
Chapter 07

Biodiversity

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7. Biodiversity

7.1 Introduction

This chapter assesses the impact of the proposed Barnesmore Gap Greenway (hereafter, the proposed development) on biodiversity during the construction and operational phase. This chapter describes and assesses the likely direct and indirect significant impacts of the proposed development on biodiversity. The methods employed to establish the ecological baseline within and around the proposed development are described, together with the process followed to determine the nature conservation importance of the ecological features present. The ways in which habitats, species and ecosystems are likely to be affected by the proposed development are described and the magnitude of the likely effects predicted, taking into account the conservation condition of the habitats and species under consideration¹. Mitigation measures are proposed, and any residual effects are assessed.

This chapter should be read in conjunction with the following Chapters, and their appendices, which present related impacts arising from the proposed development:

- Chapter 4: Description of the Proposed Development;
- Chapter 8: Land and Soils;
- Chapter 9: Hydrology;
- Chapter 10: Hydrogeology;
- Chapter 11: Air Quality;
- Chapter 14: Landscape and Visual;
- Chapter 20: Interactions and Cumulative Effects;
- Chapter 21: Summary of Mitigation and Monitoring Measures.

7.2 Legislation, Policy and Guidance

7.2.1 Legislation

The main legislation which provides for biodiversity and nature conservation in Ireland are the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended), SI No.477 of 2011 as amended, ("the Habitats Regulations" or "the Habitats Regulations 2011 to 2021" and the Wildlife Acts 1976 to 2023² (as amended).

The Habitats Regulations were inter alia amended by S.I. No. 290 of 2013; S.I. No. 499 of 2013; S.I. No. 355 of 2015; Planning, Heritage and Broadcasting (Amendment) Act 2021 (no.11 of 2021), Chapter 4; S.I. No. 293 of 2021, and S.I. No. 451/2025. The National Parks & Wildlife Service ('the NPWS') has issued the following guidance on the implementation of the Habitats Regulations:

- *Applications for Regulation 54 Derogations for Annex IV species. Guidance for Applicants.* (NPWS, 2025d).
- *Guidance for Public authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a Public authority* (NPWS, 2021b).

¹ Based upon the definitions of favourable conservation status in Article 1 of Council Directive 92/43/EEC (the Habitats Directive)

² Wildlife Act 1976 (No 39 of 1976); Wildlife (Amendment) Act 2000 (No 38 of 2000); Wildlife (Amendment) Act 2010 (No 19 of 2010); Wildlife (Amendment) Act 2012 (No 29 of 2012); Heritage Act 2018 (No. 15 of 2018), Part 3; Planning, Heritage and Broadcasting (Amendment) Act 2021 (No. 11 of 2021), Chapter 3; Wildlife (Amendment) Act 2023 (No 25 of 2023) as per National Parks & Wildlife Service.

- *Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland* (NPWS, 2021a).
- *Circular Letter NPWS 1/10; Circular Letter L8/08; Circular Letter NPWS 2/08; Circular Letter SEA 1/08 & NPWS 1/08; Circular Letter PD 2/07 & NPWS 1/07; Circular Letter NPWS 2-07 - Guidance on Compliance with Regulation 23.*

The European Communities (Birds and Natural Habitats) Regulations, 2011, as amended ('the Habitats Regulations'), transpose into Irish law Directive 2009/147/EC (the 'Birds Directive') and Council Directive 92/43/EEC (the 'Habitats Directive'), which list priority habitats and species of international (European Union) conservation importance, which require protection. This protection is afforded in part through the designation of European sites – areas that represent significant occurrences of listed habitat types and populations of listed species within a European context. Areas designated for bird species are classed as Special Protection Areas (SPAs), while those designated for other protected species and/or habitats are classed as Special Areas of Conservation (SACs). Wild bird species in SPAs, and habitats and species listed on Annexes I and II (respectively) to the Habitats Directive that are contained in SACs, are legally protected.

Additionally, species listed on Annex IV to the Habitats Directive are strictly protected wherever they occur – whether inside or outside the Natura 2000 network. This protection is afforded to animal and plant species by Regulation 51 and 52, respectively, of the Habitats Regulations.

The Wildlife Act, 1976 (as amended) ('the Wildlife Acts'), is the principle legislative mechanism for the protection of wildlife in Ireland. A network of nationally protected Nature Reserves, which public bodies have a duty to protect, is established under the Wildlife Acts. Sites of national importance for nature conservation are afforded protection under planning policy and the Wildlife Acts. Natural Heritage Areas (NHAs) are sites that are designated under the Wildlife Acts for the protection of flora, fauna, habitats and geological features of interest. Proposed Natural Heritage Areas (pNHAs) are published sites identified as of similar conservation interest, but which have not been statutorily proposed or designated – but are nonetheless afforded some protection under planning policies and objectives.

The Wildlife Acts also protect species of conservation value from injury, disturbance and damage to individual entities or to their breeding and resting places. All species listed on the relevant Schedules to the Wildlife Acts must, therefore, be appropriately considered in the planning process.

Wild flora, i.e. vascular plants, mosses, liverworts, lichens and stoneworts that are listed in the Flora (Protection) Order, 2022, are protected under Section 21 of the Wildlife Act 1976, which makes it illegal to cut, uproot or damage listed species or to alter, damage or interfere with their habitats.

7.2.2 Policy

This section summarises National policy relevant to this Chapter, including national policy documents, and policies and objectives in the relevant county development plans.

Ireland's 4th National Biodiversity Action Plan (2023 – 2030) (NPWS, 2023a), in accordance with the Convention on Biological Diversity, is a framework for the conservation and protection of Ireland's biodiversity, with an overall objective to secure the conservation, including, where possible, the enhancement and sustainable use, of biological diversity in Ireland and to contribute to collective efforts for conservation of biodiversity globally. Action 3C1 of the National Biodiversity Action Plan states that "All Public Authorities and private sector bodies move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure" (p. 99). This is particularly relevant to developments. The plan is implemented through legislation and statutory instruments concerned with nature conservation.

Ireland's 4th National Biodiversity Action Plan (NBAP) contains five overall Objectives:

1. Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity.

2. Meet Urgent Conservation and Restoration Needs.
3. Secure Nature's Contribution to People.
4. Enhance the Evidence Base for Action on Biodiversity.
5. Strengthen Ireland's Contribution to International Biodiversity Initiatives.

The Draft County Donegal Biodiversity Action Plan 2026-2030 sets out a clear vision to protect, restore, and celebrate County Donegal's biodiversity, ensuring that nature thrives alongside people, and that future generations inherit a county rich in wildlife and healthy ecosystems. The County Donegal Biodiversity Action Plan commits the Council to lead by example while recognising that it cannot achieve this alone. It aims to weave biodiversity into everyday decision-making and land management, but just as importantly, to support and enable others to take action for nature. The Donegal Biodiversity Action Plan is due to be launched in Q4 of 2026.

All-Ireland Pollinator Plan 2021 – 2025 (NBDC, 2021) seeks to halt the decline in pollinators through a range of objectives. This plan is supplemented by the guidance document, Pollinator Friendly Management of Transport Corridors (NBDC, 2019) and Councils: Actions to Help Pollinators (NBDC, 2016).

Transport Infrastructure Ireland's Biodiversity Plan (TII, 2023b) will deliver on the following key policy areas while developing and maintaining a safe and reliable transport network for Ireland:

1. Biodiversity is fully integrated into all TII operations and processes.
2. TII transport corridors will promote habitat connectivity across the wider landscape and will contribute to the enhancement of wider ecosystem services.
3. New projects will be developed with no net loss of biodiversity and will strive for a net gain in biodiversity.
4. Legacy impacts to biodiversity from existing infrastructure will be identified and addressed.
5. All TII activities (e.g. plans, projects and programs) comply with relevant biodiversity legislation.

National Cycle Network Plan 2023 (Department of Transport, 2023) provides a vision to *"develop a safe, connected and inviting cycle network between urban areas and key destinations to achieve accessible, sustainable, and high-quality routes that will help to reduce the carbon impact of transport and promote a healthy and inclusive society"*. The Strategic Environmental Assessment (SEA) produced for the Plan included the following examples of mitigation and enhancement measures that can be considered during the development of schemes which implement the NCN Plan:

- The design, location and layout of new cycle infrastructure should be sensitive to (and reinforce) local landscape, townscape and villagescape character.
- The delivery of new cycle links should be sensitive to the fabric and setting of the historic environment and facilitate opportunities for its enhancement.
- Signage and waymarking of the NCN should be designed so as not to detract from local character, the setting of the historic environment or impact adversely on the quality of the public realm.
- Design, surfacing and street furniture should complement the setting of the historic environment and local distinctiveness.
- The development of off-line cycle infrastructure should appropriately recognise the possibility for archaeological remains to be found and seek to avoid impacts on significant remains which have been or are identified. Where found, remains should be archaeologically recorded in order to "preserve by record" the significant aspects of the route. This should be informed by an evaluation of the importance and significance of the archaeological resource.

- New cycle links should be delivered as key components of wider multifunctional green infrastructure networks which deliver multiple environmental and socio-economic benefits relating to, for example, health and wellbeing, landscape character, biodiversity, climate change adaptation, water quality and a range of others.
- Limitation of potential impacts on habitats and species from landtake and loss of vegetation and trees.
- Avoidance of land take on designated biodiversity sites and sensitive habitats, and consideration of both direct and indirect effects on these sites.
- Enhancement of ecological networks alongside NCN infrastructure through appropriate planting and green infrastructure enhancements, and where possible, employing a premise of environmental net gain.
- Delivery of well-designed and appropriate lighting which seeks to limit impacts on light pollution and night blight, visual intrusion and ecological sensitivities.
- Provision of information for NCN users on local areas of interest, such as associated with the historic environment, cultural heritage, biodiversity assets and others.
- Facilitation of the use of recycled/reused materials to reduce the use of primary aggregates in construction and limit resource use.

Additionally, the Natura Impact Statement (NIS) produced for the Plan identified mitigation principles that should be followed if required, during the final design for each NCN route. The principles outlined in the NCN Plan are as follows:

- Identify routes that do not cross a European Site as a first preference. This wasn't always possible because due to the extensive nature of some European Sites in Ireland (particularly riverine SACs) it is impossible to connect some destinations without traversing a European site.
- Utilise existing infrastructure and bridge crossings where possible.
- Complete an options development process (based on TII standards).
- Set out a hierarchy of studies, design requirements and potential mitigation solutions in the NCN Plan Appropriate Assessment, to be undertaken and refined for each project.
- Complete project level appropriate assessment screening (and appropriate assessment where necessary) to ensure no adverse effects on the integrity of European Sites either alone or in combination, taking account of any necessary surveys for mobile qualifying interests (i.e. functionally linked habitat), any necessary recreational impact assessment and any necessary noise or air quality modelling. The need for such investigations for each corridor is identified in this NCN Plan NIS.
- Where engineering works are required on existing infrastructure, identify and utilise standard well-established mitigation to reduce any potential impact due to engineering or construction works, such as documented noise or dust control techniques.
- Aim to avoid new construction within 200m of a European site in order to avoid impacts from construction noise or construction related air quality impacts, or operational lighting or visual disturbance impacts on site integrity. If such construction is required, identify whether any negative effects would actually arise (such as through modelling) and, if so, utilise standard well-established mitigation to reduce any potential impact due to engineering or construction works, such as seasonal restrictions where needed, or physical controls.
- Produce a Construction Environment Management Plan (CEMP) to ensure compliance with all relevant legislation, utilise an ecological clerk of works where necessary.
- Where feasible the crossing should be made using the existing road bridges.
- Where engineering works to the road bridge would be required to render it suitable, any permanent works must remain out of the water column, unless it can be

demonstrated this would not affect site integrity, and must not hinder potential for otter passage along the riverbanks. If any temporary 'in river' works were to be necessary, studies (including but not limited to underwater noise and hydrodynamic studies), and potentially mitigation, would be required to ensure the works could be delivered without an adverse effect on the SAC habitats or fish populations.

- If a new bridge crossing is required, the following general requirements must be followed in designing and assessing the structure:
 - Any abutments must be located outside the SAC boundary and/or must involve no loss of qualifying SAC habitat or supporting habitat for SPA birds.
 - Any abutments must be located outside the river channel and must be set sufficiently far back from the bank top to ensure passage of otter along the banks is not prevented.
 - The soffit of the bridge should be sufficiently high that significant shading impacts on the water column and in river vegetation will not arise. Research suggests this would require a soffit height: deck width ratio of 0.7 or above.
 - A noise impact assessment of bridge construction sensitive receptors will be required, and potentially mitigation (such as seasonal restrictions on working, alternative construction methods or noise control techniques) to ensure no significant effect on the population of relevant species.
 - Water quality protection measures will be required.
 - Lighting should be avoided in areas that are currently unlit unless it can be demonstrated that there would be no adverse effect on site integrity.
- If detailed design work indicates that a new crossing is required but it is not possible to deliver such a crossing without an adverse effect on site integrity, the identified potential alternative solutions should be taken forward, or the corridor otherwise revised so that adverse effects on the integrity of European sites are avoided.

Donegal County Development Plan 2024-2030 (DCC, 2024) outlines how development should proceed in Donegal, ensuring environmental sustainability and the protection of biodiversity in the county. The following policies are relevant in relation to this biodiversity assessment:

BIO-O-1 To preserve and enhance the biodiversity of the County in accordance with the relevant EU policies and national legislation.

BIO-P-1 To require all developments to comply with the requirements of the EU Habitats Directive and EU Bird Directive, including ensuring that development proposals:
a) Do not adversely affect the integrity of any European/Natura 2000 site (i.e. Special Areas of Conservation and Special Protection Areas) including effects on ex-situ but functionally linked habitats, and species (e.g. Pearl Mussel) save where a plan must be carried out for imperative reasons of overriding public interest (IROPI). b) Provide for the protection of animal and plant species listed in Annex IV of the EU Habitats Directive and the Flora Protection Order. c) Protect and enhance features of the landscape (such as rivers, riverbanks, field boundaries, ponds and small woods) which are of major importance for wild fauna and flora and the ecological coherence of the Natura 2000 network.

BIO-P-2 Ensure that all developments seek to conserve/protect the qualifying interests of Ramsar Sites, Nature Reserves, Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA), the Cró na mBroanáin Red Grouse Sanctuary and any species protected under the Wildlife Act save to the extent necessary to provide for strategic infrastructure projects including but not restricted to the TEN-T Priority Route Improvement Project, Donegal, the Bridgend to County border project scheme, the Buncrana Inner Relief Road and Greenways, subject to such projects being in accordance with all relevant statutory and regulatory provisions. Otherwise, where no statutory or regulatory provisions apply this policy will be

implemented by the Council in so far as same can be practicably and reasonably achieved within the context of such projects.

- BIO-P-3** a) Protect features of local biodiversity value (e.g. hedgerows/field boundaries, trees, woodlands, wetlands, water bodies, riverbanks and peatlands) which make a significant contribution to the biodiversity, biodiversity/ecosystem services, ecological connectivity, and associated visual amenity and/or rural character of the area. b) Require that developments otherwise maximise the retention of and suitably integrate such features and provide new ecological corridors where appropriate. In this regard proposals for the removal of existing roadside hedgerows / field boundaries for new developments in rural areas will only be permitted in so far as is necessary to safeguard public safety and any remaining portion of those features identified above not so required shall be retained. c) Require that development proposals provide biodiversity enhancement measures (e.g. native tree and hedgerow planting, and nature-based water management solutions). d) Require that large-scale developments result in no net biodiversity loss and include a site-specific comprehensive Biodiversity Management Plan (BMP), as part of any planning proposal. This policy will be implemented by the Council in so far as same can be practicably and reasonably achieved within the context of Strategic Infrastructure Projects including, but not restricted to, the TEN-T Priority Route Improvement Project, Donegal, the Bridgend to County border project scheme, the Buncrana Inner relief Road and Greenways.
- BIO-P-4** Ensure that any development proposals do not lead to the introduction or spread of invasive species. Where invasive species are present, development proposals will be required to submit an appropriate control and management programme for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I.477/2011).
- BIO-P-5** a) Ensure that new developments do not have a significant adverse impact on pollinator habitat and species, including protecting rare pollinators and maximizing the retention of habitats and providing biodiversity enhancement within development proposal where feasible. b) Require native pollinator friendly planting and management regimes as part of planting/landscaping schemes for new public development including green infrastructure, large scale residential and transport development. c) Manage road verges to enhance biodiversity in accordance with the All-Ireland Pollinator Plan.

7.2.3 Guidance

The process of identifying, quantifying and evaluating potential impacts of the proposed development on habitats, species and ecosystems was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3* (CIEEM, 2018). In addition, reference to the following recognised guidance defined the scope and evaluation process:

- CIEEM (2023) Briefing Paper: Biodiversity Enhancement for New Developments in Ireland. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.
- Collins (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition).
- EPA (2003) Advice Notes on Current Practice in the Preparation of Environmental Impact Statements. Environmental Protection Agency.
- EPA (2015) Draft Advice Notes for preparing Environmental Impact Statements. Environmental Protection Agency.

- EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency.
- IFI (2016) Guidelines on Protection of Fisheries During Construction Works and Adjacent to Waters. Inland Fisheries Ireland.
- ILP (2023) Bats and Artificial Lighting at Night: Guidance Note 08/23. Institution of Lighting Professionals & Bat Conservation Trust, Regent House, Regent Place, Rugby, Warwickshire, UK.
- Marnell, F. Kelleher, C & Mullen, E. (2022). Bat Mitigation Guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks & Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.
- NBDC (2019) Pollinator-friendly management of: Transport Corridors. All-Ireland Pollinator Plan, Guidelines 9. National Biodiversity Data Centre Series No. 20, Waterford. September 2019. Updated November 2025.
- NBDC (2021) All Ireland Pollinator Plan 2021-2025. National Biodiversity Data Centre, Waterford.
- Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.
- TII (2005a) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. PE-ENV-01115. Transport Infrastructure Ireland.
- TII (2005b) Guidelines for the Treatment of Bats during the Construction of National Road Schemes. CC-ENV-01102. Transport Infrastructure Ireland.
- TII (2005c) Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes. CC-ENV-01103. Transport Infrastructure Ireland.
- TII (2005d) Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes. CC-ENV-01101. Transport Infrastructure Ireland.
- TII (2006a) Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post Construction of National Road Schemes. GE-ENV-01110. Transport Infrastructure Ireland.
- TII (2006b) Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. CC-ENV-01104. Transport Infrastructure Ireland.
- TII (2008a) Environmental Impact Assessment of National Road Schemes – A Practical Guide (Revision 1). PE-ENV-01114. Transport Infrastructure Ireland.
- TII (2008b) Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. PE-ENV-01113. Transport Infrastructure Ireland.
- TII (2009) Guidelines for Assessment of Ecological Impacts of National Road Schemes. PE-ENV-01112. Transport Infrastructure Ireland.
- TII (2015a) Edge of Pavement Details (including Amendment No.1 dated June 2015). DN-DNG-03062. Transport Infrastructure Ireland.
- TII (2015b) Drainage of Runoff from Natural Catchments (including Amendment No.1 dated June 2015). DN-DNG-03064. Transport Infrastructure Ireland.
- TII (2020a) The Management of Invasive Alien Plant Species on National Roads – Standard. GE-ENV-01104. Transport Infrastructure Ireland.
- TII (2020b) The Management of Invasive Alien Plant Species on National Roads – Technical Guidance. GE-ENV-01105. Transport Infrastructure Ireland.
- TII (2023a) Environmental Planning of National Road and Greenway Projects. RE-ENV-07008. Transport Infrastructure Ireland.
- TII (2023b) Biodiversity Plan. Transport Infrastructure Ireland.

