and bog rehabilitation progress. The licence also requires regular visual inspections and maintenance of silt ponds, upgrades to sedimentation pond treatment systems, and installation of oil interceptors for surface water discharges from workshop areas.

A review of AERs and associated monitoring data identified ten exceedances of the suspended solids (SS) emission limit value (ELV) of 35 mg/l for emissions to water during the monitoring period. However, these exceedances were recorded under IPC Licence P0501-01, which applies to the wider Derrygreenagh Group and not solely to the Application Site. Inconsistencies in sampling locations were also noted, with some sites situated at discharge points or settling ponds rather than natural streams. Data from surface water sampling stations relevant to the Application Site were analysed, covering an irregular monitoring period, to ensure an accurate assessment of water quality impacts associated with peat extraction activities. At monitoring locations relevant to the Application Site a generally high level of compliance with licence requirements and does not identify a consistent pattern of significant deterioration in surface water quality attributable to activities at the Application Site. The recorded exceedances were infrequent and, when considered in the context of the overall monitoring record, do not suggest significant adverse effects on receiving watercourses. Overall, the monitoring data indicate that water quality was generally managed in accordance with the requirements of the licence and that the environmental control measures implemented at the site were effective in minimising environmental risks. .

7.12 RESIDUAL EFFECTS

Residual effects represent the remaining impacts on an assessment feature after mitigation measures have been applied and accounted for. These effects are assessed against the initial impact assessment, with significance redefined based on the reduced magnitude of effects following mitigation.

7.12.1 Peat Extraction Phase (July 1988 – June 2020)

7.12.1.1 Habitats

The former peat extraction activities and all ancillary works from July 1988 to June 2020 are considered to have had a Long-term, Moderate, Effect on the bog habitats at the Application Site, which were already highly modified from their natural state.

The effect was considered Moderate as the habitats were already degraded and fragmented through drainage and peat extraction in the surrounding area, and the acrotelm⁴¹ removed from much of the Application Site. Based on the above, Residual Effects are unchanged at **Long-term, Moderate, Negative**.

7.12.1.2 Water Quality and Aquatic Fauna

By 1988, peat extraction and ancillary activities were well-established at the site. While EPA Q-values varied throughout the Peat Extraction Phase, no consistent decline in surface water quality was observed between 1988 and 2020. Despite no clear decline, based on the risk of effect in the absence of control measures the potential effects were deemed as Long-term Significant Negative Effect. Standard operating procedures and best-practice measures were implemented during peat-extraction activities to manage environmental risks, particularly those relating to suspended solids and potential contamination. With these control measures in place, the predicted residual effect is assessed as **Long-Term, Moderate, Negative**.

7.12.1.3 Effects on Fauna

The effects on fauna varied according to the ecological requirements of individual species and the nature of the activities.

Potential adverse effects on species associated with aquatic habitats, including Otter, were primarily indirect and related to the risk of deterioration in water quality. Standard operational measures, including the continued management of surface water and operation of the site's drainage and sediment control infrastructure, reduced the likelihood of such effects occurring. Taking account of the operational controls implemented and the available monitoring evidence, the residual effect on designated sites is considered Not Significant.

For bird species, the principal effects arose from habitat loss and habitat modification associated with peat extraction activities. As peat extraction declined and areas were taken out of production and natural revegetation facilitated the development of secondary habitats in some locations, including wetland habitats. These habitats have provided localised ecological benefits and additional habitat resources for bird species including wetland-associated species. These habitats will have provided localised ecological benefits for certain species. Taking account of the operational controls implemented, the residual effect on designated sites is considered Not Significant.

The development of suitable habitat conditions in certain areas may have provided localised benefits for species such as Marsh Fritillary. The establishment of secondary habitats, including wet grassland and wetland habitats, is likely to have resulted in localised positive residual effects for certain faunal species through the provision of additional foraging, sheltering and breeding opportunities. Accordingly, a localised, long-term, slight positive residual effect is considered likely for species capable of utilising these developing habitats.

7.12.1.4 Effects on European and National Sites

In the absence of control measures the potential effects were deemed as Long-term, Moderate, Negative.