- TII (2024) Drainage Systems for National Roads. DN-DNG-03022. Transport Infrastructure Ireland.
- TII (2025) Rural Cycleway Design (Offline & Greenway). DN-GEO-03047. Transport Infrastructure Ireland, Dublin.

7.3 Methodology

This section describes the methodologies that were followed in collecting information, in describing the baseline ecological conditions and in assessing the likely effects of the proposed development.

7.3.1 Establishing the Zone of Influence

The Zone of Influence is the zone encompassing all of the potential impacts on the receiving environment associated with the route option/project being evaluated. Each environmental factor (or a specific receptor within that factor) will have a defined Zone of Influence which will depend on the receptors/baseline and the potential impacts from the project. The Zone of Influence should be established on a case-by-case basis using the Source-Pathway-Receptor model (TII, 2024). The key variables to be taken into account when establishing the Zone of Influence for a proposed development are:

- The nature, scale, and location of the proposed development;
- The sensitivities of the ecological receptors within the receiving natural environment; and,
- The potential for cumulative or in-combination effects.

For example, in the case of a proposed development connected to a river, it may be necessary to extend the Zone of Influence a significant distance upstream and/or downstream to capture all potential impacts on water-dependent ecological receptors.

Based on the above key variables, the Zone of Influence was defined as:

- The entire area within 550m of the proposed development for noise and visual disturbance associated with construction and operation of the proposed development.
- All watercourses crossed by the proposed development, downstream and including the River Eske as far as the 'Inner Donegal Bay Transitional Waterbody' and downstream of the River Finn as far as the Foyle Bridge in Derry City, for aquatic habitats and species dependent on aquatic habitats.
- All waterbodies crossed by the proposed development, upstream and including Lough Eske, the upper reaches of the Lowerymore River and the upper reaches of the River Finn and its tributaries, for aquatic habitats and species dependent on aquatic habitats.
- Within 20km of the proposed development for the potential for ex-situ impacts on SPAs designated for breeding and wintering birds.

The buffer was defined as 550m around the proposed development as beyond this limit, noise and visual disturbance to birds is unlikely to occur (Cutts *et al.*, 2013). This distance also covers the limits of disturbance to other species such as breeding birds, Otter, bats and Badger. The watercourses crossed by the proposed development, downstream and including the Donegal Bay Transitional Waterbody and the River Finn and River Foyle downstream to the Foyle Bridge in Derry City, is the extent to which hydrological impacts could potentially occur in the watercourses connected to the proposed development.

Non-breeding waterbirds generally inhabit wetlands, migrating locally between feeding sites and roosts, and between estuaries. The movements of these species between these sites is likely to be between sites that are close together (SNH, 2023). Therefore, a 20km buffer for potential ex-situ impacts to wintering bird species was used around the proposed development. The core foraging ranges of breeding birds is also considered within this buffer.

7.3.2 Study Area

The desk study was carried out to collate information on the ecology of the Zone of Influence that could potentially be impacted by the proposed development. Information on species listed on Annexes II and IV of the Habitats Directive, the Wildlife Acts, the Flora (Protection) Order 2022, Annex I to the Birds Directive, Red- and Amber-listed Birds (Gilbert et al., 2021), and the Third Schedule to the Habitats Regulations were sourced from the statutory consultee, the NPWS, and the National Biodiversity Data Centre (NBDC). The NPWS and NIEA Natural Environment online interactive map viewers provided information relating to designated sites of nature conservation importance within the Zone of Influence. The NBDC provided rare and protected species data from within the 10km grid squares which overlap with the proposed development (G97, G98, H08, H09, H19).

The field study area included the proposed development, plus a 50m buffer surrounding the proposed development boundary. In the case of Otter, the survey areas included the area 150m upstream and downstream of watercourse crossings. For wintering and breeding birds, a 550m buffer around the proposed development in suitable habitat was used. This area was considered to be appropriate to allow for identification of the ecological features which could potentially be subject to direct impacts from the proposed development, or act as pathways for indirect impacts or effects to other features in the Zone of Influence.

7.3.3 Approach and Objectives

A 'habitat' is the environment in which an animal or plant lives and is generally defined in terms of vegetation and physical structures. Habitats and species of ecological significance occurring, or likely to occur within the defined Zone of Influence and Study Area of the proposed development are classified as Key Ecological Receptors (KERs).

In accordance with Transport Infrastructure Ireland (TII) '*Guidelines for Assessment of Ecological Impacts of National Road Schemes*' (TII, 2009), an impact assessment is used to identify, estimate and evaluate the consequences of proposed actions on the natural environment. According to these guidelines, the Zone of Influence is the receiving environment for the activities associated with the project and the biophysical changes that are likely to result. The 'Key Ecological Receptors' are defined as features of sufficient value as to be material in the decision-making process for which potential impacts are likely. Their importance can be defined on a geographic scale, adapted for the particular circumstances of a project.

The assessment presented in this report does not consider any other type of environmental effects other than those on biological diversity (of flora and fauna). This report quantifies the potential effects on the identified Key Ecological Receptors and prescribes mitigation measures required to avoid and reduce any negative effects identified.

Determining the ecological issues to be addressed for the assessment was informed by early engagement with relevant stakeholders. During this scoping process, selected consultees were provided the opportunity to input into the proposed development through preliminary discussions on Key Ecological Receptors that could potentially be affected; strategies to avoid negative impacts; and possible compensation or enhancement measures. Further details of the consultation process, including a list of the statutory and non-statutory consultees, can be found in Table 7-1.

Where potential significant negative effects were identified, detailed and specific mitigation measures have been proposed in accordance with the hierarchy of options suggested in the European Commission report, '*Assessment of plans and projects in relation to Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*' (EC, 2021). Preference was given to avoiding impacts at their source. Where this was not possible, the following approaches were adopted, in order of decreasing preference: reduce impacts at source, abate on site, and finally abate at receptor. These measures have been incorporated into the design of the proposed development.

The information provided in this chapter accurately and comprehensively describes the baseline ecological environment, provides an accurate prediction of the likely significant

ecological effects of the proposed development, prescribes specific mitigation, as necessary, and describes the residual ecological effects.

7.3.4 Terminology

The evaluation of Key Ecological Receptors (KER's) and the criteria used to determine ecological value is in accordance with TII guidance *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (2009), and with consideration for the Chartered Institute of Ecology and Environmental Management's (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018). The description of effects is in accordance with the *EPA Guidelines Information to be Contained in Environmental Impact Assessment Reports* (EPA, 2022).

7.3.5 Desk Study

In addition to the sources described above, the desk study, which was undertaken in October 2025, included a review of available ecological data from the following sources:

- Aerial photography available from www.osi.ie and Google Maps <<https://maps.google.com>>.
- Data on waterbodies, available for download from the Environmental Protection Agency (EPA) web map service. Available from <<https://gis.epa.ie/EPAMaps>>.
- Inland Fisheries Ireland (IFI) Open Data - WFD Fish Ecological Status: Rivers, Lakes and Transitional Waters
- National Biodiversity Data Centre – Species Distribution Maps; Available online at <www.biodiversityireland.ie>.
- NPWS documents related to national and European protected sites within the Zone of Influence.
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from <www.npws.ie>.
- Online data available on European sites in Northern Ireland and Areas of Special Scientific Interest held by the Northern Ireland Environment Agency (NIEA) from <<https://www.daera-ni.gov.uk/articles/northern-ireland-environment-agency>>.

Other resources used during the desk study included the following:

- Atkinson et al., (2023) *Guidance on Assessment and Construction Management in Margaritifera catchments in Ireland*.
- AtkinsRéalis (2025) *Barnesmore Gap Greenway – Freshwater Pearl Mussel Survey Report*. September 2025.
- Ecofact (2024) *Barnesmore Gap Greenway: Freshwater Pearl Mussel Desk Study*. December 2024
- Gilbert, G., Stanbury, A., Lewis, L. (2021). *Birds of Conservation Concern in Ireland 4: 2020-2026*. Irish Birds 43: 1-22.
- IFI (2023) *Electrofishing Data for the Eske_010 subcatchment*. Inland Fisheries Ireland, Ballyshannon.
- Irish Wetland Bird Survey Site database (I-WeBS, 2025).
- SSE Renewables (2012) *Proposed New Road Connecting to the N15 Through the Townlands of Croaghonagh & Meenbog. Natura Impact Statement*. Prepared by Fehily Timoney & Company on behalf of SSE Renewables.
- Planree Limited (2017a) *Meenbog Wind Farm – Environmental Impact Assessment Report. Chapter 6: Flora and Fauna/Biodiversity*. November 2017. Prepared by MKO on behalf of Planree Limited.

- Planree Limited (2017b) *Meenbog Wind Farm – Environmental Impact Assessment Report. Chapter 7: Ornithology*. November 2017. Prepared by MKO on behalf of Planree Limited.
- Scottish Power Renewables (2019a) *Barnesmore Wind Farm – Environmental Impact Assessment Report. Chapter 6: Biodiversity*. December 2019.
- Scottish Power Renewables (2019b) *Barnesmore Wind Farm – Environmental Impact Assessment Report. Chapter 7: Ornithology*. December 2019.

As with all desk studies, the data considered was only as good as the data supplied by the recorders and recording schemes. The recording schemes provide disclaimers in relation to the quality and quantity of the data they provide, and these were considered when examining outputs of the desk study.

7.3.6 Consultation

The consultees listed in Table 7-1 were contacted and invited to submit observations in relation to ecology and nature conservation and to attend online and in-person meetings. Observations and matters discussed at the meetings that are relevant to this chapter are summarised. Concerns raised by the consultees have been addressed as far as possible.

The purpose of the consultation was to:

- Identify any relevant information that consultees held, including the presence of data on protected species or species of conservation concern.
- Identify any concerns that consultees may have about the proposed development.
- Identify any issues that the consultees would like to see addressed during the ecological impact assessment process.

Table 7-1 - Consultation response for the proposed development

Statutory Consultee	Date	Overview of Presentation	Summary of Response
National Parks and Wildlife Service (NPWS)	26 th October 2023 (online)	The first consultation with the NPWS was held during Phase 2: Option Selection of the proposed development. ROD-AECOM presented a summary of the proposed development and the corridor options being assessed as part of the Option Selection process. The presentation provided a high-level assessment of the ecological constraints associated with each corridor option, based on desk study information. The presentation also laid out the next steps of the proposed development including proposed ecological surveys.	The following points were made: - The NPWS recommended that the Environmental Sensitivity Mapping (ESM) webtool should be used as a resource for identifying ecological constraints. - It was noted that the NPWS would like to see two wintering bird survey seasons. - The proposed greenway is to have No Net Loss in terms of biodiversity, including the maintenance thereof. - The proposed greenway should utilise existing corridors, where feasible. - Indirect impacts of the proposed greenway should also be considered. - Avoidance of Annex I habitats is key.
	25 th April 2024 (online)	The second consultation with the NPWS was held following the identification of the EPRC. ROD-AECOM presented more detailed desk study data, including protected species records from the NPWS and utilised the ESM webtool to further identify areas of ecological constraint in the EPRC. A summary of the 2023/2024 wintering bird survey results was presented, showing low numbers of wintering birds in suitable habitat along the EPRC.	The following points were made: - With regard to reintroduction schemes in relation to raptors within the area, ROD should submit a sensitive data request for Golden Eagle and White-tailed Sea Eagle to the NPWS to ensure there will be no impacts to raptors as a result of the proposed development. - There is potential for the proposed development to create a wildlife corridor to facilitate movement of grey squirrel from Ballybofey to important red squirrel habitat in Ardnamona Wood/Lough Eske. - Consideration must be given to Freshwater Pearl Mussel during the design and construction methodology.
	11 th October 2024 (online)	The third consultation with the NPWS was held during the Phase 3: Optioneering/route selection stage. ROD-AECOM provided a summary of the habitat survey results, which were undertaken in summer 2024 and outlined the next surveys to be undertaken, including for mammals and Freshwater Pearl Mussel. The proposed options for watercourse crossings and an indicative route was also presented to the NPWS for comment.	The following points were made: - Clarification was sought from NPWS on whether the River Eske watercourse crossing would be a clear-span structure. - NPWS acknowledged that RODA's sensitive data request to the NPWS for records of White-tailed Sea Eagle and Golden Eagle was unsuccessful. - ROD should submit a sensitive data request for Freshwater Pearl Mussel to the NPWS. - Following RODA's query regarding the requirement for a 2nd season of wintering bird surveys, given the low numbers recorded during the 1st season, NPWS reiterated that any pre-planning request for comment from the NPWS must be made via the official DAU channel. [No response was received from the DAU and a 2nd season was undertaken]

Statutory Consultee	Date	Overview of Presentation	Summary of Response
	28 th April 2025 (in person)	The fourth consultation with the NPWS was held during an on-site walkover. ROD-AECOM and DCC brought the NPWS to specific locations of potential ecological sensitivity along the proposed route. Locations included areas where the proposed development interacts with the Lough Eske and Ardnamona Wood SAC and the Croaghonagh Bog SAC.	The following points were made: - The NPWS acknowledged that the proposed River Eske crossing location was the most appropriate in the context of the wider environment. - NPWS recommended that a woodland relevé survey at the location of the forest trail should be undertaken to determine whether or not the woodland corresponds to Annex I habitat. This would avoid reliance on historical desk study data and provide a more robust habitat assessment as part of the environmental reporting for the proposed development. - The NPWS noted the presence of dead <i>Molinia</i> vegetation and poor habitat at the location of the Dearg Line bridge. - The NPWS reiterated the requirement for clear span structures over watercourses and potential impacts to habitats, including water quality impacts, to watercourses are avoided/reduced/mitigated for as required. - NPWS noted evidence of Badger activity in the railway embankment on the north side of the River Finn. - The Freshwater Pearl Mussel Survey report to be issued to NPWS by the licence holder as per the FWPM license conditions.
	16 th April 2026 (online)	The fifth consultation with the NPWS was held during the progression of the EIAR and NIS. ROD-AECOM provided a summary of the ecology survey results, which were undertaken at various dates between 2023-2026. A summary of the potential impacts and mitigation measures presented in the EIAR and NIS was also provided.	The following points were made: - The NPWS noted that the installation of dipper boxes would be beneficial and should be included where in-stream works are occurring. - The NPWS notes off-road style greenway where surface is not similar to a road would be beneficial as more appealing to user and less harsh on landscape. - The NPWS noted that the lighting plan for the proposed development is acceptable (2700K) but recommends a lower lux level such as 2000K or 1800K to improve mitigation further. - The NPWS recommends reviewing disturbance distance of White-tailed Sea Eagle, given their known presence in the area. - The NPWS noted the potential for the project to introduce mitigation to prevent spread of Grey Squirrel. - RODA to highlight the operational-phase landscape management where the proposed development boundary includes areas of Conifer plantation (i.e. continuous forest cover).
	11 th May 2026 (in person)	The sixth consultation with the NPWS was held during a second on-site walkover with different NPWS personnel. ROD-AECOM and DCC brought the NPWS and IFI together on a second site visit to specific	The following points were made:

Statutory Consultee	Date	Overview of Presentation	Summary of Response
		locations of potential ecological sensitivity along the proposed route. Locations included areas where the proposed development interacts with the Lough Eske and Ardnamona Wood SAC, Ancient and Long-Established Woodland in Loughesk Demesne and the Croaghonagh Bog SAC.	• Straw/hay bales are not suitable for water quality mitigation during the construction phase in watercourses where Freshwater Pearl Mussel are located due to the potential for sedimentation. • Oak saplings for woodland planting areas can be sourced from Glenveagh National Park tree nursery. • The proposed development through the Loughesk Demesne should be re-routed to the eastern side to avoid felling of oak trees in the western area of the woodland. The NPWS noted the eastern area of Loughesk Demesne to be vegetated with Conifer species, Ash and Rhododendron, as well as already-felled trees. • There is a potential increase in biosecurity risk to ecologically sensitive areas, including Lough Eske, due to increased public access to these areas as a result of the proposed development. • Scrub habitat at the proposed trailhead at Biddy's O'Barnes has potential suitable habitat for bird species including Grasshopper Warbler. The NPWS recommended areas of scrub within the proposed development boundary close to this trailhead be allowed to establish during the enabling works prior to scrub clearance for the trailhead construction to allow bird species relocate to suitable habitat. • There is a potential drainage concern where the proposed development runs adjacent to the Croaghonagh Bog SAC. The introduction of hardstanding surface and associated drainage design has the potential to drain the SAC. • The north side of the proposed development at Croaghonagh Bog could be screened from road traffic along the N15 by the provision of berms and translocating displaced willow trees to the northern side of the proposed development. • Fencing along the Croaghonagh Bog SAC should be considered to avoid potential of dogs entering ground nesting bird habitat on the bog. • The potential for hedgerow translocation, where possible, should be assessed. • The existing railway corridor should be kept as intact as possible. • Lighting on the bridges should be lighting the deck only.
Inland Fisheries Ireland (IFI)	30 th October 2024 (online)	The first consultation with the IFI was held during the Phase 3: Optioneering/route selection stage, following an advice note received from IFI on the 27th August 2024. ROD-AECOM provided a summary of the key aquatic ecological considerations in the EPRC, identified during desk study exercises. ROD-AECOM outlined the next surveys to be undertaken, including	The following points were made: • The River Eske is ecologically sensitive and IFI are expecting a large amount of activity in terms of fish numbers. • Lowerymore River is a high-energy active river with a lot of bank erosion downstream of Biddy's O'Barnes. IFI recommend considering soft engineering to mitigate the issue (e.g. tree brash, spur posts).

Statutory Consultee	Date	Overview of Presentation	Summary of Response
		for Otter and Freshwater Pearl Mussel and identified the potential aquatic issues to be addressed. The proposed options for watercourse crossings and an indicative route was also presented to the IFI for comment.	- In order to mitigate for the potential loss of vegetation along the riparian margin, consideration should be made with regard to tree planting in these areas. - IFI requested the methodology for the river crossings (and any other area where the proposed development is in proximity to a river) for review and comments as well as the co-ordinates of the proposed river crossings to review the locations. - IFI recommended the preparation of a biodiversity enhancements/offsets plan for the project following the ethos of the TII Biodiversity plan and provide to IFI and the Loughs Agency for review and comment. - With regard to other enhancement works being considered and undertaken by IFI (e.g. riparian pruning) in the area, IFI recommend consideration on the mitigation measures for the proposed development should be given on where these mitigation measures may overlap with projects being carried out by IFI.
13 th June 2025 (in person)		The second consultation with the IFI was held during an on-site walkover. ROD-AECOM and DCC brought IFI to specific locations of potential ecological sensitivity along the proposed route with a focus on watercourse crossings and aquatic sensitivities in the Eske subcatchment. Locations included areas where the proposed development interacts with notable watercourses for Freshwater Pearl Mussel and Salmon, among other aquatic species.	The following points were made: - The Outline Construction Environmental Management Plan (CEMP) will be prepared as part of the planning application. A draft CEMP will be made available to IFI in advance of the planning application for review and comment. - Route design will be finalised in advance of the planning application with consideration for ecological sensitivities. - ROD to include landscaping requirements for native tree planting in environmental reports as part of the planning application.
11 th May 2026 (in person)		The third consultation with the IFI was held during an on-site walkover. ROD-AECOM and DCC brought IFI and the NPWS to specific locations of potential ecological sensitivity along the proposed route that are under IFI jurisdiction (i.e. areas outside the Foyle catchment, which are under the jurisdiction of the Loughs Agency). Many of the locations during the site visit focused on watercourse crossings and aquatic sensitivities in the Eske subcatchment. Locations included areas where the proposed development interacts with notable watercourses for Freshwater Pearl Mussel and Salmon, among other aquatic species.	The following points were made: - Access to angling structures should be maintained during construction and operational phases of the proposed development. - Any bunding of material or refuelling of machinery should be kept away from watercourses. - There should be no potential for any debris to fall into watercourses, including the River Eske. - An ECoW should be employed throughout the construction of the proposed development. - The CEMP for the proposed development should be thorough. - In areas of ecological sensitivity, such as the River Eske for Freshwater Pearl Mussel, silt fences and other mitigation should be inspected daily to ensure correct implementation of mitigation measures.

Statutory Consultee	Date	Overview of Presentation	Summary of Response
Loughs Agency	27 th January 2025 (online)	A consultation meeting was held with the Loughs Agency during the preliminary design and development of the proposed development centreline. ROD-AECOM presented an overview of the proposed development to-date and highlighted the key ecological considerations within the Foyle catchment. Following the consultation meeting, the EIA Scoping Report was issued to the Loughs Agency on the 10th April 2025. Observations by the Loughs Agency were received on the 6th May 2025 and are summarised across.	The following points were made: - Considering the location of the proposed development in a border county with downstream sites in Northern Ireland, the Loughs Agency recommended that the River Foyle and Tributaries SAC are included in the AA process. - The Loughs Agency have a number of restoration projects being undertaken in the Foyle catchment and consideration on the mitigation measures for the proposed development should be given on where these mitigation measures may overlap with projects being carried out by the Loughs Agency. Loughs Agency staff can engage with wider team and advise on restoration projects being undertaken in the area. - The Loughs Agency reviewed the EIA Scoping Report and were content with the report. The Loughs Agency advised that noise and vibration can impact upon aquatic species and create a barrier to migration. Timing of works is key for any works in or near watercourses. - The Loughs Agency reiterated that it is an offence to remove or disturb any material, including sand or gravel from the bed of any freshwater river within the Foyle and Carlingford Areas without the consent of the Loughs Agency contrary to Section 47 of the Foyle Fisheries Act 1952, as amended by article 18(3) of the Foyle and Carlingford Fisheries Act. - The Loughs Agency reiterated that it is an offence under section 171(1) of the Fisheries (Consolidation) Act 1959, as extended by Section 10 of the Foyle Fisheries (Amendment) Act, 1961 and as amended, to cause pollution which is detrimental to fisheries interests.

7.3.7 Ecological Survey Methodology

Field surveys were conducted adhering to the following guidelines:

- *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition)*. The Bat Conservation Trust, London (Collins, J. (Ed.), 2023);
- *Best Practice Guidance for Habitat Survey and Mapping* (Smith et al., 2011);
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes*. PE-ENV-01115. Transport Infrastructure Ireland. (TII, 2005a);
- *Bird Monitoring Methods: A Manual of Techniques for UK Key Species* (Gilbert, G., Gibbons, D.W., & Evans, J., 1998). The Royal Society for the protection of Birds, Sandy, Bedfordshire, England;
- *Bird Atlas 2007-11* (BTO, 2011);
- *CBS Manual Guidelines for Countryside Bird Survey participants* (BWI, 2012);
- *A Guide to Habitats in Ireland* (Fossitt, 2000);
- *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes* (TII, 2008b);
- *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes*. CC-ENV-01103. Transport Infrastructure Ireland. TII (2005c)
- *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes*. CC-ENV-01104. Transport Infrastructure Ireland. (TII, 2006b);
- *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (TII, 2005b);
- *Interpretation Manual of European Union Habitats* (EC, 2013);
- *Threat Response Plan: Otter (2009-2011)* (NPWS 2009a).

7.3.8 Overview of Ecological Surveys

The field surveys carried out for the proposed development are presented in Table 7-2. The surveys aimed to detect the presence, or likely presence, of rare/threatened, protected and invasive species, and to record the habitats present in the study area. The surveys provided baseline information regarding the existing ecology of the study area. Incidental records of plants, bird species and protected species were collected throughout the surveys.

Specific ecological surveys were carried out with respect to the following:

- Habitats
- Breeding birds
- Wintering birds
- Otter
- Badger and other mammals, including Red Squirrel
- Bats
- Reptiles and Amphibians
- Marsh Fritillary
- Freshwater Pearl Mussel
- Fisheries and Aquatic Habitats
- Invasive Species

Section 7.3.7 presents the guidance documents which informed the methodologies applied during these surveys. The results of these surveys are presented in Section 0. Table 7-2 below lists the surveys, dates and personnel involved.

Table 7-2 - Ecological Survey Details

Survey	Date	Surveyor
Habitats	May, June, July, August 2024; November 2024; May 2025.	ROD
Breeding Birds	May, June, July 2024.	ROD
Wintering Birds	October 2023 to March 2024; January to March 2025; November 2025 to March 2026.	ROD
Otter	January, March 2025.	ROD
Badger and other mammals	January, February, March 2025.	ROD
Preliminary Roost Assessment (PRA) survey (bats)	January, February, March, April 2025.	ROD
Bat emergence surveys	July, August 2025.	ROD
Reptiles and amphibians	May, June, July, August 2024; May 2025.	ROD
Marsh Fritillary	September 2025	ROD
Freshwater pearl mussel surveys	July 2025.	AtkinsRéalís
Fisheries and aquatic fauna	May, June, July, August 2024; January, February, March, July 2025.	ROD & AtkinsRéalís
Invasive species	May, June, July, August 2024; November 2024; May 2025.	ROD

7.3.8.1 Habitats

Habitats were classified in accordance with *A Guide to Habitats in Ireland* (Fossitt, 2000) and mapped following Smith et al. (2011). Due to the size of the proposed development, the study area for the habitat surveys included the proposed development boundary (i.e. the red line boundary) plus the area up to 50m around the proposed development boundary, where accessible. The study area was systematically and thoroughly walked, and all habitats were classified and sketched onto maps. Any Fossitt habitats with links to Annex I habitats were examined further to determine if they corresponded to Annex I habitat. The presence of Annex I habitats, or otherwise, was confirmed using the Interpretation Manual of European Union Habitats (EC, 2013) supplemented by the relevant monitoring reports published by the NPWS.

7.3.8.2 Breeding Birds

Breeding Raptor surveys were undertaken in accordance with Hardey et al., (2014). Surveys were undertaken at four separate Vantage Points in areas with suitable breeding raptor habitat in proximity to the proposed development. Suitable habitats that were surveyed included uplands in proximity to conifer plantations, Croaghonagh Bog and the Barnesmore Gap.

Breeding wader surveys were undertaken in conjunction with the breeding raptor surveys as described above. The surveys were undertaken in accordance with BTO's Breeding Wader Survey Guidance (BTO, 2023). Survey effort for breeding waders was focussed on areas of suitable breeding habitat, including Croaghonagh Bog and uplands south of the Barnesmore Gap.

All species recorded were classified according to British Trust for Ornithology (BTO) species codes. Evidence of breeding was also collected, noting 'possible', 'probable' and 'confirmed' breeding, in line with Bird Atlas 2007-2011 (BTO, 2011).

7.3.8.3 Wintering Birds

All wintering bird species were recorded using a 'look-see' approach (Bibby et al., 2022). All bird species were recorded using standard species codes from the British Trust for Ornithology (BTO, 2011). The surveys included all fields, bogs and waterbodies in proximity to the proposed development including the Inner Donegal Bay Estuary, Lough Eske, Lough Mourne, Lough Craig and Croaghonagh Bog. The inland survey methodology followed Gilbert et al. (1998) and the Irish Wetland Bird Survey.

Surveys for Hen Harrier winter roosts were undertaken from January to March 2024, following the methodology of the Irish Hen Harrier Winter Survey Guide (O'Donoghue, 2019). The surveys were undertaken over two nights per month at two vantage points covering different areas of Croaghonagh Bog.

All species recorded were classified according to British Trust for Ornithology (BTO) species codes. For each observation, the date, time, site, species, number of birds, position, activity and any other notes of interest were recorded.

7.3.8.4 Otter

An Otter survey for the proposed development was conducted adhering to best practice guidelines (TII, 2008b; 2006b). The study area for otters included accessible areas along the route of the proposed development plus the area up to 50m around the proposed development boundary, as well as around lakes including Lough Mourne and Lough Eske, and 150m upstream and downstream of all watercourses to be crossed by the proposed development. The survey involved a search for signs of Otter activity (prints, spraints, trails, holts, couches, slides, feeding remains etc.).

7.3.8.5 Badger and Other Mammals

The badger survey was conducted within the footprint of the proposed development and a 50m buffer. The survey was undertaken in accordance with best practice guidance (TII, 2005c) and involved a systematic search for physical evidence of badgers, e.g. setts, latrines, badger paths.

During the ecological surveys, the potential for the study area to support other mammal species protected under the Wildlife Acts, such as Irish Hare, Pygmy Shrew, deer species, Irish Stoat and Hedgehog was assessed. Any natural and built features that could potentially support these species were searched thoroughly and any physical evidence, such as live sightings, feeding signs and droppings/scats. Any incidental evidence of these species observed during the surveys was recorded.

7.3.8.6 Bats

Bat suitability assessment

The bat suitability assessment focussed on identifying built or natural features within the footprint of the proposed development and a 30m buffer, where accessible. The bat suitability assessment was conducted adhering to best practice guidelines (TII, 2005a,b; Collins (ed.), 2023) and involved a visual assessment and categorisation of suitable features on trees and structures capable of supporting roosting bats. Trees and structures were classified using the criteria outlined in Collins (ed.) (2023), recorded with a hand-held GPS unit and photographed.

Emergence/Re-entry Surveys

Following the bat roost suitability assessment, structures that were considered suitable for bats to roost in were surveyed. No potential roost features were recorded on any of the trees that will be impacted by the proposed development. All trees where potential roost features were recorded are located outside the proposed development boundary and will not be impacted by the proposed development.

The emergence surveys were undertaken between 15 minutes before sunset and 90 minutes after sunset. The emergence surveys adhered to best practice guidelines (Collins (ed.), 2023). Surveyors undertook their work in pairs. The surveys were undertaken using Anabat

Walkabout bat detectors and Nightfox Whisker infra-red binoculars, which were mounted on tripods along with two Nightfox XB5 Pro infra-red torches to increase the level of illumination of the structure. Detailed handwritten notes were also taken during the surveys.

Following these surveys, the recordings were processed using Kaleidoscope Pro Analysis software to extract information including sound recordings, sonograms, GPS coordinates, time, date, and species identification confidence values. Recordings with low confidence values or of rare species were validated manually. The footage captured on the Nightfox Whisker was reviewed manually using VLC Media Player.

Bat Activity Surveys

No bat activity surveys were carried out for the proposed development. There is suitable foraging habitat at various locations along the proposed development, including along the treelines of the abandoned railway corridor and various hedgerows and treelines that make up the landscape. However, the presence of suitable habitat does not in and of itself trigger the need for bat activity surveys.

Where minor vegetation removal is required to pass through linear habitats, the greenway is approximately 4m wide and this gap will not disrupt bat foraging habitat or sever connectivity. The loss of habitat associated with the proposed development will not affect the availability or quality of bat habitat, and the proposed development does not pose a risk of collision with bats as is the case for road schemes where activity surveys are routinely undertaken.

7.3.8.7 Reptiles and Amphibians

During the ecological surveys, the potential for the study area to support other species protected under the Wildlife Acts, such as Common Lizard, Common Frog and Smooth Newt was assessed. Any natural and built features that could potentially support these species were searched thoroughly and any physical evidence, such as live sightings, feeding signs and droppings/scats. Any incidental evidence of these species observed during the surveys was recorded.

7.3.8.8 Marsh Fritillary

There are records of Marsh Fritillary (*Euphydryas aurinia*), a species designated under Annex II of the Habitats Directive, within the Zone of Influence (NBDC, 2025). The food plant of this species, Devil's Bit Scabious (*Succina praetensis*) is widespread in Donegal and was recorded in Wet Grassland (GS4) habitat during the ecological surveys undertaken for the proposed development. A survey for larval webs of Marsh Fritillary was undertaken in suitable habitat within the proposed development boundary on the 23rd September 2025 according to best practice guidance (TII, 2008b). This comprised the area to the southeast of St. Francis National School, in the Wet Grassland habitat dominated by Devil's Bit Scabious. No larval webs or evidence of Marsh Fritillary were found during the surveys carried out for the proposed development.

7.3.8.9 Freshwater Pearl Mussel

Freshwater pearl mussel surveys were undertaken by AtkinsRéalis from the 14th – 16th July 2025 under licence from the NPWS. As per the licence conditions, the surveys were limited to Stage 1 and Stage 2 visual surveys using a bathyscope while wading in an upstream direction in waders or a drysuit. The survey methodology used was in accordance with *Margaritifera margaritifera* Stage 1 and Stage 2 survey guidelines (Anon., 2004). The purpose of the Stage 1 surveys was to identify the presence or absence of freshwater pearl mussel or suitable habitat for this species and the purpose of the Stage 2 survey was to estimate the adult mussel population at and in the vicinity of each of the 18 survey sites. Subject to safe access and presence of suitable habitat, thorough searches for mussels were undertaken in transects across the rivers at 50m intervals, from 50m upstream to 150m downstream of 18 potential crossing points.

7.3.8.10 Fisheries Habitats

Ten watercourses where new culverts are proposed were surveyed for fisheries habitat potential. The surveys assessed for the quality of spawning, nursery and holding habitat for salmonids and Lamprey using the Life Cycle Unit (salmonids) and 'Ecology of the River, Brook and Sea Lamprey *Lampetra fluviatilis*, *L. planeri* and *Petromyzon marinus*' by Maitland (2003) and 'Monitoring the River, Brook and Sea Lamprey' by Harvey and Cowx (2003) for Lamprey. Features assessed include the channel and bank morphology, channel substrate composition, flow regime, water depth, riparian and instream vegetation, sedimentation, bank structure and modifications. There are 81 other culverts being installed in order to cross field drains and minor ditches. Fisheries habitat surveys were not undertaken at these locations, given their small size and the fact that they dry out.

7.3.8.11 Invasive Species

The presence of invasive alien species was recorded as part of the habitat survey. The ecologists had particular regard for invasive species subject to restrictions under Regulation 49 of the Habitats Regulations, including Himalayan Balsam (*Impatiens glandulifera*), Giant-rhubarb (*Gunnera sp.*), Japanese Knotweed (*Reynoutria japonica*), Bohemian Knotweed (*Reynoutria × bohemica*) and Rhododendron (*Rhododendron ponticum*). Other invasive species which can negatively impact biodiversity were also recorded. The distribution of recorded species was sketched on field maps and target notes were taken which detailed height, density, and any signs of previous management. The surveys were carried out between May – September 2024, which is inside the optimum survey period.

7.3.9 Difficulties Encountered / Limitations

Standard survey methods were followed, and no difficulties were encountered during the completion of the ecological surveys. However, any biases or limitations associated with these methods could potentially affect the results collected. While every effort was made to provide a full assessment and comprehensive description of the study area, ecological trends (e.g., population trends) may not be fully reflected due to the instantaneous/short-term nature of the field surveys. However, the data obtained from field surveys coupled with the desk study provides a robust representation of the baseline for the habitats and species within the Zone of Influence.

Private homes and gardens within the study areas were not surveyed, therefore protected species could be present in these areas. However, this is not considered significant as these areas will not be directly impacted by a development of this nature.

7.4 Assessment Methodology

The ecological evaluation and impact assessment methodology within this chapter follows the methodology that is set out in *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (TII, 2009) and *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3* (CIEEM, 2018).

7.4.1 Evaluation of Ecological Features

The criteria used for the ecological evaluation follow those set out in TII's guidelines (TII, 2009). The guidelines set out a list of features which should be considered for ecological evaluation such as designated sites, legally protected species, species on biodiversity lists, rare and red-listed species, and those which may play a key functional role in the ecosystem. These guidelines also set out that the importance of an ecological feature should be determined within a defined geographical context, with a hierarchy assigned in relation to the importance of any receptor. The scale below has been used to assign a level of geographic importance to each Key Ecological Receptor:

- International Importance.

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

The Guidelines set out the criteria by which each geographic level of importance can be assigned. For example, sites designated for conservation as part of the Natura 2000 network (SACs or SPAs) are assigned 'International Importance' as this reflects the geographic context for their designation. For legally protected species such as Otter which are protected under Annex II and Annex IV of the EU Habitats Directive, and nationally under the Wildlife Acts, the geographic context for importance should be assigned by considering the context of the population and conservation status. For example, if a group of Otter in a county are rare they may be assigned 'County Importance' or if they are widespread they may be assigned 'Local Importance (Higher Value)', but would not be considered a nationally important population. Locally Important (Low Value) receptors contain habitats and species that are widespread and of low ecological significance and only of importance in the local area. Features of local importance (Lower Value) and features of no ecological value are not considered to be Key Ecological Receptors and have not been considered in any extent in this assessment. The assessment presented in this Chapter does not consider any other type of environmental effects other than those on biological diversity (of flora and fauna). This Chapter quantifies the potential effects on identified Key Ecological Receptors and prescribes mitigation measures required to avoid and reduce any negative effects identified.

All habitats and species within the Zone of Influence and study area were assigned a level of significance on the above basis, and Key Ecological Receptors were established and classified on this basis.

7.4.2 Characterisation of Ecological Impacts

The impact assessment uses the TII (2009) guidelines, but also has regard to the EPA (2022) and CIEEM (2018) guidelines in relation to characterising the impact of the proposed development on the receiving environment. The parameters used to characterise ecological impacts are listed below. In the assessment, impacts are described in the relevant terms to the ecological feature being impacted and thus the relative significance can be determined. For example, the duration of a particular impact may vary depending on the life history of a species (short-lived vs long-lived species).

- Positive or negative - Positive and negative impacts and effects should be determined according to whether the change is in accordance with nature conservation objectives and policy;
- Extent - the spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions;
- Magnitude - refers to size, amount, intensity and volume of an impact;
- Duration - defined in relation to ecological characteristics;
- Frequency and timing - The number of times an activity occurs will influence the resulting effect. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons;
- Reversibility - an irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. It is necessary to ensure that any assessment of impacts takes account of the construction and operational phases; direct, indirect and cumulative impacts; and impacts that are temporary, reversible and irreversible.

Definitions of terms used when quantifying duration and frequency of effects are defined below, as per EPA (2022):

- Momentary – seconds to minutes.
- Brief – less than a day.
- Temporary – up to 1 year.

- Short-term – 1 to 7 years.
- Medium-term – 7 to 15 years.
- Long-term – 15 to 60 years.
- Permanent – over 60 years.
- Reversible – Can be undone, for example through remediation or restoration.

It is necessary to ensure that any assessment of impacts takes account of the construction and operational phases; direct, indirect and cumulative impacts; and impacts that are temporary, reversible and irreversible.