⁴¹ Acrotelm is active layer of bog where water, nutrients, and gases like oxygen are exchanged freely, and biological processes such as plant growth and decomposition occur,

The long-term nature of the effect of hydrological changes means that with mitigation, there is a reduced risk of sediment runoff, nutrient release, or other ecological disturbances that could affect water quality and habitat integrity. Given these considerations, the Residual Effect is considered **Long-term, Moderate, Neutral**.

7.12.2 Current Phase (June 2020 – Present Day)

7.12.2.1 Habitats (Habitat Loss, Fragmentation, Degradation)

There has been no additional loss, degradation or fragmentation of habitat because of the Current Phase of the Project. With the cessation of peat extraction, the reduced levels of activity have allowed regeneration from the natural regrowth of vegetation on disturbed cutover bog areas now offering more diverse and structurally complex habitats, and so the Residual Effect is **Long-term, Moderate, Positive**.

When the operational controls and measures are considered, the Residual Effect remains unchanged at **Long-term, Moderate, Positive**.

7.12.2.2 Water Quality and Aquatic Fauna

EPA Q-values, which measure surface water quality, fluctuated throughout the Peat Extraction Phase, with available monitoring data showing no discernible trend (positive or negative) in Q-values in downstream surface watercourses since the cessation of peat extraction July in 2020. Results suggest that increased regulation under the IPC Licence did not lead to significant downstream water quality improvements. This is primarily attributable to the presence of other activities within the catchment that also influence water quality, together with the observation that baseline water quality, both before and during peat-extraction operations, remained relatively stable and showed no substantial deterioration.

With the implementation of standard operating procedures and IPC Licence control measures, the effect downstream surface water quality is reduced to **Long-term, Slight, Negative**.

7.12.2.3 Effects on Fauna

During the Current Phase of the Project, the impact on local fauna has remained relatively limited, with the primary concern being the potential degradation of habitats that support various species. These include Otters, Badger, Irish Hare, and other species that rely on stable water quality and suitable habitat conditions. The most affected areas would be those within and downstream of the Application Site, where project-related activities could have influenced.

In addition to potential aquatic habitat disturbances, the presence and operation of plant and machinery on-site may have caused disruptions to terrestrial and avian species. Otters, which rely on undisturbed riparian environments, could have been subject to minor disturbances, while a range of bird species may have experienced short-term behavioural changes due to increased human activity, noise, and movement of equipment. However, these effects are expected to have been minimal and transient in nature.

Given the scale and specific nature of activities undertaken during this phase, no significant or long-term adverse effects on fauna are anticipated. The implementation of appropriate mitigation measures, such as controlled site operations, habitat preservation efforts, and noise reduction strategies, has further minimised the risk of ecological disruption.

Additionally, the reduction in plant, machinery, and workforce activity compared to the more intensive Peat Extraction Phase has contributed to an overall decrease in potential disturbances to wildlife and their habitats.

Any minor disturbances that may have occurred are considered short-lived and of negligible impact, ensuring that the integrity and stability of the local ecosystems remain largely unaffected. Continued monitoring and adherence to best environmental practices will further support the conservation of biodiversity in and around the Application Site.

In the absence of control measures the effect is assessed as **Long-term, Slight, Negative**. As the standard operation measures are primarily focused on managing risk to water quality, the Residual Effects remain unchanged.

7.12.2.4 Effects on European and National Sites

In the absence of control measures the effect is assessed as Long-term, Slight, Negative. As the standard operation measures are focused on managing risk to water quality that will benefit the European and National Sites, the Residual Effects is reduced to **Long-term, Not Significant, Negative**.

7.12.3 Remedial Phase (Future)

7.12.3.1 Habitats

The implementation of the Cutaway Bog Decommissioning and Rehabilitation Plans is a crucial step in restoring the ecological integrity of the peatland areas within the Application Site. These plans are designed to stabilise previously disturbed peatland, reducing erosion, preventing further habitat loss, and promoting the gradual recovery of ecosystem functions. By re-wetting and re-vegetating cutaway bogs, the rehabilitation efforts will help enhance hydrological stability, reduce carbon loss, and support the regeneration of semi-natural habitats.