7.4.3 Assessing the Significance of Effects

The significance of effects was determined following guidelines set out in CIEEM (2018), whereby effects are assigned significance based on the characterisation of impacts, irrespective of the value of the receptor. Significance is determined by effects on conservation status or integrity, regardless of geographical level at which these would be relevant.

The criteria for assessing Quality, which is one of the most relevant criteria for the assessment of effects on biodiversity are defined in EPA (2022) and reproduced below in Table 7-3.

Table 7-3 - Criteria for assessing quality (EPA, 2022)

Quality	Criteria
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

7.4.4 Mitigation, Compensation and Enhancement

The proposed development has been designed to specifically avoid, reduce and/or minimise impacts on all Key Ecological Receptors. The potential impacts of the proposed development have been considered and assessed to ensure that all impacts on Key Ecological Receptors are adequately addressed. Where potential significant impacts on Key Ecological Receptors are predicted, mitigation has been prescribed to ameliorate such impacts. Proposed best practice and mitigation measures are specifically set out in this chapter and are realistic in terms of cost and practicality. Mitigation measures follow best practice and have a high probability of success in terms of addressing the impacts on the identified Key Ecological Receptors.

The need for compensation and/or enhancement measures has also been considered. Compensatory measures are those which 'offset' significant residual (post-mitigation) impacts. Enhancement measures are those which "*seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation*" (CIEEM, 2018 p. 12).

7.5 Receiving Environment (Desk Study Results)

7.5.1 General Description and Context

The proposed development is located in County Donegal, commencing from Donegal town through to the twin towns Ballybofey/Stranorlar. The proposed development will run predominantly along the abandoned West Donegal railway line (undesignated) and through

the area known as Barnesmore Gap, a scenic glacial valley located within the 'Bluestack Mountains' forming the main mountain pass between north and south Donegal, joining the settlements of Donegal Town and Ballybofey/Stranorlar. The overall length of the Barnesmore Gap Greenway is approximately 30km, with a further 7.5km of spurs and loops which provide additional connectivity and integration to surrounding amenities and active travel routes.

In some areas, the railway has been subsumed into the surrounding fields, whereas in other areas it is relatively intact, with embankments, treelines, stone walls and fencing marking the original railway boundaries. In many areas, the disused railway line is used for farm access. The proposed greenway leaves Donegal town and follows the River Eske valley through agricultural grassland before splitting, with one section travelling through fields on the south side of the River Eske, and the other forming the Lough Eske Loop. The loop will involve the construction of a new clear span bridge across the River Eske before the route travels through Ardnamona Wood.

Ardnamona wood is a mixed woodland that includes semi-natural woodland, conifer plantation and felled areas. Parts of it are listed on the NPWS database of 'ancient and long-established woodland', meaning the areas has been woodland continuously since the 19th century. Lough Eske, the River Eske and parts of Ardnamona Wood are designated as the 'Lough Eske and Ardnamona Wood SAC', which is designated for lake and woodland habitats, tufa springs, Salmon, Freshwater Pearl Mussel and Killarney Fern. The route will then cross the River Eske on the existing bridge before rejoining the main route of the greenway.

The route then passes close to St. Francis National School before travelling north-east through the Barnesmore Gap. At this point the area surrounding the route becomes more upland in character with open heath and bog habitats dominating the landscape. The route follows the gap through Croaghonagh Bog on the disused railway line and passes between Lough Mourne and the N15. Croaghonagh Bog is an SAC is designated Blanket Bog. The route then enters an area of conifer plantation, using the disused railway line and forest roads. The landscape then becomes predominantly farmland again, with pockets of immature woodland and scrub. At the point the area becomes more built up as the route enters the outskirts of Ballybofey. The route crosses the River Finn on a new deck which will be fitted to the original railway bridge piers, before terminating in Stranorlar. The River Finn is designated as an SAC designated for lake and peatland habitats, Otter and Salmon.

Drawings of the general arrangement are presented in drawings 60701883-ACM-HGN-SW_ZZ_ZZ_ZZ-DR-HG-0096-0125 in Volume 3 of this EIAR. The site is hydrologically connected to Donegal Bay and the River Foyle, which have a number of designations for nature conservation, including SACs and SPAs. The site of the proposed development is important for biodiversity, as it runs adjacent to designated bogs and loughs, EPA watercourses and functions as an ecological corridor linking saltwater and freshwater habitats. The site also supports species listed on Annex II and IV of the Habitats Directive.

7.5.2 European Designated Sites

The NPWS online map viewer and the NIEA map viewer were used to identify the boundaries of designated sites within the Zone of Influence.

There are 15 European sites (SAC/SPA) within the Zone of Influence. Table 7-4 lists these sites and describes how these sites are connected to the proposed development.

(Appendix 7.1 in Volume 4 of this EIAR presents the site descriptions as described by NPWS and NIEA, and drawings 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-EN-0719 - 0720 in Volume 3 presents the designated sites and the Zone of Influence).

Table 7-4 - European Designated sites located within the Zone of Influence

European site [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
Special Areas of Conservation (SAC)	
Donegal Bay (Murvagh) SAC [000133]	Yes. The proposed development is located at least 1.5km upstream of this European site via the River Eske and 369m northwest as the crow flies.

European site [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
	Due to the hydrological connection between the proposed development and this European site, there is a potential pathway for impacts to this European site.
Lough Eske and Ardnamona Wood SAC [000163]	Yes. The proposed development is located within the boundary of this European site and two new watercourse crossings are proposed within this European site. Due to the overlapping boundaries of the proposed development and this European site, there is a potential pathway for impacts to this European site.
Croaghonagh Bog SAC [000129]	Yes. The proposed development is located immediately adjacent to this European site. Due to the proximity between the proposed development and this European site, there is a potential pathway for impacts to this European site.
River Finn SAC [002301]	Yes. The proposed development is located within the boundary of this European site and a new watercourse crossing over the River Finn is proposed. Due to the overlapping boundaries of the proposed development and this European site, there is a potential pathway for impacts to this European site.
Cloghernagore Bog and Glenveagh National Park SAC [002047]	Yes. The proposed development is located at least 21.2km southeast and 30.1km downstream of this European site. This European site is designated for terrestrial habitats and species as well as mobile aquatic species that have the potential to use watercourses crossed by the proposed development, including the River Finn. While this nature of the proposed development will not directly affect upstream or terrestrial habitats, mobile species which are Qualifying Interests of this European site may be present in the vicinity or downstream of the proposed development works. Therefore, there is a potential pathway for impacts to this European site.
Meentygrannagh Bog SAC [000173]	No. The proposed development is located at least 16.6km southeast of this European site. This European site is designated for terrestrial peatland habitats. The proposed development is located in a different subcatchment to this European site. Therefore, given the nature of the Qualifying Interests for which this site is designated, there are no pathways for impacts to this European site.
River Foyle and Tributaries SAC [UK0030320]	Yes. The proposed development is located at least 18.3 km upstream of this European site via the River Finn and 14.4km west as the crow flies. Due to the hydrological connection between the proposed development and this European site, there is a potential pathway for impacts to this European site.
Special Protection Areas (SPA)	
Donegal Bay SPA [004151]	Yes. The proposed development is located at least 367m northeast and 1.5km upstream of this European site. Due to the hydrological connection via the River Eske between the proposed development and this European site, there is a potential pathway for impacts to this European site.
Lough Swilly SPA [004075]	Yes. The proposed development is located at least 18.1km south of this European site. This is within the maximum core foraging range for some of the Qualifying Interests for which this site is designated. Therefore, given the distance, there is an ex-situ pathway for impact to this European site.
Derryveagh and Glendowan Mountains SPA [4039]	No. The proposed development is located at least 18.2km southeast of this European site. This is outside the maximum core foraging range for all of the Qualifying Interests for which this site is designated. Therefore, given the distance, there are no pathways for impact to this European site.
Lough Nillan Bog SPA [004110]	Yes. The proposed development is located at least 10.5km southeast of this European site. This is within the maximum core foraging range for some of the Qualifying Interests for which this site is designated.

European site [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
	Therefore, given the distance, there is an ex-situ pathway for impact to this European site.
Durnesh Lough SPA [004145]	No. The proposed development is located at least 9.5km northeast of this European site. This is outside the maximum core foraging range for all of the Qualifying Interests for which this site is designated. Therefore, given the distance, there are no pathways for impact to this European site.
Pettigo Plateau Nature Reserve SPA [004099]	Yes. The proposed development is located at least 7.5km northwest of this European site. This is within the maximum core foraging range for the Qualifying Interests for which this site is designated. Therefore, given the distance, there is an ex-situ pathway for impact to this European site.
Lough Derg (Donegal) SPA [004057]	Yes. The proposed development is located at least 9.2km northwest of this European site. This is within the maximum core foraging ranges for all the Qualifying Interests for which this site is designated. Therefore, given the distance, there is an ex-situ pathway for impact to this European site.
Pettigo Plateau SPA [UK9020051]	No. The proposed development is located at least 14.1km northwest of this European site. This is outside the maximum core foraging range for the Qualifying Interest for which this site is designated. Therefore, given the distance, there are no pathways for impact to this European site.

7.5.3 Nationally Designated Sites

There are five National Heritage Areas (NHAs), twenty-four Proposed National Heritage Areas (pNHAs) and nine Areas of Special Scientific Interest (ASSIs) within the Zone of Influence. The table below (Table 7-5) provides the list of designated sites, the distances from the proposed development and the potential pathway for impacts for each site.

Table 7-5 - Nationally designated sites within the Zone of Influence.

Nationally designated sites [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
National Heritage Areas (NHA)	
Barnesmore Bog NHA [002375]	The proposed development runs along the northwestern edge of this designated site boundary. Given the proximity to this site, there is a potential pathway for negative effects between the proposed development and this site.
Meenagarranroe Bog NHA [002437]	The proposed development is 500 m north of this designated site. Given the proximity to this site, there is a potential pathway for negative effects between the proposed development and this site.
Lough Hill Bog NHA [002452]	The proposed development is located 530 m north of this site and is hydrologically connected via a tributary of the Burn Daurnett river. Due to this, there is a potential pathway for water quality impacts downstream to this site.
Cashelnavean Bog NHA [000122]	The proposed development is located 30 m from the boundary of this designated site. Given the proximity to this site, there is a potential pathway for negative effects between the proposed development and this site.
Lough Fad Bog NHA [001159]	The proposed development is located 12.4 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Proposed National Heritage Areas (pNHA)	
Ballintra pNHA [000115]	The proposed development is located 10 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.

Nationally designated sites [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
Carricknahorna Lough And Lough Gorman pNHA [002068]	The proposed development is located 21.7 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Croaghonagh Bog pNHA [000129]	The proposed development is located adjacent to the boundary of this designated site. Given the proximity to this site, there is a potential pathway for negative effects between the proposed development and this site.
Donegal Bay (Murvagh) pNHA [000133]	The western extent of the proposed development is 380 m from this site and is 770 m upstream of this site. This hydrological connection is a potential pathway for negative effects between the proposed development and this site.
Dunragh Loughs/Pettigo Plateau pNHA [001125]	The proposed development is located 6.2 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Durnesh Lough pNHA [000138]	The proposed development is located 9.3 east km from this site. This hydrological connection is a potential pathway for negative effects between the proposed development and this site.
Erne Estuary/Finner Dunes pNHA [000139]	The proposed development is located 18.2 km northeast of this designated site. This hydrological connection is a potential pathway for negative effects between the proposed development and this site.
Feddyglass Woods pNHA [001129]	The proposed development is located 18.6 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Leannan Valley Woods pNHA [001155]	The proposed development is located 19.6 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Lough Derg (Donegal) pNHA [000162]	The proposed development is located 9.8 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Lough Eske And Ardnamona Wood pNHA [000163]	The proposed development is within the boundary of this site and will require three watercourse crossings over watercourses that feed into the lough. This hydrological connection is a potential pathway for negative effects between the proposed development and this site.
Lough Finn pNHA [001163]	The proposed development is located 17.8 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Lough Nillan Bog (Carrickatlieve) pNHA [000165]	The proposed development is located 11.9 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Lough Swilly Including Big Isle, Blanket Nook & Inch Lake pNHA [000166]	The proposed development is located 16.9 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Meenaguse Scragh pNHA [001880]	The proposed development is located 9.5 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Meenaguse / Ardbane Bog pNHA [000172]	The proposed development is located 7.1 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
Meentygrannagh Bog pNHA [000173]	The proposed development is located 16.1 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.

Nationally designated sites [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
Owendoo And Cloghervaddy Bogs pNHA [002046]	The proposed development is located 4.6 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
River Swilly Valley Woods pNHA [002011]	The proposed development is located 13.2 km south of this designated site. There is no pathway for negative effects between the proposed development and this site.
St. John's Point pNHA [000191]	The proposed development is located 19.6 km east of this designated site. This hydrologically connectivity is a potential pathway for negative effects between the proposed development and this site.
Tamur Bog pNHA [001992]	The proposed development is located 10.8 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Tullytresna Bog pNHA [001870]	The proposed development is located 11.1 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
West Of Ardara / Maas Road pNHA [000197]	The proposed development is located 20.3 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Cloghernagore Bog and Glenveagh National Park pNHA [002047]	The proposed development is located 21.2 km southeast of this designated site and 30.1km downstream via the River Finn. This hydrological connection is a potential pathway for negative effects between the proposed development and this site.
Areas of Special Scientific Interest (NI)	
Croagh Bog [ASSI378]	The proposed development is located 5.1 km west of this designated site. There is no pathway for negative effects between the proposed development and this site.
Essen Burn and Mullyfamore [ASSI134]	The proposed development is located 9.6 km west of this designated site. There is no pathway for negative effects between the proposed development and this site.
Killeter Forest and Bogs and Lakes [ASSI357]	The proposed development is located 3.2 km west of this designated site. There is no pathway for negative effects between the proposed development and this site.
Lough Scolban [ASSI247]	The proposed development is 19.3 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Magheramenagh [ASSI119]	The proposed development is located 20.4 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Moneygal Bog [ASSI005]	The proposed development is located 11.4 km west of this designated site. There is no pathway for negative effects between the proposed development and this site.
Moneygal Bog Part II [ASSI209]	The proposed development is located 10.4 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Pettigo Plateau [ASSI065]	The proposed development is located 14.1 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.
Larkhill [ASSI326]	The proposed development is located 16.6 km north of this designated site. There is no pathway for negative effects between the proposed development and this site.

Nationally designated sites [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
River Foyle and Tributaries [ASSI229]	The proposed development is located 14.3 km west of this designated site. There is hydrological connectivity between the proposed development and this site.

7.5.4 Other Designated Sites

Other designated sites including the Pettigo Plateau Ramsar site, the Ardnamona Wood Nature Reserve and the Pettigo Plateau Nature Reserve have connectivity to the proposed development, as described in Table 7-6.

Table 7-6 - Other designated sites within the Zone of Influence.

Designated sites [site code]	Are there potential pathways for impacts from the proposed development to this site? Explain.
Pettigo Plateau Ramsar site [334]	The proposed development is 9km northwest of this Ramsar site. Given the species for which this site is designated, there are potential for ex-situ impacts to this site as a result of the proposed development.
Ardnamona Wood Nature Reserve	The proposed development runs through the southern part of this Nature Reserve. Given the proximity to this site, there is a potential pathway for negative effects between the proposed development and this site.
Pettigo Plateau Nature Reserve	The proposed development is 9km northwest of this Nature Reserve. Given the species for which this site is designated, there are potential for ex-situ impacts to this site as a result of the proposed development.

Habitats and species under the designated sites listed in Section 7.5.2, 7.5.3 and 7.5.4 have been considered under **KER 1: Woodlands Treelines and Hedgerows, KER 2: Aquatic Ecosystems and Associated Fauna, KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines, KER 5: Otter and KER: 9 Birds.**

7.5.5 Rare and Protected Species

This section lists the rare and protected species of flora and fauna recorded in the desk study.

National Parks & Wildlife Service Data

Records of rare and protected species from within the 10km grid squares G97, G98, H08, H09 and H19 were provided by the NPWS in May 2025 and are listed in Table 7-7 below.

Table 7-7 - Records for rare and protected species. Source: NPWS (2025h).

Common Name	Scientific Name	Status*
Mammals		
Badger	<i>Meles meles</i>	WA
Brown Long-eared Bat	<i>Plecotus auritus</i>	WA; HD IV
Grey Seal	<i>Halichoerus grypus</i>	WA; HD II, V
Harbour Seal	<i>Phoca vitulina</i>	WA; HD II, V
Hedgehog	<i>Erinaceus europaeus</i>	WA
Irish Hare	<i>Lepus timidus</i> subsp. <i>hibernicus</i>	WA; HD V
Irish Stoat	<i>Mustela erminea</i> subsp. <i>hibernica</i>	WA
Pine Marten	<i>Martes martes</i>	WA; HD V
Red Deer	<i>Cervus elaphus</i>	WA

Common Name	Scientific Name	Status*
Red Squirrel	<i>Sciurus vulgaris</i>	WA
Otter	<i>Lutra lutra</i>	WA; HD IV
Amphibians and Reptiles		
Common Frog	<i>Rana temporaria</i>	WA; HD V
Fisheries and Aquatic Fauna		
Freshwater Pearl Mussel	<i>Margaritifera margaritifera</i>	WA; HD II, V
Invertebrates		
Marsh Fritillary	<i>Eurodryas aurinia</i>	HD II
Flora		
Globeflower	<i>Trollius europaeus</i>	FPO
Heath Cudweed	<i>Omalotheca sylvatica</i>	FPO
Irish Hawkweed	<i>Hieracium hibernicum</i>	FPO
Killarney Fern	<i>Vandenboschia speciosum</i>	FPO
Marsh Clubmoss	<i>Lycopodiella inundata</i>	FPO
Narrow-leaved Helleborine	<i>Cephalanthera longifolia</i>	FPO
Shade Horsetail	<i>Equisetum pratense</i>	FPO
Small-white Orchid	<i>Pseudorchis albida</i>	FPO

*Status (listing conferring protection or describing conservation status) abbreviations: Annex II/IV/V (non-avian species) = Habitats Directive (HD); WA = Wildlife Act, 1976 (as amended); FPO = Flora (Protection) Order, 2022.

Flora Protection Order

Records on the NPWS Flora (Protection) Order 2022 map viewer within 2km of the proposed development database for a number of flora species listed on the Flora (Protection) Order 2022 were identified within 2km of the proposed development (Table 7-8 below). A search of the NBDC's online biodiversity database returned no records of species on the Flora (Protection) Order, 2022) in the proposed development boundary.

Table 7-8 - Species on the Flora (Protection) Order, 2022 recorded within 2km of the proposed development

Common Name	Scientific name	Most recent record	Grid square
Globeflower	<i>Trollius europaeus</i>	1898	H09
Heath Cudweed	<i>Omalotheca sylvatica</i>	1898	G98, H19
Irish Hawkweed	<i>Hieracium hibernicum</i>	1954	G97
Killarney Fern	<i>Vandenboschia speciosum</i>	2022	G98
Marsh Clubmoss	<i>Lycopodiella inundata</i>	1985	G98
Narrow-leaved Helleborine	<i>Cephalanthera longifolia</i>	2022	G98
Shade Horsetail	<i>Equisetum pratense</i>	1864	G98
Small-white Orchid	<i>Pseudorchis albida</i>	1898	G98

National Biodiversity Data Centre Database

Table 7-9 lists the rare and protected species records obtained from the NBDC in October 2025 for the 10km grid squares covering the proposed development. To avoid replication, all records of species represented in the NPWS dataset have been removed from the displayed NBDC data. Only those bird species which are listed on Annex I to the Birds Directive and/or are Amber- or Red-listed Birds of Conservation Concern in Ireland (BoCCI) 2020- 2026, and/or are raptors have been listed here. Table 7-10 lists the invasive species recorded within the 2km grid squares covering the proposed development.

Table 7-9 - Records for rare and protected species within the 10km grid squares encompassing the proposed development. Source: NBDC (2025).

Common Name	Scientific Name	Status*
Mammals		
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	WA; HD IV
Daubenton's Bat	<i>Myotis daubentonii</i>	WA; HD IV
Leisler's Bat	<i>Nyctalus leisleri</i>	WA; HD IV
Nathusius's Pipistrelle	<i>Pipistrellus nathusii</i>	WA; HD IV
Natterer's Bat	<i>Myotis nattereri</i>	WA; HD IV
Pygmy Shrew	<i>Sorex minutus</i>	WA
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	WA; HD IV
Whiskered Bat	<i>Myotis mystacinus</i>	WA; HD IV
Amphibians and Reptiles		
Common Lizard	<i>Zootoca vivipara</i>	WA; HD V
Fisheries and Aquatic Fauna		
Atlantic Salmon	<i>Salmo salar</i>	HD II, V
European Eel	<i>Anguilla anguilla</i>	OSPAR Convention
White-clawed Crayfish	<i>Austropotamobius pallipes</i>	WA; HD II, V
Flora		
Acute-leaved Bog-moss	<i>Sphagnum capillifolium</i>	HD V
Alpine Clubmoss	<i>Diphasiastrum alpinum</i>	HD V
Blunt-leaved Bog-moss	<i>Sphagnum palustre</i>	HD V
Braided Frostwort	<i>Gymnomitrium concinnum</i>	FPO
Compact Bog-moss	<i>Sphagnum compactum</i>	HD V
Cow-horn Bog-moss	<i>Sphagnum auriculatum</i>	HD V
Feathery Bog-moss	<i>Sphagnum cuspidatum</i>	HD V
Fir Clubmoss	<i>Huperzia selago</i>	HD V
Five-ranked Bog-moss	<i>Sphagnum quinquefarium</i>	HD V
Flat-topped Bog-moss	<i>Sphagnum fallax</i>	HD V
Fringed Bog-moss	<i>Sphagnum fimbriatum</i>	HD V
Large White-moss	<i>Leucobryum glaucum</i>	HD V

Common Name	Scientific Name	Status*
Lesser Cow-horn Bog-moss	<i>Sphagnum inundatum</i>	HD V
Pale Bog-moss	<i>Sphagnum strictum</i>	HD V
Papillose Bog-moss	<i>Sphagnum papillosum</i>	HD V
Red Bog-moss	<i>Sphagnum rubellum</i>	HD V
Slender Cow-horn Bog-moss	<i>Sphagnum subsecundum</i>	HD V
Soft Bog-moss	<i>Sphagnum tenellum</i>	HD V
<i>Sphagnum</i> sp.	<i>Sphagnum beothuk</i>	HD V
<i>Sphagnum</i> sp.	<i>Sphagnum subnitens</i> subsp. <i>subnitens</i>	HD V
Stag's-horn Clubmoss	<i>Lycopodium clavatum</i>	HD V
Birds		
Barn Owl	<i>Tyto alba</i>	Red
Bar-tailed Godwit	<i>Limosa lapponica</i>	EU BD I; Red
Black Guillemot	<i>Cephus grylle</i>	Amber
Black-headed Gull	<i>Larus ridibundus</i>	Amber
Brambling	<i>Fringilla montifringilla</i>	Amber
Common Gull	<i>Larus canus</i>	Amber
Common Sandpiper	<i>Actitis hypoleucos</i>	Amber
Common Tern	<i>Sterna hirundo</i>	EU BD I; Amber
Coot	<i>Fulica atra</i>	Amber
Cormorant	<i>Phalacrocorax carbo</i>	Amber
Corncrake	<i>Crex crex</i>	EU BD I; Red
Curlew	<i>Numenius arquata</i>	Red
Dunlin	<i>Calidris alpina</i>	Red
Goldcrest	<i>Regulus regulus</i>	Amber
Golden Eagle	<i>Aquila chrysaetos</i>	EU BD I; Red
Golden Plover	<i>Pluvialis apricaria</i>	EU BD I; Red
Goldeneye	<i>Bucephala clangula</i>	Red
Great Crested Grebe	<i>Podiceps cristatus</i>	Amber
Great Northern Diver	<i>Gavia immer</i>	EU BD I; Amber
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Green
Greenfinch	<i>Chloris chloris</i>	Amber
Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>	EU BD I; Amber
Grey Wagtail	<i>Motacilla cinerea</i>	Red
Hen Harrier	<i>Circus cyaneus</i>	EU BD I; Amber
Herring Gull	<i>Larus argentatus</i>	Amber

Common Name	Scientific Name	Status*
House Martin	<i>Delichon urbicum</i>	Amber
House Sparrow	<i>Passer domesticus</i>	Amber
Kestrel	<i>Falco tinnunculus</i>	Red
Kingfisher	<i>Alcedo atthis</i>	EU BD I; Amber
Knot	<i>Calidris canutus</i>	Red
Lapwing	<i>Vanellus vanellus</i>	Red
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber
Light-bellied Brent Goose	<i>Branta bernicla hrota</i>	Amber
Linnet	<i>Linaria cannabina</i>	Amber
Little Egret	<i>Egretta garzetta</i>	EU BD I; Green
Little Grebe	<i>Tachybaptus ruficollis</i>	Green
Little Gull	<i>Hydrocoloeus minutus</i>	EU BD I; Amber
Mallard	<i>Anas platyrhynchos</i>	Amber
Meadow Pipit	<i>Anthus pratensis</i>	Red
Merlin	<i>Falco columbarius</i>	EU BD I; Amber
Mistle Thrush	<i>Turdus viscivorus</i>	Green
Mute Swan	<i>Cygnus olor</i>	Amber
Nightjar	<i>Caprimulgus europaeus</i>	EU BD I; Red
Oystercatcher	<i>Haematopus ostralegus</i>	Red
Peregrine	<i>Falco peregrinus</i>	EU BD I; Green
Pintail	<i>Anas acuta</i>	Amber
Pochard	<i>Aythya ferina</i>	Red
Red Grouse	<i>Lagopus lagopus</i>	Red
Red-breasted Merganser	<i>Mergus serrator</i>	Amber
Redshank	<i>Tringa totanus</i>	Red
Red-throated Diver	<i>Gavia stellata</i>	EU BD I; Amber
Redwing	<i>Turdus iliacus</i>	Red
Ring Ouzel	<i>Turdus torquatus</i>	Red
Ringed Plover	<i>Charadrius hiaticula</i>	Amber
Robin	<i>Erithacus rubecula</i>	Green
Rock Dove	<i>Columba livia</i>	Green
Sand Martin	<i>Riparia riparia</i>	Amber
Shag	<i>Gulosus aristotelis</i>	Amber
Shelduck	<i>Tadorna tadorna</i>	Amber
Skylark	<i>Alauda arvensis</i>	Amber

Common Name	Scientific Name	Status*
Snipe	<i>Gallinago gallinago</i>	Red
Sparrowhawk	<i>Accipiter nisus</i>	Green
Spotted Flycatcher	<i>Muscicapa striata</i>	Amber
Starling	<i>Sturnus vulgaris</i>	Amber
Stock Dove	<i>Columba oenas</i>	Red
Stonechat	<i>Saxicola rubicola</i>	Green
Swallow	<i>Hirundo rustica</i>	Amber
Swift	<i>Apus apus</i>	Red
Teal	<i>Anas crecca</i>	Amber
Tree Sparrow	<i>Passer montanus</i>	Amber
Tufted Duck	<i>Aythya fuligula</i>	Amber
Turnstone	<i>Arenaria interpres</i>	Amber
Wheatear	<i>Oenanthe oenanthe</i>	Amber
Whinchat	<i>Saxicola rubetra</i>	Red
Whooper Swan	<i>Cygnus cygnus</i>	EU BD I; Amber
Wigeon	<i>Mareca penelope</i>	Amber
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber
Wood Sandpiper	<i>Tringa glareola</i>	EU BD I; Amber
Woodcock	<i>Scolopax rusticola</i>	Red
Yellowhammer	<i>Emberiza citrinella</i>	Red

*Status (listing conferring protection or describing conservation status) abbreviations: Annex II/IV/V (non-avian species) = Habitats Directive (HD); Annex I = Birds Directive (BD); WA = Wildlife Acts and Red/Amber = Birds of Conservation Concern in Ireland 2020-2026 (Gilbert et al., 2021).

Table 7-10 - Records for Invasive Alien Species within the 2km grid squares encompassing the proposed development. Source: NBDC (2025).

Common Name	Scientific Name
American Mink	<i>Mustela vison</i>
Canada Goose	<i>Branta canadensis</i>
Canadian Waterweed	<i>Elodea canadensis</i>
Cherry Laurel	<i>Prunus laurocerasus</i>
Fallow Deer	<i>Dama dama</i>
Giant Hogweed	<i>Heracleum mantegazzianum</i>
Grey Squirrel	<i>Sciurus carolinensis</i>
Himalayan Balsam	<i>Impatiens glandulifera</i>
Himalayan Knotweed	<i>Persicaria wallichii</i>
Japanese Knotweed	<i>Reynoutria japonica</i>

Common Name	Scientific Name
Jenkin's Spire snail	<i>Potamopyrgus antipodarum</i>
New Zealand Flatworm	<i>Arthurdendyus triangulatus</i>
Nuttall's Waterweed	<i>Elodea nuttallii</i>
Rhododendron	<i>Rhododendron ponticum</i>
Sika Deer	<i>Cervus nippon</i>

Birds

Irish Wetland Bird Survey (I-WeBS) data for three sites hydrologically connected to the proposed development, namely Donegal Bay [0A405] and the River Foyle [0A301] sites were reviewed as part of the desk study (BWI, 2025; Burke et al., 2025).

According to the grid references provided by I-WeBS, these sites are located 6.9km southwest, 53.6km northeast and 24.9km northeast, respectively, of the proposed development.

These sites are used by large numbers of wintering birds, including nationally important numbers of Mute Swan (0A405; 0A301), Whooper Swan (0A405; 0A301), Light-bellied Brent Goose (0A405), Greenland White-fronted Goose (0A301), Greylag Goose (0A301), Wigeon (0A405), Mallard (0A405), Eider (0A405; 0A408), Common Scoter (0A405), Goldeneye (0A405; 0A301), Red-breasted Merganser (0A405; 0A408), Great Northern Diver (0A405), Little Grebe (0A405), Great Crested Grebe (0A405; 0A408), Cormorant (0A405), Little Egret (0A405), Grey Heron (0A405), Oystercatcher (0A405), Ringed Plover (0A405), Sanderling (0A405), Curlew (0A405; 0A301), Teal (0A301), Turnstone (0A405) and Lapwing (0A301).

Consultations with the NPWS also highlighted the presence of White-tailed Sea Eagle (*Haliaeetus albicilla*) in the vicinity of Lough Eske. The project team attempted to obtain the records of nesting raptors from as part of the desk study, however the information was not available. The disturbance buffer zone for White-tailed Sea Eagle is considered to be 500-1000m during the breeding season and 250-500m during the non-breeding season (Goodship and Furness, 2022). Further consultation with the NPWS in April 2026 suggests that the proposed development is not located within disturbance distance of any known White-tailed Sea Eagle nesting sites.

Fish species

A search of IFI's online open data portal (IFI, 2025) returned records of numerous fish species in watercourses connected to the proposed development, namely the Inner Donegal Bay and Lough Eske. Species recorded in these waterbodies are presented below in Table 7-11. The WFD Fish Ecological status at Inner Donegal Bay and Lough Eske was classified as 'good', and 'high', respectively.

Table 7-11 - Fish species recorded in waterbodies connected to the proposed development (IFI, 2025).

Common Name	Scientific Name	Inner Donegal Bay	Lough Eske
Arctic char	<i>Salvelinus alpinus</i>		X
Brill	<i>Scophthalmus rhombus</i>	X	
Brown trout	<i>Salmo trutta</i>		X
Coalfish / Pollock	<i>Pollachius virens</i>	X	
Atlantic Cod	<i>Gadus morhua</i>	X	
Deep-snouted pipefish	<i>Syngnathus typhle</i>	X	
European eel	<i>Anguilla anguilla</i>		X

Common Name	Scientific Name	Inner Donegal Bay	Lough Eske
Fifteen-spined stickleback	<i>Spinachia</i>	X	
Fivebeard rockling	<i>Ciliata mustela</i>	X	
European Flounder	<i>Platichthys flesus</i>	X	
Greater Pipefish	<i>Syngnathus acus</i>	X	
Greater sandeel	<i>Hyperoplus lanceolatus</i>	X	
Gunnel	<i>Pholis gunnellus</i>	X	
Lesser sandeel	<i>Ammodytes tobianus</i>	X	
Long-spined sea scorpion	<i>Taurulus bubalis</i>	X	
European Plaice	<i>Pleuronectes platessa</i>	X	
Pogge	<i>Agonus cataphractus</i>	X	
Pollock	<i>Pollachius pollachius</i>	X	
Poor cod	<i>Trisopterus minutus</i>	X	
Rock goby	<i>Gobius paganellus</i>	X	
Salmon	<i>Salmo salar</i>		X
Sand goby	<i>Pomatoschistus minutus</i>	X	
Sea trout	<i>Salmo trutta</i>	X	X
Three-spined stickleback	<i>Gasterosteus aculeatus</i>		X

The River Finn is a designated “Salmonid Water” under the European Union’s (Quality of Salmonid Waters) Regulations, 1988.

IFI recorded six species of fish in Lough Eske as part of the National Research Survey Programme for Lakes 2022. This included brown trout (*Salmo trutta*), Arctic char (*Salvelinus alpinus*), European eel (*Anguilla Anguilla*), three-spined stickleback (*Gasterosteus aculeatus*), sea trout (*Salmo trutta*) and salmon (*Salmo salar*).

European eel has also been recorded in the Clogher (Donegal) watercourse.

Fish are vulnerable to accidental pollution and disturbance. **Accordingly, Fish have been considered under KER 2: Aquatic Ecosystems and Associated Fauna.**

Freshwater Pearl Mussel

The distribution of Freshwater Pearl Mussel in the River Eske stretches from Lough Eske to the end of the freshwater extent of the River Eske in Donegal town. This species is highly threatened and critically endangered in Ireland and across Europe. The species’ poor conservation status and severe declines have resulted from habitat deterioration, including a combination of hydrological and morphological changes, sedimentation and enrichment. Riverbeds have become so clogged with silt, algae and rooted plants that young mussels can no longer survive. In many rivers, adult mussels have become stressed and are prematurely dying due to habitat deterioration (NPWS, 2025g).

A desk study (EcoFACT, 2024) aims to identify records of Freshwater Pearl Mussel within the relevant river catchments, and to assess the potential for this species to occur in the watercourses that have the potential to be impacted by the proposed development. For the Eske sub-catchment (SC_010), Freshwater Pearl Mussel have been recorded in the River Eske from Lough Eske to the estuarine limits at Donegal Town. However they are largely

absent in the tributaries of the River Eske, which are typically made up of eroding, mountainous rivers and streams. There are no records of Freshwater Pearl Mussel in the Mourne Beg sub-catchment (SC_010). Given historic records, Freshwater Pearl Mussel may still be present in the lower Foyle catchment, however this population is likely not reproducing, and is functionally extinct. Similarly, for the Mourne Beg sub-catchment (SC_040), Freshwater Pearl Mussel are largely absent, however it is noted in the desk study that given historic records and the large size of the River Finn, a small population may still be present.

EPA and WFD Watercourse Assessments

The Water Framework Directive (WFD) requires that each EU Member State protects and improves water quality in all waters so that good ecological status is achieved. Additionally, proposed actions (within discrete River Basin Management Plans) are also required, to secure national natural water resources for the future. The Environmental Protection Agency (EPA) is the public authority responsible for monitoring, protecting and improving the water environment in Ireland. In accordance with WFD guidelines, water quality 'Status' is assigned using a variety of available data on aquatic flora and fauna (including fish), the availability of nutrients, and aspects like salinity, temperature and pollution by chemical pollutants. Morphological features, such as quantity, water flow, water depths and structures of the riverbeds, are also taken into account.

The EPA assesses the overall ecological health of a water body by monitoring a range of biological elements which can tell how good the water quality and habitat condition is. The river biological quality indicator is based on the Q-value for macroinvertebrates. Changes in Q-value are generally indicative of changes in overall river ecological status. The lake indicator is based on the biological elements; fish, macroinvertebrates, aquatic plants, phytobenthos and phytoplankton. The EPA undertakes a full assessment of the overall quality and ecological status of Ireland's waters every three years. A review of both the WFD status and Ecological status for the watercourses was undertaken.

The online EPA Unified GIS Application provides access to information at individual waterbody level and at Water Management Unit level for all the River Basin Districts in Ireland. Waterbodies can relate to surface waters (these include rivers, lakes, estuaries [transitional waters], and coastal waters) or to groundwater. The EPA is responsible for monitoring the quality of all waterbodies in Ireland and these results are available online. The current statuses for the waterbodies connected to the proposed development are presented in Table 7-12. The 'Poor' and 'Moderate' statuses of the waterbodies are indicated to be as a result of poor Phytoplankton and Macroinvertebrate Status, respectively as per the EPA Catchments website.

Watercourses are covered under 'KER 2: Aquatic Ecosystems and Associated Fauna' as a Key Ecological Receptor.

Table 7-12 - EPA Water Quality Results

Waterbody	WFD Status 2013 – 2018	WFD Status 2016 – 2021	WFD Status 2019 – 2024	Ecological Status 2013 – 2018	Ecological Status 2016 – 2021	Ecological Status 2019 – 2024
Rivers						
BURN DAURNETT_010	Poor	Moderate	Moderate	Poor	Moderate	Moderate
CLOGHER (DONEGAL)_010	Good	Good	Moderate	Good	Good	Moderate
Drummeny_010	Good	Good	Good	Good	Good	Good
ESKE_010	Good	Good	Good	Good	Good	Good
ESKE_020	Good	Good	Good	Good	Good	Good
FINN (DONEGAL)_060	Poor	Poor	Good	Poor	Poor	Good
LOWERYMORE_010	Good	Moderate	Moderate	Good	Moderate	Moderate
LOWERYMORE_020	High	High	High	High	High	High
LOWERYMORE_030	High	High	High	High	High	High
MOURNE BEG_010	Poor	Poor	Poor	Poor	Poor	Poor
Lakes						
Lough Eske	Good	Good	Good	Good	Good	Good
Lough Mourne DL	Good	Good	Good	Good	Good	Good
Unnamed [Code: 37_25]	Unassigned	Unassigned	Unassigned	Unassigned	Unassigned	Unassigned
Transitional Waterbodies						
Inner Donegal Bay	Good	Good	Good	Good	Good	Good
Foyle and Faughan Estuaries	Moderate	Unassigned	Unassigned	Moderate	Unassigned	Unassigned
Groundwater						
Donegal-Ballintra	Good	Good	Good	n/a	n/a	n/a
Donegal South	Good	Good	Good	n/a	n/a	n/a

Waterbody	WFD Status 2013 – 2018	WFD Status 2016 – 2021	WFD Status 2019 – 2024	Ecological Status 2013 – 2018	Ecological Status 2016 – 2021	Ecological Status 2019 – 2024
Castlederg	Good	Good	Good	n/a	n/a	n/a
Ballybofey	Good	Good	Good	n/a	n/a	n/a

7.6 Receiving Environment (Field Survey Results)

7.6.1 Habitats

This section describes the habitats recorded during the field surveys in the study area of the proposed development. A total of 32 Fossitt (2000) habitats were identified in the study area and are described below. Fossitt habitats that correspond to Annex I habitat were subject to further assessment using the Interpretation Manual of European Union Habitats (European Commission, 2013). (See drawings 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-EN-0701 - 718 Volume 3 of this EIAR for the habitat map).