One of the most significant benefits of these measures is their ability to improve water quality over the long term. By reinstating natural drainage patterns and minimising runoff carrying suspended sediments and nutrients into nearby watercourses, the plans will mitigate historic water quality impacts linked to peat extraction activities. This, in turn, will benefit downstream aquatic habitats, including designated conservation sites that are hydrologically connected to the Application Site.

Overall, the implementation of these rehabilitation efforts is expected to result in a **Long-term, Significant, Positive** effect on the habitats within the Application Site. These improvements will support biodiversity recovery, facilitate the return of key species, and contribute to the broader environmental sustainability of the area.

7.12.3.2 Water Quality and Aquatic Fauna

The implementation of the Cutaway Bog Decommissioning and Rehabilitation Plans is a critical step in restoring the ecological integrity of the peatland areas within the Application Site. Over time, they will become wetter, enhancing their capacity to retain water and reduce runoff. As the landscape evolves, natural vegetation will gradually recolonise the area. This rehabilitation process will lead to a substantial decline in silt and nutrient output, contributing to improved water quality in downstream surface watercourses.

Given these expected changes, the long-term impact of the rehabilitation measures during the Remedial Phase is considered to be a Moderate, Positive, Indirect Effect on downstream surface water hydrology, overall water quality, and aquatic fauna. As water retention improves and sediment transport decreases, habitat conditions for aquatic life will stabilise, fostering biodiversity and enhancing the ecological integrity of the surrounding water systems. As such the Residual Effects of the implementation of the rehabilitation plans for the Remedial Phase is considered to be a **Long-term, Moderate, Positive, Indirect Effect** on downstream surface water hydrology and water quality and aquatic fauna.

7.12.3.3 Effects on Fauna

The potential impacts of the Remedial Phase of the Project on local fauna are primarily linked to positive changes in habitat conditions for species.

Many species, including ground-nesting birds, and mammals relying on the existing landscape for foraging, breeding, and shelter, will benefit from the action proposed under the Rehabilitation Plans. Improvement in vegetation cover, water levels, and or land stability during the rehabilitation process will be beneficial to these species by modifying their habitat availability and structure.

As rehabilitation efforts progress, the wetter conditions and increased vegetation cover will create more diverse habitat structures, supporting the return of species adapted to peatland and wetland environments. Bird species, particularly waders and waterfowl, may benefit from the establishment of open-water areas, while scrub and woodland regrowth will provide nesting and foraging opportunities for passerines and raptors. Additionally, the stabilisation of soil and reduction in human activity following the Remedial Phase will further enhance the suitability of the site for wildlife.

Given these anticipated benefits, changes in terrestrial species or bird populations diversity and/or population levels are expected. Instead, the long-term ecological rehabilitation of the site is likely to provide **Long-term, Moderate, Positive, Indirect Effect**, supporting biodiversity recovery and improving habitat quality for a variety of species.

7.12.3.4 Effects on European and National Sites

The rehabilitation plans will positively impact the peatland ecosystem by enhancing habitat diversity and functionality through interventions like drain-blocking and natural recolonisation. the plans aim to create stable, self-sustaining ecosystems that support a wider range of species. Benefits may include the gradual recolonisation of the Application Site by SCIs of nearby SPAs and the more mobile QIs of the nearby SACs.

Additionally, the plans will improve downstream surface water hydrology, water quality, and aquatic habitats, benefiting downstream hydrologically linked European sites and National sites alike. The overall Residual Effect is a **Long-Term, Moderate, Positive, Indirect Effect**.

7.13 CUMULATIVE AND IN-COMBINATION EFFECTS

An evaluation of the potential cumulative and in-combination effects of peat extraction activities and all associated works at the Application Site was conducted, considering historical, existing and proposed plans and projects in the surrounding area. This assessment specifically examined the combined effects on Key Ecological Receptors.

7.13.1 Assessment of Plans

The review of relevant plans focused on evaluating policies and objectives that have the potential for cumulatively impacting biodiversity with the peat extraction and associated activities at the Application Site. The sources of information on such policies and objectives national, and county-level plans and strategies are included in Section 7.3 above.

This assessment aimed to determine how existing regulatory frameworks support ecological preservation and mitigate potential environmental impacts. In addition to biodiversity-focused policies, the review examined objectives related to peatland conservation and sustainable land use practices, particularly those that influence the maintenance and enhancement of surface water quality.