Stone walls and other stonework (BL1)

This habitat was primarily recorded along localised stretches of the abandoned railway line as remanent features of the existing infrastructure. These habitats will not be impacted by the proposed development. This habitat was also recorded in a small stretch near Ballybofey, whereby large rocks were placed in the pathway of the abandoned railway line.

Buildings and artificial surfaces (BL3)

This habitat occurs within the urban town centres of Donegal and Ballybofey/Stranorlar. This category includes roads, buildings, hardstanding ground and other elements of the built environment. Built habitats are not considered to be of high ecological significance or biodiversity value.

Spoil and bare ground (ED2)

This habitat includes heaps of spoil and rubble, and other areas of bare ground that are either very transient in nature or persist for longer periods of time because of ongoing disturbance or maintenance. Spoil is generally associated with the excavation or construction of roads and buildings, or with drainage and dredging activities (Fossitt, 2000). This habitat was not widely recorded along the proposed development and only recorded once overlapping the proposed development boundary at the site of a private farmyard.

Recolonising bare ground (ED3)

This category is used for any areas where bare or disturbed ground, derelict sites or artificial surfaces of tarmac, concrete or hard core have been invaded by herbaceous plants (Fossitt, 2000). Similar to spoil and bare ground, this habitat was recorded in limited areas along the proposed development and was mostly restricted to localised sites in the urban centre of Ballybofey/Stranorlar. This habitat was also recorded adjacent to the Lowerymore river to the southeast of Biddy's O'Barnes. These areas are intended for use as working areas (e.g. access roads) for the construction phase of the proposed development.

Acid oligotrophic lakes (FL2)

This habitat was recorded at Lough Eske. Lough Eske is an oligotrophic lake at the junction of Carboniferous rocks with more resistant Dalradian gneiss and granite (NPWS, 2015). Annex I lake habitat 'Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)' [3110] occurs in Lough Eske (NPWS, 2019). This habitat is vulnerable to water quality impacts. **Acid oligotrophic lakes (FL2) is included as a Key Ecological Receptor under KER 2: Aquatic Ecosystems and Associated Fauna.**

Reservoirs (FL7)

This category incorporates all open water bodies that are used for the storage and supply of water, including both natural lakes and modified lakes with dams or retaining walls or banks. This habitat occurs at Lough Mourne, adjacent to the proposed development north of Barnesmore Gap. Lough Mourne is known for a healthy population of Brown Trout. Lough Mourne is also a public water supply. This habitat is vulnerable to water quality impacts. **Reservoirs (FL7) is included as a Key Ecological Receptor under KER 2: Aquatic Ecosystems and Associated Fauna.**

Reed and large sedge swamps (FS1)

This category includes species-poor stands of herbaceous vegetation that are dominated by reeds and other large grasses or large, tussock-forming sedges. Most reed and large sedge swamps are overwhelmingly dominated by one or a small number of species, as in the case of reedbeds. Stands of vegetation can range from very dense to open. This habitat was recorded northeast of Lough Mourne adjacent to the proposed development (Figure 7-1). This habitat was dominated by Bulrush (*Typha latifolia*) and Soft Rush (*Juncus effusus*) with Reed Canary Grass (*Phalaris arundinacea*) and *Sphagnum* spp. also recorded.



Figure 7-1 - Reed and large sedge swamps habitat (Ch. 20750).

Eroding/upland rivers (FW1)

This category includes natural watercourses, or sections of these, that are actively eroding, unstable and where there is little or no deposition of fine sediment. Eroding conditions are typically associated with the upland parts of river systems where gradients are often steep, and water flow is fast and turbulent (Fossitt, 2000). This habitat was recorded at multiple locations along the proposed development, including the Clogher River and the Lowerymore River, and often flowing underneath the abandoned railway line at existing railway bridges. Eroding/upland rivers contain suitable habitat for fisheries and aquatic fauna. This habitat is vulnerable to water quality impacts. **Eroding/upland rivers (FW1) is included as a Key Ecological Receptor under KER 2: Aquatic Ecosystems and Associated Fauna.**

Depositing/lowland rivers (FW2)

This category includes watercourses, or sections of these, where fine sediments are deposited on the riverbed. Depositing conditions are typical of lowland areas where gradients are low and water flow is slow and sluggish. These rivers vary in size but are usually larger and deeper than Eroding/upland rivers (Fossitt, 2000). This habitat was recorded as part of the River Eske in Donegal town (Figure 7-2) and the River Finn in Ballybofey/Stranor (Figure 7-3). During the Freshwater Pearl Mussel surveys carried out for the proposed development, a single Eel (*Anguilla anguilla*) was recorded in the River Eske in Donegal town. Depositing/lowland rivers contain suitable habitat for fisheries and aquatic fauna. This habitat is vulnerable to water quality impacts. **Depositing/lowland rivers (FW2) is included as a Key Ecological Receptor under KER 2: Aquatic Ecosystems and Associated Fauna.**



Figure 7-2 - Depositing/lowland rivers (FW2) habitat at existing River Eske crossing in Donegal Town (Ch. 750)



Figure 7-3 - Depositing/lowland rivers (FW2) habitat at proposed River Finn crossing in Ballybofey/Stranorlar (Ch. 29500).

Drainage ditches (FW4)

Drainage ditches include linear water bodies or wet channels that are entirely artificial in origin, and some sections of natural watercourses that have been excavated or modified to enhance drainage and control the flow of water. This habitat was often recorded adjacent to hedgerows

along field boundaries. The drainage ditches recorded in the study area were varied in terms of the level of water present. Some ditches were dry, others wet with stagnant water and others with flowing water. Vegetation recorded along the banks of this habitat included Meadowsweet (*Filipendula ulmaria*), Nettle (*Urtica dioica*), Bramble (*Rubus fruticosus* agg.), Cock's-foot (*Dactylis glomerata*), Water figwort (*Scrophularia auriculata*), Great willowherb (*Epilobium hirsutum*), Yellow flag iris (*Iris pseudacorus*), Broad leaved dock (*Rumex obtusifolius*), Wild angelica (*Angelica sylvestris*), Sorrel (*Rumex acetosa*), Soft rush (*Juncus effusus*), Cuckooflower (*Cardamine pratensis*), Gorse (*Ulex europaeus*) and Forget-me-not (*Myosotis* spp.). This habitat is vulnerable to water quality impacts, and can also act as a conduit for impacts on water quality to sensitive receptors downstream. **Drainage ditches (FW4) is included as a Key Ecological Receptor under KER 2: Aquatic Ecosystems and Associated Fauna.**

Improved agricultural grassland (GA1)

This habitat includes intensively managed or highly modified agricultural grassland that has been reseeded and/or regularly fertilised and is now heavily grazed and/or used for silage making. It includes regularly reseeded monoculture grasslands and rye-grass leys that are planted as part of an arable rotation (Fossitt, 2000). This habitat was common along the length of the proposed development, particularly in the agricultural areas close to Donegal town and Ballybofey/Stranorlar. The most common species recorded in this habitat includes Perennial Ryegrass (*Lolium perenne*), Yorkshire Fog (*Holcus lanatus*), White Clover (*Trifolium repens*), Creeping Buttercup (*Ranunculus repens*), Marsh Thistle (*Cirsium palustre*), Nettle, Broad-leaved Dock and Silverweed (*Argentina anserina*). While this habitat can provide suitable habitat for wintering bird species, no wintering bird species were recorded utilising examples of this habitat for inland roosting or foraging during the surveys carried out for the proposed development. Many examples of this habitat were grazed by livestock and are generally not considered to be of high ecological or biodiversity value.

Amenity grassland (GA2)

This type of grassland is improved, or species-poor, and is managed for purposes other than grass production. It includes amenity, recreational or landscaped grasslands, but excludes farmland. Most areas of amenity grassland have been reseeded and are regularly mown to maintain very short swards. Fertilisers and herbicides are often applied and there is rarely any grazing by livestock. This habitat was often recorded in the gardens of private dwellings adjacent to the proposed development but also occurred in the urban centres of Donegal and Ballybofey/Stranorlar as community green areas and sports pitches. This habitat also occurred south of Biddy's O'Barnes, between the existing car park and the Lowerymore River.

Dry-humid acid grassland (GS3)

This habitat is typically unimproved or semi-improved grassland that occurs on free-draining acid soils that may be dry or humid, but not waterlogged (Fossitt, 2000). This habitat was recorded outside Donegal town and adjacent to the Lowerymore River along the Barnesmore Gap. Species recorded include Common Spotted Orchid (*Dactylorhiza fuchsii* subsp. *fuchsii*), Sharp-flowered rush (*Juncus acutiflorus*), Heath wood-rush (*Luzula multiflora* agg.), Sweet vernal grass (*Anthoxanthum odoratum*), Creeping bent (*Agrostis stolonifera*), Blue sedge (*Carex flacca*), Star sedge (*Carex echinata*), Carnation sedge (*Carex panicea*), Meadow thistle (*Cirsium dissectum*), Meadow buttercup (*Ranunculus acris*), Creeping buttercup (*Ranunculus repens*), tormentil (*Potentilla erecta*), selfheal (*Prunella vulgaris*), Yorkshire fog (*Holcus lanatus*), Ragged robin (*Silene flos-cuculi*) and Ribwort plantain (*Plantago lanceolata*). This habitat is not within the landtake boundary of the proposed development and will not be impacted by the proposed development.

Wet grassland (GS4)

This type of grassland can be found on flat or sloping ground in upland and lowland areas. It occurs on wet or waterlogged mineral or organic soils that are poorly drained or, in some cases, subjected to seasonal or periodic flooding. On sloping ground, wet grassland is mainly confined to clay-rich gleys and loams, or organic soils that are wet but not waterlogged. This category includes areas of poorly drained farmland that have not recently been improved and seasonally-flooded alluvial grasslands. This habitat was common along the length of the proposed development, particularly in the agricultural areas between Donegal town and the

Barnesmore Gap. Wet grassland habitat typically comprised of Cock's-foot, Meadowsweet, Sorrel, Creeping buttercup, Meadow buttercup, Ribwort plantain, Crested Dog's-tail (*Cynosurus cristatus*), White clover, Marsh thistle, Spear thistle (*Cirsium vulgare*), Tormentil, Bugle (*Ajuga reptans*), Rosebay Willowherb (*Chamaenerion angustifolium*), Field Horsetail (*Equisetum arvense*), Yorkshire Fog, Nettle, Devil's Bit Scabious, Bird's-foot trefoil (*Lotus corniculatus*). Patches of gorse and willow scrub were also recorded. One area of Wet Grassland within the proposed development boundary, to the southeast of St. Francis National School, was dominated by Devil's Bit Scabious. A survey for larval webs of Marsh Fritillary was undertaken in this grassland on the 23rd September 2025 according to best practice guidance (TII, 2009). No larval webs or evidence of Marsh Fritillary were found during the surveys carried out for the proposed development. Most examples of Wet Grassland habitat were grazed by livestock.

Most examples of this habitat were dominated by Soft Rush, with some examples dominated by Purple Moor-grass (*Molinia caerulea*). The Purple Moor-grass dominated Wet grassland habitat was often recorded in mosaic with Wet Heath habitat. All but one example of Purple Moor-grass-dominated habitat was recorded outside the landtake boundary. At the one location where Purple Moor-grass-dominated habitat was recorded within the landtake boundary, this was at the edge of Croaghonagh Bog SAC within the abandoned railway line (Ch. 17300) (Figure 7-4). The tussocks of Purple Moor-grass were located in stagnant water and the habitat is rank, with no evidence of positive management or grazing. Impoverished forms of *Molinia*, such as those recorded at this location, are excluded from Annex I definition. There are no examples of wet grassland habitat that correspond to Annex I 'Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]' habitat and there will be no loss of Annex I 'Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]' as a result of the proposed development.



Figure 7-4 - Rank, impoverished *Molinia* in Wet Grassland habitat along the abandoned railway corridor (Ch.17300).

Dense bracken (HD1)

This habitat is in areas of open vegetation dominated by Bracken (*Pteridium aquilinum*). Cover of the fern may be either patchy or continuous, but should exceed 50% overall (Fossitt, 2000).

This habitat was common in scrubby areas outside the proposed development boundary, particularly south of Barnesmore Gap. This habitat occurred within the proposed development boundary at one location, immediately adjacent to the abandoned railway line at the southern end of the Barnesmore Gap (Figure 7-5).



Figure 7-5 - Dense bracken on the northside of the abandoned railway line in Barnesmore Gap (Ch. 12850).

Dry siliceous heath (HH1)

Dry siliceous heath can be found on flat to steeply sloping ground in upland and lowland areas. The underlying soils are relatively dry or free-draining but are acid and poor in nutrients (mainly mineral-rich or peaty podzols) (Fossitt, 2000). This habitat was recorded at one location adjacent to the proposed development, on the eastern side of the Lowerymore River at Biddy's O'Barnes (Ch. 12150). Species recorded in this habitat include Bell Heather (*Erica cinerea*), Ling Heather (*Calluna vulgaris*), Bilberry (*Vaccinium myrtillus*), Heath Rush (*Juncus squarrosus*), Tormentil (*Potentilla erecta*), Sweet Vernal Grass (*Anthoxanthum odoratum*), Heath Bedstraw (*Galium saxatile*), Common Bent (*Agrostis capillaris*) and saplings of Rowan (*Sorbus aucuparia*) and Silver birch (*Betula pendula*). This habitat has links to Annex I 'European dry heaths [4030]' habitat. This habitat was recorded adjacent to the landtake boundary of the proposed development. There is no landtake within this habitat and this habitat will not be impacted by the proposed development.

Wet heath (HH3)

Wet heath habitat is classified as vegetation with at least 25% cover of dwarf shrubs on peaty soils and shallow wet peats that typically have an average depth of 15-50 cm. Wet heath can occur in upland and lowland areas and is widespread on the lower slopes of hills and mountains that are either too dry or too steep for deep peat accumulation (Fossitt, 2000). This habitat was abundant alongside the proposed development, sometimes forming mosaics with dry siliceous heath and peatland habitats. This habitat corresponds to Annex I 'Northern Atlantic wet heaths with *Erica tetralix* [4010]'.

This habitat was most commonly recorded in the area of the Barnesmore Gap, between the Lowerymore River and the proposed development boundary. A new watercourse crossing is proposed at Ch. 12350 to facilitate connection between the proposed trailhead at Biddy's O'Barnes and the greenway. This habitat occurs where this connection is proposed, including

where embankments and cutting are required. Approximately 0.24Ha of this habitat will be lost as a result of the proposed development.

A large area of this habitat was recorded between the existing N15 National Road and the proposed development to the east of Lough Mourne, where the habitat graded into Wet Grassland habitat closer to the lake. Species recorded in this habitat included Purple Moor-grass, Tormentil, Bog myrtle (*Myrica gale*), Cross-leaved Heath (*Erica tetralix*), Ling heather, Jointed Rush, Devil's bit scabious, Slender rush (*Juncus tenuis*), Sharp-flowered rush, Soft rush, Heath rush, Star sedge, Sweet vernal grass and Yorkshire fog. Where Devil's Bit Scabious was recorded, the specimens were not present in large numbers and were considered incapable of supporting suitable Marsh Fritillary breeding habitat. Wet heath was recorded within the red line boundary at this location, but not within the proposed greenway corridor. The habitat within the greenway corridor at this location is primarily made up of Wet Grassland (GS4) and Scrub (WS1) habitats, neither of which correspond to Annex I habitat.

This habitat is also sensitive to drying-out. There is no potential for drainage-related impacts to this habitat for the following reasons: the bedrock geology at the location of this habitat consists of Feldspathic Psammite, Quartzite and Marble, and is characterised as a poor aquifer. This bedrock geology has low permeability. The superficial deposits consist of Blanket Peat. This subsoil type, because of its low permeability, will not allow water to permeate easily through the soil during the construction works.

As this habitat is vulnerable to habitat loss at the location of the proposed Lowerymore crossing, **Wet heath (HH3) is included as a Key Ecological Receptor under KER 4: Upland habitats.**

Upland blanket bog (PB2)

Upland blanket bog occurs on flat or gently sloping ground above 150m and is widespread on hills and mountains throughout Ireland. The 150m limit serves to distinguish upland from lowland blanket bog but is loosely applied. Peat depths vary and normally fall in the range of 1-2 m, but can be much deeper in pockets (Fossitt, 2000). This habitat was common along the proposed development between the Barnesmore Gap and Lough Mourne, notably at Croaghonagh Bog. Along the Barnesmore Gap, this habitat was dominated by Ling heather, Cross-leaved heath, Bog cotton (*Eriophorum angustifolium*), Tormentil, Soft rush, *Sphagnum* species and Deergrass (*Trichophorum germanicum*). Other species recorded include Reindeer lichen (*Cladonia rangiferina*), Heath Milkwort (*Polygala serpyllifolia*), Lousewort (*Pedicularis sylvatica*), Butterwort (*Pinguicula vulgaris*), Bog Asphodel (*Narthecium ossifragum*), Round-leaved sundew (*Drosera rotundifolia*), Bog bean (*Menyanthes trifoliata*), Purple Moor-grass, Hard fern (*Blechnum spicant*), Sharp-flowered rush, Bog Myrtle, Wild Angelica and Lesser Spearwort (*Ranunculus flammula*). At Croaghonagh Bog, this habitat was dominated by *Sphagnum* species, Ling heather, willow shrubs and saplings and bog cotton. Along the proposed development close to the N15, the habitat is lined with willow trees and gorse scrub. This habitat corresponds to Annex I 'Blanket bog (*if active bog) 7130]'.

While this habitat occurs within the proposed development boundary between Barnesmore Gap and Lough Mourne, the abandoned railway line itself is made ground which has been recolonised and is no longer peat-forming blanket bog habitat (Figure 7-4). There is no Annex I 'blanket bogs (*if active bog) [7130]' habitat that will be impacted by the proposed development, including where upland blanket bog (PB2) is located within the proposed development boundary. The habitat will be retained as existing in these locations. Considering this as well as the underlying geological conditions, as described above, there is no potential for impacts to this habitat as a result of the proposed development.