To provide a structured summary of the findings, an overview of relevant plans and their key environmental considerations is presented in Table 7-24. This table outlines how various planning documents incorporate conservation principles, highlighting their relevance to biodiversity protection, peatland management, and water quality preservation. The insights gained from this review contribute to a broader understanding of the policy landscape influencing land-use decisions and environmental management in areas of ecological sensitivity.

A detailed review of the Development Plans was conducted, including examining policies related to biodiversity conservation and the protection of SACs, SPAs, NHAs, and pNHAs. This assessment aimed to determine how these policies apply to historical and ongoing land-use activities within the Application Site and their alignment with broader environmental objectives. The peat extraction activities, which took place between 1988 and 2020 at varying levels of intensity across different sections of the bog, were carefully evaluated in this context. Based on this analysis, these activities are not considered to conflict with the relevant policies and objectives outlined in the Development Plans.

The implementation of the Cutaway Bog Decommissioning and Rehabilitation Plans for the Application Site is expected to yield significant ecological benefits, contributing positively to biodiversity and environmental conditions at the site. Additionally, the rehabilitation of the bog will enhance ecosystem functions, including carbon sequestration and water retention, further supporting regional conservation efforts. The effects of the Cutaway Bog Decommissioning and Rehabilitation Plans are discussed above.

Beyond benefits, the rehabilitation plans also have the potential to generate positive effects on nearby sites that are hydrologically connected to the Application Site. The restoration of natural hydrological conditions is expected to improve water quality, reduce sedimentation, and enhance habitat conditions for aquatic and wetland species. By minimising habitat fragmentation and mitigating historical environmental disturbances, the rehabilitation process will contribute to broader conservation objectives. These anticipated outcomes align closely with the policies and objectives outlined within the Development Plans, reinforcing commitments to sustainable land management, biodiversity protection, and ecological resilience.

Table 7-24: Assessment of Plans

Plan	Objectives	Assessment
Offaly County Development Plan 2021-2027	The following provide summary of key relevant Biodiversity and Landscape Objectives (BLOs) and Biodiversity and Landscape Policies (BLPs) listed in Chapter 4 Biodiversity and Landscape. General Natural Heritage Protection - BLO-01 – Ensure all development occurs within environmental limits, respecting environmental legislation and sustainable management of natural capital. - BLO-02 – Protect habitats and species listed under the Habitats Directive, Birds Directive, and Wildlife Acts. Protection of Designated Sites - BLO-03 – Safeguard SACs, SPAs, NHAs, and proposed NHAs. Ensure developments comply with Appropriate Assessment (AA) and EU conservation laws. Establish buffer zones and undertake habitat surveys. Conservation of Wetlands, Turloughs, and Watercourses - While OCDP does not label these as standalone numbered policies, equivalent protections occur in Chapter 4: Protect wetlands from degradation and require mitigation measures for developments near sensitive water habitats. Prevent unauthorised drainage of wetlands. Peatland Conservation - BLP-07 – Consider designation of the North Offaly Esker Landscape as a UNESCO Geopark (strongly peatland-linked landscapes). - BLP-15 – Promote a National Park designation for Midlands peatlands and develop a Regional Peatway. - Just Transition alignment – Work with Transition stakeholders to manage, rehabilitate, restore and re-wet peatlands. - Above serve to conserve designated peatlands and support National Peatlands Strategy. Collaborate with stakeholders for sustainable peatland management and require planning permission for wetland modifications. Invasive Species Management	The peat extraction activities, along with ancillary works, were carried out at varying levels of intensity at the Application Site during the Peat Extraction Phase (July 1988 to June 2020). The overall environmental impacts on biodiversity were considered to be limited in extent to the Application and not significant enough to breach the Objectives outlined in the County Development Plans, which aim to protect biodiversity, conserve habitats, and safeguard designated areas. During the Current Phase (June 2020 – Present), the activities at the Application Site have been compliant with the environmental safeguards specified in these Policies and Objectives, ensuring that no adverse effects have occurred on biodiversity, or European or National Sites. The implementation of the Cutaway Bog Decommissioning and Rehabilitation Plans will lead to substantial ecological improvements across the Application Site. These efforts will rehabilitate habitats, enhance water retention and quality, and support the recovery of local biodiversity. The long-term positive effects on both terrestrial and aquatic environments, including improved conditions for fauna and surrounding sensitive areas, highlight the significant environmental benefits of this phase. The overall impact is expected to be positive, supporting the sustainability and ecological integrity of the Application Site and European or National Sites into the future. The Cutaway Bog Decommissioning and Rehabilitation Plans align with and actively support the Policies and



Plan	Objectives	Assessment
	- BLP-34 It is Council policy to continue to deliver and support measures for the prevention, control and/or eradication of invasive species within the county, and to seek details of how these species will be managed and controlled where their presence is identified. Biodiversity and Nature Conservation - BLP-24 – Protect and manage woodlands, trees, hedgerow networks of biodiversity value and landscape character. - BLO-16 – Encourage preservation and enhancement of native and semi-natural woodlands, tree groups and individual trees. - Chapter 4 ecosystem services + action plans: Support for the National Biodiversity Action Plan and integration with the All-Ireland Pollinator Plan	Objectives outlined in the County Development Plans. These plans are designed to restore and enhance local biodiversity, improve water quality, and rehabilitate degraded habitats, all of which are key priorities in the County's environmental policies. By focusing on habitat rehabilitation, water retention, and the long-term ecological sustainability of the Application Site, the rehabilitation efforts are fully consistent with the County's objectives for biodiversity conservation, habitat protection, and the safeguarding of designated sites. The implementation of these plans will contribute positively to the goals set forth in the County Development Plans, ensuring the continued preservation and enhancement of the natural environment.
Meath County Development Plan 2021–2027	The following provide summary of key relevant aspects from the Meath County Development plan regarding Chapter 8 – Cultural and Natural Heritage Strategy. This is the chapter where Meath places: - Natural heritage policies - Biodiversity protection commitments - Landscape protection context - Statutory obligations under Habitats/Birds/Wildlife Acts General Natural Heritage Protection - Meath aims <i>“to identify, protect, conserve and manage the cultural and natural heritage of the County and encourage its sensitive integration into sustainable development.”</i> - Natural heritage includes <i>“scenic river valleys, rolling farmland, mature hedgerows and diverse coastal habitats.”</i>[consult.meath.ie] - International and national obligations (e.g., Convention on Biological Diversity, Wildlife Acts, EU environmental legislation) guide natural-heritage protection. Protection of Designated Sites (SACs, SPAs, NHAs, pNHAs) - The CDP explicitly references obligations under EU Habitats Directive, Birds Directive, and Natura 2000 (SACs & SPAs).	



Plan	Objectives	Assessment
	- Chapter 8 states: <i>"Ireland gives effect to these obligations through the Wildlife Acts and Planning & Development Act... including protection of natural heritage."</i> Conservation of Wetlands, Turloughs & Watercourses - Meath's natural heritage includes <i>"scenic river valleys... diverse coastal habitats"</i> which require conservation as part of the heritage strategy. - The CDP is legally bound by the EU Water Framework Directive, Appropriate Assessment, and environmental protection provisions. Peatland Conservation - Meath's landscape includes <i>"tracts of peatland and raised bog in the southwest."</i> These are identified as natural-heritage assets requiring conservation under the chapter's fundamental protection aim. Invasive Species Management - Under international obligations, Meath is bound by the Convention on Biological Diversity, which requires actions to <i>"halt the loss of biodiversity and reduce threats to ecosystems."</i> This includes invasive-species controls as part of national biodiversity strategies. Biodiversity & Nature Conservation / Ecological Networks - The CDP's vision is to protect, conserve and manage natural heritage, with a commitment to integrating biodiversity into sustainable development. - Natural features such as <i>hedgerows, river valleys, coastal habitats</i> are highlighted as key ecological corridors. - Statutory context includes the Habitats Directive, Birds Directive, and EIA Directive, requiring ecological assessments. https://consult.meath.ie/en/consultation/consolidated-meath-county-development-plan-2021-2027-incl-variations-1-2-3/chapter/a02-strategic-policy-guidance-and-legislation Landscape Protection	