Nevertheless, due to the proximity of the proposed development to Internationally and Nationally designated sites for peatland habitat, including the Croaghonagh Bog SAC and the Barnesmore Bog NHA, **Upland blanket bog (PB2) is included as a Key Ecological Receptor under KER 4: Upland habitats.**

Cutover bog (PB4)

Cutover bog is a peatland habitat where part of the original mass of peat has been removed through turf cutting or other forms of peat extraction. This habitat was recorded along the proposed development boundary between the N15 and the Croaghonagh Bog boundary,

where the bog has been subject to turbary, although the abandoned railway line itself is made ground which has been recolonised and is no longer peat-forming blanket bog habitat.

There is no Annex I 'depressions on peat substrates of the *Rhynchosporion* [7150]' habitat that will be impacted by the proposed development, including where Cutover Bog (PB4) is located within the proposed development boundary. The habitat will be retained as existing in these locations. Considering this as well as the underlying geological conditions, as described above, there is no potential for impacts to this habitat as a result of the proposed development.

Nevertheless, due to the proximity of the proposed development to Internationally and Nationally designated sites for peatland habitat, including the Croaghonagh Bog SAC and the Barnesmore Bog NHA, **Cutover bog (PB4) is included as a Key Ecological Receptor under KER 4: Upland habitats.**

(Mixed) broadleaved woodland (WD1)

This category includes woodland areas with 75-100% cover of broadleaved trees, and 0-25% cover of conifers. It should be used in situations where woodland stands cannot be classified as semi-natural on the basis of the criteria outlined above. Trees may include native and non-native species. Plantations of broadleaved trees are included if the canopy height is greater than 5m, or 4m in the case of wetland areas (Fossitt, 2000). This habitat was recorded often along the proposed development between Lough Eske and the Barnesmore Gap. Many examples of this habitat were dominated by a mixture of Hazel (*Corylus avellana*), Birch, (*Betula* spp.), Ash (*Fraxinus excelsior*), Alder (*Alnus glutinosa*) and Willow (*Salix* spp.). Other species recorded include Rowan (*Sorbus aucuparia*), Hawthorn (*Crataegus monogyna*), Oak (*Quercus* spp.), Sycamore (*Acer pseudoplatanus*), Holly (*Ilex aquifolium*), and Gorse scrub (*Ulex europaeus*). Species recorded in the ground layer include Brambles (*Rubus fruticosus* agg.), Fern species, Herb Robert (*Geranium robertianum*), Enchanter's nightshade (*Circaea lutetiana*), Ivy (*Hedera helix*), Wood Sorrel (*Oxalis acetosella*), Bugle (*Ajuga reptans*), Polypody (*Polypodium vulgare*) and Nettle (*Urtica dioica*). Examples of this habitat occurred in patches of Loughesack Demesne to the southwest of Lough Eske.

This habitat is vulnerable to habitat loss. **(Mixed) broadleaved woodland (WD1) is included as a Key Ecological Receptor under KER 1: Woodlands.**

Mixed broadleaved/conifer woodland (WD2)

This habitat type includes woodland areas with mixed stands of broadleaved trees and conifers, where both types have a minimum cover of 25%, and a maximum of 75%. Trees may be either native or non-native species. Mixed broadleaved/conifer plantations are included if the canopy height is greater than 5m, or 4m in the case of wetland areas (Fossitt, 2000). This habitat was commonly recorded along the proposed development, notably in areas of Loughesack Demesne to the southwest of Lough Eske and also various areas adjacent to the abandoned railway corridor close to areas of forestry and plantations.

With regard to the Loughesack Demesne, Rhododendron was recorded in very large stands with some areas of woodland comprising entirely of large growths of Rhododendron and Cherry Laurel. The extent of Rhododendron and Cherry Laurel are described in full in the Invasive Species Management Plan, which is presented in Appendix G of the CEMP attached to this planning application. Other species in Loughesack Demesne include Hazel, Ash (*Fraxinus excelsior*), Birch (*Betula* spp.), Holly (*Ilex aquifolium*), Rowan (*Sorbus aucuparia*), Sycamore (*Acer pseudoplatanus*) and Sitka Spruce (*Picea sitchensis*).

Along the abandoned railway line adjacent to, and sometimes within the proposed development footprint, this habitat was typically comprised of pine and spruce species, birches, Rowan, Alder and Willow (*Salix* spp.).

This habitat is vulnerable to habitat loss. **Mixed broadleaved/conifer woodland (WD2) is included as a Key Ecological Receptor under KER 1: Woodlands.**

Conifer plantation (WD4)

This category is used for areas that support dense stands of planted conifers where the broadleaved component is less than 25% and the overriding interest is commercial timber production. Conifer plantations are characterised by even-aged stands of trees that are

usually planted in regular rows, frequently within angular blocks. Species diversity is low and single species stands are common (Fossitt, 2000). This habitat is widespread in the proposed development area between Lough Mourne and Ballybofey/Stranorlar. The proposed development is proposed to utilise existing forest trails through these conifer plantations. Species recorded in this habitat typically comprised of Sitka spruce, Lodgepole pine (*Pinus contorta*) and other pine species. Most of the plantations were bordered by broadleaf trees including Oak, Ash or Willow species. On particular area was recorded at the north end of the Barnesmore Gap, where the abandoned railway passes through an old plantation. This woodland was covered in mosses and ferns and contained windblown trees. In the gaps left by the windblown trees, there were young coniferous and broadleaf trees.

This habitat is vulnerable to habitat loss. **Conifer plantation (WD4) is included as a Key Ecological Receptor under KER 1: Woodlands.**

Scattered trees and parkland (WD5)

This category is typically used in situations where scattered trees, standing alone or in small clusters, cover less than 30% of the total area under consideration but are a prominent structural or visual feature of the habitat, usually in areas of cultivated grassland and amenity areas. In the case of parkland or parks which originate from former planting and landscaping, the proportion of non-native trees is typically high (Fossitt, 2000). Within the proposed development, this habitat was recorded in Navenny, 682m south of the River Finn outside of Ballybofey, where the proposed development links to the Lawndale residential housing estate.

As this habitat is vulnerable to habitat loss, **Scattered trees and parkland (WD5) is included as a Key Ecological Receptor under KER 1: Woodlands.**

Hedgerows (WL1)

Hedgerows are linear strips of shrubs, often with occasional trees, that typically form field or property boundaries. Most hedgerows originate from planting, and many occur on raised banks of earth that are derived from the excavation of associated drainage ditches.

Hedgerows were common throughout the study area and along the proposed development boundary occur throughout the study area and were typically consisted of Hawthorn and also contained Bramble and Gorse. Hedgerows in the study area are generally of low diversity and therefore lower ecological value. However, they are essential in maintaining links and ecological corridors between features of higher ecological value.

There will be no uprooting of lengths of hedgerows for the purposes of the proposed development. The nature of the proposed development as a linear habitat will ensure the route travels along the side of a hedgerow. However, minor vegetation removal within hedgerows is required to 'punch through' the proposed development approximately 4m in width. **Hedgerows (WL1) is included as a Key Ecological Receptor under KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines**

Treelines (WL2)

Treelines are narrow rows or single lines of trees that are typically planted along roads and property boundaries. Treelines in the proposed development typically comprised the same species as the hedgerows but where they were greater than 5m in height these were classed as treelines. The abandoned railway corridor is lined with beech trees where the corridor is relatively intact between Lough Mourne and Ballybofey / Stranorlar. Treelines may also develop from unmanaged hedgerows. There will be no uprooting of lengths of treelines for the purposes of the proposed development. The nature of the proposed development as a linear habitat will ensure the route travels along the side of a treeline. However, minor vegetation removal within treelines may be required to 'punch through' the proposed development approximately 4m in width. This habitat is therefore vulnerable to some habitat loss. **Treelines (WL2) is included as a Key Ecological Receptor under KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines.**

Oak-birch-holly woodland (WN1)

This habitat includes native, semi-natural broadleaved woodland that occurs on acid or base-poor soils that may be either dry or humid, but not waterlogged. Stands are usually dominated by Sessile Oak (*Quercus petraea*), or mixed stands of Sessile and Pedunculate Oak (*Q. petraea* and *Q. robur*) or their hybrids (*Q. x rosacea*). This habitat was recorded at various locations along the proposed development, including close to the proposed River Eske crossing, as well as in the Loughesack Demesne woodland to the south of the existing local road.

The Lough Eske and Ardnamona Wood SAC occurs within the proposed development footprint. However, the habitat surveys undertaken for the proposed development determined that while 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' occur along the River Eske and there is some overlap with the proposed development boundary along the River Eske, there will be no removal of this Annex I habitat at any location for the purposes of the proposed development boundary. The habitat on the southern side of the proposed River Eske crossing is classified as a treeline, rather than a woodland, due to the sparse and narrow nature of the trees (<4m wide), based on the criteria set out in Fossitt (2000) (Figure 7-6). Tree species recorded in this treeline include Hybrid Oak (*Quercus x rosacea*), Silver birch, Hazel and Alder.



Figure 7-6 - Treeline (WL2) habitat in middle ground between River Eske in background and Wet Grassland in foreground.

The proposed development extends north through the woodland of Loughesack Demesne on the south side of the L1945 local road. Habitat surveys were undertaken within this woodland where it interacts with the proposed development. The area of woodland that was surveyed in accordance with Fossitt (2000) contained a mix of several types, namely Oak-birch-holly woodland (WN1), (Mixed) broadleaved woodland (WD1) and Mixed broadleaved/conifer woodland (WD2). As Oak-birch-holly (WN1) has an affiliation with the Annex I woodland 'Old Sessile Oak Woods with *Ilex* and *Blechnum* in the British Isles' [91A0], further surveys to determine whether or not WN1 corresponds to this Annex I habitat were undertaken.

The Annex I woodland survey and 'Old Sessile Oak Woods with *Ilex* and *Blechnum* in the British Isles' structure and functions assessment criteria was undertaken in accordance with the methodology outlined in the '*National Survey of Native Woodlands 2003-2008*' (Perrin et

al., 2008). Reference was also made to 'Results of monitoring survey of old sessile oak woods and alluvial forests' (O'Neill & Barron, 2013). In accordance with Perrin et al., (2008), a 20m x 20m relevé was conducted. The results of the relevé survey are presented in Appendix 7.3.

The criteria for Annex I Old Oak Woodlands passes on the presence of ≥ 6 positive indicator species but fails on two of the thresholds, namely the presence of negative indicator species (i.e. *Fagus sylvatica* and *Acer pseudoplatanus*) and that the habitat only reaches 4/5 of the structural data requirements. All five of the structural data requirements must be met to pass the structural data threshold. The structural data thresholds fails on the basis that neither Sessile Oak (*Q. petraea*), nor Oak Hybrid (*Q. x rosacea*) contribute to $>50\%$ of the canopy. Although Pedunculate Oak (*Q. robur*) was recorded within the relevé (Figure 7-6), neither *Q. petraea* nor *Q. x rosacea* were present, which are structural requirements for 'Old Sessile Oak Woods with *Ilex* and *Blechnum* in the British Isles' based on Perrin et al., 2008. As this area of woodland did not pass the criteria for target tree species, the area of Oak-Birch-Holly (WN1) woodland in this area does not correspond to Old Sessile Oak Woods with *Ilex* and *Blechnum* in the British Isles. Other negative indicator species, such as non-native conifer species and *Rhododendron ponticum*, were recorded in the woodland, although these were beyond the relevé extents.

Beech, Hazel, Holly, Birch, Alder and Pedunculate Oak were the tree species recorded within the relevé. Ground flora included Enchanters nightshade, Wood sorrel, Honeysuckle (*Lonicera periclymenum*), Remote sedge (*Carex remota*), Herb Robert, Ivy, Germander speedwell (*Veronica chamaedrys*), Bramble, Violets (*Viola* sp.), Brome species, Hard fern and Meadowsweet (*Filipendula ulmaria*) (Figure 7-7).



Figure 7-6 - Pedunculate oak (*Quercus robur*) recorded in the woodland at Loughesk Demesne (Ch. Lough Eske Loop West 400).



Figure 7-7 - Area of Oak-Birch-Holly woodland (WN1) at Loughesack Demesne (Fossitt, 2000). This area did not correspond to Annex I 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' (Ch. Lough Eske Loop West 400).

While no Annex I 'Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles' [91A0] will be lost as a result of the proposed development, non-Annex Oak-birch-holly woodland is vulnerable to habitat loss. **Oak-birch-holly woodland (WN1) is included as a Key Ecological Receptor under KER 1: Woodlands.**

Oak-ash-hazel woodland (WN2)

Native, semi-natural woodland that occurs on base-rich or calcareous soils that are generally dry or well-drained, or on rocky limestone terrain. This type of woodland is typically dominated by Pedunculate Oak, Ash or Hazel, or by various mixtures of some or all of these trees. Other trees may be present but should not be abundant (Fossitt, 2000). This habitat was recorded in small areas outside the abandoned railway line boundary in the agricultural areas south of Ballybofey/Stranorlar. Hazel was typically the dominant species with others including Ash, Rowan, Holly and Oak. Ground flora included Wood sorrel, Hard fern, Bluebell (*Hyacinthoides non-scripta*), *Polytrichum*, Greater wood-rush (*Luzula sylvatica*), Bramble, Ivy, Wood avens (*Geum urbanum*), False brome (*Brachypodium sylvaticum*) and Ramsons (*Allium ursinum*). Although this habitat overlaps with the proposed development boundary in an area of private woodland to the south of the Lowerymore River crossing, there are no works proposed here and therefore, there will be no loss of this habitat as a result of the proposed development.

Riparian woodland (WN5)

This category includes wet woodlands of river margins (gallery woodland) and low islands that are subject to frequent flooding, or where water levels fluctuate as a result of tidal movement (in the lower reaches of rivers). Riparian woodland is dominated by stands of willows that may include native (*Salix cinerea*, *S. purpurea*, *S. triandra*) and nonnative (*Salix fragilis*, *S. alba*, *S. viminalis*) species. These woodlands often reveal an accumulation of river borne debris, including dead vegetation and plastic, when water levels are low. A fine coating of grey mud on vegetation and tree bases that are regularly submerged and emerged is also characteristic (Fossitt, 2000).

This habitat was recorded on the margins of watercourses at some localised areas near the proposed development, including adjacent to the River Eske and Drumroosk_East watercourse outside Donegal town and the River Eske west of the proposed River Eske crossing (although no works are proposed in this habitat at these locations). This habitat interacts with the proposed development at the River Finn south of the proposed River Finn crossing and an unnamed watercourse southwest of Ballybofey.

Where this habitat interacts with the proposed development at the River Finn, the habitat was dominated by Willow species with extensive Himalayan balsam present. Tree cover was low, with the habitat dominated by shrubs. Therefore, Riparian Woodland at this location was not considered to correspond to Annex I 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)' [91E0] habitat.

While no Annex I 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)' [91E0] will be lost as a result of the proposed development, non-Annex Riparian Woodland is vulnerable to habitat loss. **Riparian woodland (WN5) is included as a Key Ecological Receptor under KER 1: Woodlands.**

Wet willow-alder-ash woodland (WN6)

This broad category includes woodlands of permanently waterlogged sites that are dominated by Willows, Alder or Ash, or by various combinations of some or all of these trees (Fossitt, 2000). Most examples of this habitat were recorded along the Lowerymore River outside the proposed development boundary. However, this habitat was also recorded within the proposed development boundary, including outside Donegal town to the south of the N56 and at two small areas adjacent to the Keadew Lower L2595 local road.

Where these two areas of habitat occur along the Keadew Lower local road, the first habitat was adjacent to an unnamed lake. The woodland habitat in this area was dominated by Willow species, with no other tree species recorded. Flora around the margin of the lake included Common Reed (*Phragmites australis*) and Marsh Marigold (*Caltha palustris*). The vegetation in the terrestrial bounds of the woodland was dominated by Soft Rush, with many examples of Marsh Marigold present. Marsh cinquefoil (*Comarum palustre*), Meadowsweet, Common Dog-violet (*Viola riviniana*), Ferns and Mosses were also recorded, albeit to a lesser extent. The second area of this habitat was located approximately 303m northeast of the first immediately adjacent to the Keadew Lower L2595 local road. The second area of this habitat was comprised of Willow species, including Grey Willow (*Salix cinerea*) and was located within a permanently wet ditch. A key component of Alluvial woodland, based on descriptions provided in *Interpretation Manual of European Union Habitats* (EC, 2013), *The monitoring and assessment of four EU Habitats Directive Annex I woodland habitats* (Daly, et al., 2023) and the Joint Nature Conservation Committee (JNCC, 2019), is that Alluvial woodland habitat is influenced by hydrological dynamics, including periodic inundation or fluctuating water levels, which typically occur on floodplains or soils that are periodically flooded but aerated between floods. These areas of wet woodland are not vulnerable to flooding, per Flood Maps (OPW, 2018). Given the habitat at these locations are not influenced by hydrological dynamics and are constantly wet by nature, the fact that the water level in the lake at the first area is stable, as well as the lack of tree species diversity and that Soft rush is one of the dominant species of ground flora, these areas are not considered to correspond to Annex I 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)' [91E0] and are classified as non-Annex Wet willow-alder-ash woodland (WN6) per Fossitt (2000).

While no Annex I 'Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)' [91E0] will be lost as a result of the proposed development, non-Annex Wet willow-alder-ash woodland is vulnerable to habitat loss. **Wet willow-alder-ash woodland (WN6) is included as a Key Ecological Receptor under KER 1: Woodlands.**

Scrub (WS1)

Scrub habitat is a broad category includes areas that are dominated by at least 50% cover of shrubs, stunted trees or brambles. The canopy height is generally less than 5m, or 4m in the case of wetland areas. Scrub frequently develops as a precursor to woodland and is often found in inaccessible locations, or on abandoned or marginal farmland (Fossitt, 2000). This

habitat was common along the length of the proposed development, often dominated by Bramble, Gorse, Willow. Other species recorded in this habitat include Hawthorn, Rowan and Hazel, as well as Winter heliotrope and Nettle. Some instances of this habitat was dominated by Japanese knotweed or Rhododendron.

Immature woodland (WS2)

Immature woodland includes areas that are dominated by young or sapling trees that have not yet reached the threshold heights (5m, or 4m in the case of wetland areas) for inclusion in the woodland categories previously described. Recently planted areas and young plantations should also be included here (Fossitt, 2000). This habitat was not widespread in the study area and those that did occur were dominated by willow saplings.

Recently-felled woodland (WS5)

This habitat includes areas of plantation or other woodland that have been clear-felled but have not been replanted or converted to another land use. This habitat was recorded in proximity to the conifer plantation habitat north of Lough Mourne, adjacent to the N15 on the southside of the Barnesmore Gap along the abandoned railway line, and within the Loughesk Demesne, where an area of windblown trees was cleared.

7.6.2 Rare and Protected Species

The following sections list the rare and protected species of flora and fauna identified in the field surveys.

7.6.2.1 Flora

No species listed on the Flora (Protection) Order, 2022 were recorded within the study area during the field surveys.

7.6.2.2 Fauna

Terrestrial Mammals

Otter

Evidence of Otter including spraint and feeding signs were recorded along most of the watercourses within the study area. This included the River Eske, Lough Eske, River Lowerymore, Mourne Beg, Burn Daurnett and the River Finn. No holts were recorded within 150m of the proposed development. One potential holt close to Lough Eske was surveyed using a trail camera to establish if it was a holt. Following a period of monitoring, it was classified as an active badger sett.

Otter could be negatively affected through impacts to water quality, habitat fragmentation and artificial lighting during the construction and operation of the proposed development.

Otter have been included as a Key Ecological Receptor under KER 5: Otter.