Plan	Objectives	Assessment
	- Meath recognizes its “diverse range of landscapes, including uplands, peatlands, coast, hedgerow networks, river valleys” as essential heritage assets. - Protection of landscape character is central to the natural-heritage strategy.	
Westmeath County Development Plan 2021–2027	The following provide summary of key relevant County Plan Objectives (CPOs) from the Westmeath County Development plan regarding Chapter 12 – Natural Heritage and Green Infrastructure. General Natural Heritage Protection - CPO 12.13 – Protect, manage and enhance the natural heritage, biodiversity, landscape and environment of County Westmeath as a non-renewable natural asset. - Recognises peatlands, lakes, wetlands, woodlands, grasslands, eskers, hedgerows and canal networks as strategically important habitats. Protection of Designated Sites (SAC, SPA, NHA, pNHA) - CPO 12.1 – Contribute to protection of all designated sites in compliance with EU Directives and national legislation. - CPO 12.4 – Protect SACs, cSACs, SPAs and cSPAs designated under the Habitats and Birds Directives. - CPO 12.9 – Require appropriate buffer zones between designated sites and development. - Chapter 12 Framework: Identifies all relevant designations (SAC, SPA, NHA, Ramsar, Nature Reserves, Wildlife Sites, Tree Protection Orders). Conservation of Wetlands, Turloughs & Watercourses - Westmeath’s natural heritage section highlights the importance of wetlands, rivers, lakes, springs and water-dependent ecosystems as critical components of the county’s ecological network. - The chapter embeds mandatory compliance with the Water Framework Directive (WFD) to ensure protection and non-deterioration of all aquatic ecosystems.	

Plan	Objectives	Assessment
	- Wetlands also protected through objectives to maintain ecological connectivity and ecosystem services. <i>(Westmeath does not number wetland-specific CPOs, but these protections run through Chapter 12 and its policy framework)</i> Peatland Conservation - Peatlands are identified as a major habitat type within the county requiring protection and integration into the green-infrastructure network. CPO 12.23 – Create and enhance ecological linkages and buffer zones, which include peatland landscapes⁴². CPO 12.24 – Protect and where possible enhance wetlands, bogs, geological and geomorphological systems, and features functioning as ecological corridors or stepping stones. Invasive Species Management - Westmeath's Chapter 12 commits the county to compliance with national legislation (e.g., Wildlife Acts, Birds & Natural Habitats Regulations) that requires the control and prevention of invasive alien species. Biodiversity & Nature Conservation, Ecological Connectivity - CPO 12.2 – Support the National Biodiversity Plan, All-Ireland Pollinator Plan, and National Peatlands Strategy - CPO 12.3 – Support the Westmeath Biodiversity Action Plan. - CPO 12.14 – Require new developments to identify, protect and enhance ecological features, contribute to biodiversity (e.g., swift boxes, bat roosts, green roofs) and link into the county's green-infrastructure network. - CPO 12.23 – Create and enhance ecological linkages.	

⁴² Available at <https://www.westmeathcoco.ie/en/>



Plan	Objectives	Assessment
	- CPO 12.24 – Protect connectivity features such as woodlands, hedgerows, watercourses, wetlands, springs, semi-natural grasslands and other ecological corridors. - CPO 12.25 – Acknowledge the need to protect non-designated habitats and landscapes and conserve biological diversity across the wider countryside. Landscape Protection - CPO 12.13 – Protect and enhance landscape character as part of natural heritage protection. - Chapter 12 emphasises sensitive management of landscapes including eskers, peatlands, hedgerow networks, and lake basins as fundamental green infrastructure.	
Ireland's 4th National Biodiversity Action Plan (NBAP) for 2023-2030	Five strategic objectives to guide biodiversity conservation efforts: Adopt a Whole of Government, Whole of Society Approach to Biodiversity: This objective emphasises the need for collective action across all sectors of government and society to effectively address biodiversity challenges. Meet Urgent Conservation and Restoration Needs: Focusing on immediate actions required to conserve and restore Ireland's biodiversity, this objective aims to halt further loss and promote recovery of vital ecosystems. Secure Nature's Contribution to People: Recognising the essential services that nature provides, this objective seeks to ensure the sustainable use of natural resources, benefiting both people and the environment. Enhance the Evidence Base for Action on Biodiversity: This objective highlights the importance of strengthening scientific research and data collection to inform effective biodiversity policies and actions. Strengthen Ireland's Contribution to International Biodiversity Initiatives: Aiming to bolster Ireland's role in global biodiversity efforts, this objective focuses on active participation and contribution to international conservation initiatives.	Ireland's 4th National Biodiversity Action Plan (NBAP) for 2023-2030 sets out objectives to address conservation and restoration needs. During the Current Phase (June 2020 – Present), activities at the Application Site have followed the policies and objectives outlined in the NBAP, ensuring that no adverse effects have occurred on biodiversity or European and National Sites. Looking forward, the implementation of the Cutaway Bog Decommissioning and Rehabilitation Plans will contribute substantially to achieving several of the NBAP's strategic objectives. These plans will rehabilitate habitats, enhance water retention and quality, and support the recovery of local biodiversity. The long-term positive effects on both terrestrial and aquatic environments, including improved conditions for fauna and surrounding sensitive areas, highlight the significant environmental benefits of this phase. The overall impact is expected to be positive, supporting the sustainability



Plan	Objectives	Assessment
	These objectives collectively aim to deliver transformative changes in how Ireland values and protects its natural heritage. The NBAP also introduces a public sector duty on biodiversity, as mandated by the Wildlife (Amendment) Act 2023. This legislation requires all public service bodies, including government departments, agencies, and local authorities, to integrate biodiversity considerations into their plans, policies, and programs, and to report on their progress.	and ecological integrity of the Application Site, while aligning with national goals for biodiversity conservation.

7.13.2 Cumulative Assessment of Projects

A list of the projects and plans incorporated into this cumulative impact assessment is provided in this remedial EIAR in Chapter 2 – Methodology.

In assessing the projects in Tables 2.3 to 2.5 the potential cumulative effects of their interactions, as well as any in-combination impacts arising from their spatial and temporal overlap with the activities at the Application Site, have been considered to understand their potential combined impact.

7.13.2.1 Peat Extraction Phase

The potential cumulative and combined effects of the Peat Extraction Phase of the Project along with other relevant activities and projects at the Application Site are considered below. This includes peat extraction activities and all associated ancillary works that occurred before 1988. Additional details on activities and developments included in the cumulative assessment can be found in Chapter 4. The projects considered during the Peat Extraction Phase between 1988 until June 2020 are detailed in Chapter 2.

During the Peat Extraction Phase (July 1988 – June 2020), extraction activities and ancillary works were carried out at varying levels of intensity across the Application Site. These activities caused environmental impacts, particularly on habitats and water quality, but these effects remained largely confined to the site. The overall impact on biodiversity was considered limited in extent, with no significant adverse effects extending beyond the immediate area.

Given the spatial extent of environmental impacts from activities at the Application Site, the cumulative in-combination effects of the Project with other projects have been assessed. Based on this assessment, no significant cumulative effects with other projects are anticipated to have occurred.

7.13.2.2 Current Phase

The projects considered in relation to the potential for cumulative effects during the Current Phase, from August 2020 until present day, are detailed in Table 2-4.

There are several applications for renewable energy projects including solar farms, battery energy storage systems, substations, grid uprate works applied for during the Current Phase.

The Derrygreenagh Power Plant, which is located within the wider bog complex, has been considered as part of the cumulative assessment. However, activities undertaken during the Current Phase have primarily comprised rehabilitation, after-use management and environmental monitoring activities of limited scale and intensity. Given the nature of these activities and the established operation of the Derrygreenagh Power Plant, no significant adverse cumulative or in-combination effects are anticipated.

7.13.2.3 Remedial Phase

Future use of lands at the Application Site

BnM intends to develop a wind and solar energy project across Derryarkin, Drumman, Derryhinch and Ballybeg Bog, currently known as Derrygreenagh Wind and Solar project.

The proposed development is currently at the design phase and is likely to consist of wind turbines, solar photovoltaics and a battery energy storage system. The design of the development will align and integrate with the peatland rehabilitation measures as required under the IPC Licence P0501-01.

A third party intends to develop infrastructure at lands within the Application Site, consistent with the Government's Large Energy User Action Plan (LEAP), and which will be subject to separate planning and regulatory consent as appropriate.

Any future development within the Application Site, will be the subject of separate planning applications. Where required, such applications will be accompanied by an Environmental Impact Assessment Report (EIAR), which will assess the likely significant environmental effects associated with the construction, operation and decommissioning of the respective developments, including consideration of the rehabilitation measures being implemented at the Application Site.

The potential future development and the ongoing rehabilitation of the Application Site represent a shift toward sustainable land use, marking the transition from historical peat extraction to a range of potential future uses. Any future development proposals will be subject to separate planning and environmental assessment processes, which will consider interactions with the ongoing rehabilitation measures

As the peatland rehabilitation progresses under the Decommissioning and Rehabilitation Plans, habitats within the Application Site will begin to recover, creating a more stable and ecologically rich landscape. Future developments within the Application Site, including renewable energy projects and other proposed infrastructure, will be designed to integrate with rehabilitation measures and comply with applicable environmental and planning requirements.

Beyond biodiversity, the peatland rehabilitation measures will enhance water retention and improve hydrological conditions across the Application Site. The restoration of peatland ecosystems will help regulate water flow, reducing runoff and support improvements in ecosystem resilience and water quality over the long-term.

Future developments within the Application Site, including renewable energy projects and other proposed infrastructure, will be subject to separate planning and environmental assessment processes. Through the implementation of project-specific mitigation measures and compliance with regulatory requirements, these developments can be integrated with the ongoing rehabilitation programme.

The cumulative assessment concludes that no significant adverse cumulative or in-combination effects are anticipated to arise from the combined implementation of the rehabilitation measures and potential future developments within the Application Site.

Overall, the rehabilitation of the Application Site, together with proposed future developments, has the potential to contribute to the sustainable redevelopment and beneficial reuse of former peat extraction lands while supporting broader objectives relating to biodiversity, water quality, climate resilience, renewable energy generation and strategic infrastructure provision.

7.14 CONCLUSION

Peat extraction and associated activities were well established at the Application Site in 1988, resulting in a landscape dominated by cutover bog and bare peat. Most of the area consisted of exposed bare peat, with small patches of early-stage scrub, woodland, and pioneer vegetation beginning to emerge in some locations. By 1988, extensive drainage, habitat fragmentation, and the removal of surface vegetation had already occurred.

Given the extent of these modifications, the Peat Extraction Phase from July 1988 to June 2020 is unlikely to have caused any additional significant negative effects on the site's habitats, flora, or fauna. By this stage, the original ecosystem had already been heavily degraded, with many species displaced due to habitat loss and fragmentation. Bird populations were disproportionately affected as the extraction reduced the opportunity for habitats which may have supported nesting and foraging grounds to establish. While some species may have adapted to the changing environment, as peat extraction activity decreased over time, natural vegetation began to regenerate on the disturbed cutover bog areas, resulting in the development of more diverse and structurally complex habitats.

Since 2020, the Current Phase of the Project has continued to operate in accordance with the requirements of IPC Licence No. P0501-01, which has regulated activities at the site since its grant in 2000. The licence establishes strict environmental safeguards, including operational and monitoring requirements, controls on emissions to air and water, waste management protocols, and measures for bog rehabilitation. These regulations are designed to mitigate environmental harm and, where possible, contribute to ecosystem recovery. With a substantial reduction in activities during this phase, and the enforcement of licence conditions, there is no evidence to suggest that significant adverse effects on biodiversity have occurred.

Looking ahead, the Remedial Phase of the Project will focus on rehabilitating the site by implementing rewetting and revegetation measures, facilitating the process of natural succession. As outlined in this Chapter, these efforts will promote the regeneration of peatland habitats, enhancing biodiversity and ecological functions. Over time, this rehabilitation will result in a Long-term Significant Positive Effect, on habitat quality and species diversity on the Application Site overall. Additionally, the rewetting of the bog will aid in restoring hydrological balance, reducing peat oxidation, and improving water retention. These improvements will have positive downstream effects, as confirmed in Chapter 9 - Hydrology, Hydrogeology, and Water Quality, ultimately contributing to the long-term environmental recovery.

7.15 REFERENCES

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