Badger

Evidence of Badger was recorded from the northeastern part of Donegal town to the Barnesmore Gap and then again further north around Ballybofey. During the surveys, 35 Badger setts were identified. Table 7-13 below describes the badger setts recorded within the study area (50m around the proposed development).

Table 7-13 - Badger setts identified within the study area

Sett Reference	Description	Classification	Status	Distance from works
1	This sett is within 4m of the proposed development. There are two entrances with debris and old spoil outside.	Outlier	Active	4m
2	This sett is within 10m of the proposed development. The entrances were filled with conifer needles and while they may have been used by Badger in the past, the entrances are currently too small to allow Badger passage.	Outlier	Disused	10m
3	This sett is 15m from the proposed development. This is an old main sett with four entrances which was inactive at the time of the survey. The entrances are characteristic Badger shaped and there are old large spoil heaps present. There was no fresh spoil.	Subsidiary	Inactive	15m
4	This sett is 25m from the proposed development. There was one entrance which was filled with debris at the time of survey.	Outlier	Active	25m
5	This sett is 20m from the proposed development. There are three entrances. Badgers were shown to be using this sett during the camera trap survey with regular visits through the month.	Outlier	Active	20m
6	This sett is 9m from the proposed development. The entrances to this sett were wet and full of debris with a tree growing in front of one of the entrances.	Outlier	Disused	9m
7	This sett is 20m from the proposed development. This sett has debris in the entrances. Three of the entrances are within bedrock. An old spoil heap is present in front of one of the entrances. No signs of recent use.	Annex	Inactive	20m
8	This sett is 20m from the proposed development. The sett located directly below bedrock. Some debris is present in the entrance, and there are no signs of recent activity. An old worn path leads to the entrance.	Subsidiary	Inactive	20m
9	This sett is 10m from the proposed development. Debris was present in all entrances with one entrance completely waterlogged. Spoil heaps with claw marks are present outside two of the entrances, however both are very old. No signs of recent activity.	Subsidiary	Inactive	10m
10	This sett is 8m from the proposed development. The sett located directly below bedrock. Some debris is present in the entrance, and there are no signs of recent activity. An old worn path leads to the entrance.	Outlier	Inactive	8m
11	This sett is 2m from the proposed development. The sett is small and located on the bank of a stream. Both entrances are filled with leaves and neither have been used recently. One entrance is badger sized, the second is too small or partially collapsed.	Subsidiary	Inactive	2m
12	This sett is between the proposed development and River Derg. It is within 30 m of the proposed development. There are three entrances. A clear well-trodden path leads to entrance 1, outside which is a fresh spoil heap and several snuffle holes. A soft block was placed in this entrance during the first visit and was found and to have been moved upon revisiting. Entrance 2 and 3 have some debris in the entrances but have not fallen into a state of disuse.	Outlier	Active	30m

Sett Reference	Description	Classification	Status	Distance from works
13	This sett is 20m from the proposed development. There are three entrances. A large broken branch from tree and leaf debris partially block the first entrance. This entrance also has an old spoil heap outside. There are no signs of recent activity at this entrance but it could still be used by badger. The second entrance has fallen into a state of disuse given the abundant leaf debris and tree roots which block the entrance. The third entrance is largely filled with leaf debris and exhibits no signs of recent activity.	Subsidiary	Inactive	20m
14	This sett is within 35m of the proposed development between the proposed development and the River Derg. There was fresh spoil outside the two entrances and fresh latrines.	Subsidiary	Active	35m
15	This sett is 26m from the proposed development. This sett was classified as a disused fox den.	Outlier	Disused	26m
16	This sett is 3m from the proposed development. The sett is located under the treeline on the southside of the railway. The entrance is free of debris but abundant moss cover is located outside the entrance and within the tunnel, indicating no recent activity.	Outlier	Inactive	3m
17	This sett is within 4m of the proposed development. There are six entrances. This sett is under/next to the south railway wall. Large spoil heaps, fresh latrines and fresh dung are located around the sett. Soft block placed on one entrance which was found to be removed during revisit.	Outlier	Active	4m
18	This sett is within greenway footprint of the proposed development. This entrance is filled with debris and exhibits no signs of recent activity.	Outlier	Inactive	Within greenway footprint
19	This sett is within greenway footprint of the proposed development. This entrance is filled with debris and exhibits no signs of recent activity.	Outlier	Inactive	Within greenway footprint
20	This sett is 4m from the proposed development. There are two entrances. The first entrance is relatively clear of debris but exhibits no signs of recent use. The second entrance was covered by a spiderweb and was full of debris. It has no signs of recent activity.	Outlier	Inactive	4m
21	This sett is 5m from the proposed development. There is one entrance with an old spoil heap outside. The entrance is full of debris and has fallen into a state of disuse.	Outlier	Disused	5m
22	This sett is within greenway footprint of the proposed development. The sett is old with two entrances and are considered to be now too narrow for Badger. The entrances all full of debris.	Outlier	Disused	Within greenway footprint
23	This sett is within greenway footprint of the proposed development. The sett included a single entrance under the southern railway treeline full of debris with no signs of recent activity. Smaller entrances nearby are considered too small for Badger.	Outlier	Inactive	Within greenway footprint
24	This sett is 10m from the proposed development. The sett has two entrances with a cobweb is covering one entrance. Both entrances are largely full of debris and covered with vegetation, exhibiting no signs of recent use.	Outlier	Inactive	10m
25	This sett is along a treeline, 30m from the proposed development. There were three entrances with old spoil heaps and tracks leading to the entrances.	Main	Active	30m
26	This sett is 30m from the proposed development. There is one entrance with an old spoil heap outside. Entrance very full of debris, with no recent signs of use.	Subsidiary	Inactive	30m

Sett Reference	Description	Classification	Status	Distance from works
27	This sett is within greenway footprint of the proposed development. The sett contains an old disused entrance with very old overgrown spoil heap outside and lots of old debris covering entrance, rendering it unsuitable for Badger.	Outlier	Disused	Within greenway footprint
28	This sett is 4m from the proposed development. An old sett, all entrances are all too narrow and full of debris for current use by Badger. Old spoil heap outside one of the entrances.	Old Main	Disused	4m
29	The sett is 4m from the proposed development. There was one entrance with a spoil heap.	Subsidiary	Active	4m
30	This sett has two entrances and is located 2m from the proposed development. There was debris in both entrances and a regularly used path.	Subsidiary	Active	2m
31	There are two entrances to this sett, and is located 3.5m from the proposed development. There was old spoil heaps outside the entrances with fresh dung at one of the entrance.	Subsidiary	Active	3.5m
32	This sett is within greenway footprint of the proposed development. There was one debris-filled entrance. There were two other entrances to this sett, both full of debris and too narrow to be suitable for Badger.	Subsidiary	Inactive	Within greenway footprint
33	This sett is 15m from the proposed development. There are two entrances with a large spoil heap outside the entrances - both filled with debris. No recent signs of activity recorded.	Subsidiary	Inactive	15m
34	Inactive sett built into a man-made earth bank. One entrance with big old spoil heap. The entrance has partially collapsed the tunnel can be seen splitting. There are leaves and sticks indicating no recent use.	Outlier	Inactive	6m
35	Inactive sett 20m from sett 34 on the same earth bank. The sett is full of leaves and inactive.	Outlier	Inactive	Within greenway footprint

Badger could be negatively affected through sett loss, habitat fragmentation and artificial lighting. **Badger have been included as a Key Ecological Receptor under KER 6: Badger.**

Bats

Preliminary Roost Assessment Survey

A Preliminary Roost Assessment (PRA) survey was conducted to identify built or natural features with potential to support a bat roost. A total of five structures within the proposed development footprint were categorised as having 'low potential', and four structures were categorised as having 'moderate potential' to support roosting bats. Following the PRA survey, a number of features on identified structures were inspected using an endoscope. The endoscope survey was carried out under licence from the NPWS using a Rigid CA300 Endoscope. A total of eight trees with low potential to support roosting bats were recorded during the surveys. Of these, one tree with Low potential is scheduled for removal and two are in close proximity to the proposed development and have the potential to be disturbed. As a result, pre-construction surveys at these trees is required. The structures and trees are described in Table 7-14 below. Emergence surveys were carried out to establish whether a bat roost was present, or absent with reasonable confidence. Details of the emergence surveys are presented in Table 7-15.

Table 7-14 - Structures and trees identified during Preliminary Roost Assessment

Feature	Chainage	Suitability (Collins, 2023)	Description
Old railway bridge (Lough Mourne)	Ch. 18320	Moderate	Live Daubenton's bats recorded in masonry in bridge soffit during external PRA survey.
Old River Eske railway overbridge (Donegal town)	Ch. 750	Moderate	Clean, cobweb-free crevices and holes on north side of bridge parapet and underneath arches. Moderate potential to support roosting bats.
Abandoned house (Lough Eske)	Ch. EL ³ 1000	Moderate	Gaps under end of roof tiles hanging over wall.
River Finn old railway viaduct (Ballybofey)	Ch. 29400	Moderate	Bridge piers very well intact. No visible cracks or crevices on north side of piers. Some small crevices on south face of northern abutment near the top approx. 4.5 m from ground on southwest side.
Lough Eske roadbridge (Lough Eske)	Ch. EL 950	Low	Crack on northwest face bridge with one deep cavity – should be inspected internally. Most crevices under arches were damp or shallow but there is potential for some sporadic usage by one or a few individual bats.
Old Railway underbridge (Ballybofey)	Ch. 27650	Low	Some gaps in brickwork on north side but arch too high for surveyor to check depth. Southside overgrown with ivy.
Small redbrick archbridge	Ch. 25040	Low	Brickwork has lots of gaps. No visible deep cracks under arch but potential for small crevices. Internal inspection survey undertaken on 01/08/2025 – no features identified with potential to support roosting bats.
Existing railway overbridge (outside Ballybofey)	Ch. 26450	Low	Small crevice under the arch on north side abutment approx. 2-2.5m from ground). Internal inspection survey undertaken on 01/08/2025 – no features identified with potential to support roosting bats.
Road underbridge (west of The Beeches)	Ch. 28650	Low	Some shallow cracks and crevices on west parapet and under arch. Could not inspect fully due to deep ditchwater and private property. Recommend pre-

³ Eske Loop

Feature	Chainage	Suitability (Collins, 2023)	Description
			construction inspection survey due to potential for disturbance.
Beech_01	Ch. 2760	Low	Mature beech with large knothole facing south, approx. 8m high. Recommend pre-construction inspection survey due to tree schedule for removal.
Beech_02	Ch. EL 670	Low	Tear out about 8m up on west face of trunk, small cavity on north face under branch. Tree is not scheduled for removal. Recommend pre-construction inspection survey due to potential for disturbance.
Unknown_sp.	Ch. EL 150	Low	Wound on southeast aspect of trunk on eastern side of the existing access road. Tree is not scheduled for removal. Recommend pre-construction inspection survey due to potential for disturbance.

Emergence Surveys

In accordance with Collins (2023), emergence surveys were undertaken in July and August 2025 in suitable weather conditions. The number of emergence surveys carried out at each structure/tree was determined by the category, which was assigned during the bat roost suitability assessment, as defined in Collins (eds.) 2023. Live bats were recorded in one structure during the PRA survey in April 2025. Emergence surveys were undertaken at this structure to categorise the roost. Two bats were recorded emerging from this structure on 13/08/2025. A derogation licence for the disturbance (temporary exclusion) of this roost during the construction works has been granted by the NPWS and is presented in Appendix 7.2 Details of the surveys are presented in Table 7-15 below.

Table 7-15 - Details of emergence surveys

Feature	Structure Ref.	Chainage	Date	Start time	End Time	Weather	Notes
Old railway bridge (Lough Mourne)	S12	Ch. 18320	22/07/2025	21:35	23:30	12°C, gentle wind, no rain, overcast	No emergence recorded. Live bats were recorded April 2025.
			13/08/2025	20:55	23:10	18°C, no rain, gentle wind, fine clouds	Emergence recorded.
Old River Eske railway overbridge (Donegal town)	S01	Ch. 750	23/07/2025	21:35	23:30	14°C, no wind, no rain, clear	No emergence recorded.
			12/08/2025	20:55	23:10	22°C, no wind, no rain	No emergence recorded.
Abandoned house (Lough Eske)	H01	Ch. EL ⁴ 1000	24/07/2025	21:35	23:30	17°C, no wind, overcast	No emergence recorded.
			14/08/2025	20:55	23:05	18°C, no rain, no wind, no clouds	No emergence recorded.
River Finn old railway viaduct (Ballybofey)	S20	Ch. 29400	30/07/2025	21:35	23:30	20°C, no rain, no wind, clear	No emergence recorded.
			11/08/2025	20:55	23:10	20°C, no rain, no wind	No emergence recorded.
Lough Eske roadbridge (Lough Eske)	S05	Ch EL 950	29/07/2025	21:25	23:35	14°C, no wind, light drizzle	No emergence recorded.
Old Railway underbridge (Ballybofey)	S18	Ch. 27650	31/07/2025	21:20	23:05	14°C, dry, no wind, 90% cloud	No emergence recorded.

⁴ Eske Loop

Bats could be negatively impacted by the loss of roosts, and poorly designed or excessive artificial lighting during the construction and operation of the proposed development. The loss of habitat associated with the proposed development will not affect bats. **‘Bats’ have been included as a Key Ecological Receptor under KER 7: Bats.**

Red Squirrel

Four dreys were recorded in an area of coniferous forest to the southwest of the Barnesmore Gap, in proximity to the proposed development route. Feeding signs were recorded outside the land-take boundary adjacent to the Lowerymore River to the southeast of Lough Eske.

Red squirrel could be negatively impacted by disturbance, and injury or mortality during construction. **‘Red squirrel’ has been included as a Key Ecological Receptor under KER 8: Red Squirrel.**

The results of the red squirrel survey are presented in drawing 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-EN-0722 – 0732 in Volume 3 of this EIAR.

Reptiles and amphibians

Live sightings of Common Frog were recorded at various locations in the study area outside the proposed development footprint, including in the blanket bog habitat between the Barnesmore Gap and the entrance to the Meenbog Wind Farm. No evidence of Smooth Newt or Common Lizard was recorded, and no evidence of breeding Common Frog was recorded during the surveys.

Birds

Hen Harrier Roost Surveys

A survey to identify Hen Harrier roosts was conducted from two vantage points covering the area between the entrance to Meenbog Wind Farm and Lough Mourne between January – March 2024. No Hen Harriers were recorded during any of the six evening roost surveys.

Wintering Waterbirds

Wintering bird surveys were conducted at four locations that were identified as having suitable habitat for wintering waterbirds between Donegal Town and Ballybofey/Stranorlar from October 2023-March 2024, January-March 2025 and November 2025-March 2026. Wintering bird survey metadata is presented in Table 7-16. In general, very few wintering birds were recorded during the surveys. Inner Donegal Bay has the most birds in terms of total number and species diversity. This area is separated from the proposed development by Donegal Town.

A total of 25 wintering bird species were recorded. Light-bellied Brent Goose (*Branta bernicla hrota*) and Great Northern Diver (*Gavia immer*) are Qualifying Interests of the Inner Donegal Bay SPA and were recorded during the wintering bird surveys in 2024 and 2025, respectively, as summarised in Table 7-17 below. Light-bellied Brent Goose and Great Northern Diver were only recorded in the Inner Donegal Bay Transitional Waterbody, at least 500m south of the proposed development boundary. The urban centre of Donegal Town is located between the proposed development and where this species was recorded. No wintering bird species, including Qualifying Interest species were recorded in Nationally or Internationally important numbers across the wintering bird seasons between 2023 – 2026.

Table 7-16 - Wintering Bird Survey metadata

Date	Weather Conditions	Tide Status	Tide Peak	Location Start Times
24/10/2023	13°C, 60% cloud cover, no wind, good visibility, no rain. Clear, bright some scattered clouds. Rained in the morning - ground still wet	High Tide	14:57	Inner Donegal Bay: 12:05 Lough Eske: 12:30 Lough Craig: 13:00 Lough Mourne: 13:15
30/11/2023	2°C, 35% cloud cover, no rain, no wind, good visibility. Calm sunny day.	High Tide	07:13	Inner Donegal Bay: 08:35 Lough Eske: 08:55 Lough Craig: 09:10 Lough Mourne: 09:20

Date	Weather Conditions	Tide Status	Tide Peak	Location Start Times
11/12/2023	8°C, 80% cloud cover, damp, chilly, no rain, light wind, good visibility	High Tide	16:41	Inner Donegal Bay: 14:45 Lough Eske: 15:10 Lough Craig: 15:40 Lough Mourne: 15:55
22/01/2024	8°C, 95% cloud cover, strong wind, light hail/rain throughout day	Low Tide	09:35	Inner Donegal Bay: 09:02 Lough Eske: 09:32 Lough Craig: 09:45 Lough Mourne: 10:06
14/02/2024	11°C, 100% cloud cover, light wind, light drizzle, moderate visibility. Calm, on/off light drizzle	Low Tide	15:05	Inner Donegal Bay: 13:53 Lough Eske: 14:38 Lough Craig: 15:16 Lough Mourne: 15:30
27/03/2024	12°C, 100% cloud cover, calm/no wind, showers, good visibility.	High Tide	07:07	Inner Donegal Bay: 08:21 Lough Eske: 09:00 Lough Craig: 09:23 Lough Mourne: 09:35
31/01/2025	5°C, clear, no rain, no wind	High Tide	06:52	Inner Donegal Bay: 08:45 Lough Eske: 09:15 Lough Craig: 10:40 Lough Mourne: 10:55
20/02/2025	11°C, overcast, poor visibility, heavy showers in afternoon during survey.	Low Tide	16:30	Inner Donegal Bay: 14:56 Lough Eske: 15:17 Lough Craig: 15:47 Lough Mourne: 16:48
21/02/2025	11°C, overcast, good visibility, no rain	High Tide	11:49	Inner Donegal Bay: 12:35 Lough Eske: 11:58 Lough Craig: 10:30 Lough Mourne: 10:00
05/03/2025	9°C, overcast, good visibility, strong sw wind	High Tide	09:32	Inner Donegal Bay: 09:15 Lough Eske: 09:00 Lough Craig: 08:45 Lough Mourne: 08:30
06/03/2025	11°C, some showers good visibility, light wind	Low Tide	16:45	Inner Donegal Bay: 15:20 Lough Eske: 15:45 Lough Craig: 15:00 Lough Mourne: 14:45
12/11/2025	10°C, gentle, breeze, overcast, good visibility, no rain	Low Tide	15:20	Inner Donegal Bay: 16:05 Lough Eske: 15:00 Lough Craig: 15:50 Lough Mourne: 15:35
13/11/2025	8°C, moderate wind, drizzle, overcast, good visibility	High Tide	12:20	Inner Donegal Bay: 12:30 Lough Eske: 12:05 Lough Craig: 11:50 Lough Mourne: 11:20
11/12/2025	8°C, no wind, overcast, no rain	Low Tide	10:40	Inner Donegal Bay: 10:50 Lough Eske: 11:40 Lough Craig: 12:00 Lough Mourne: 12:15
	9°C, light rain, gentle wind, overcast	High Tide	17:00	Inner Donegal Bay: 15:50 Lough Eske: 15:30 Lough Craig: 15:20 Lough Mourne: 15:00
14/01/2026	5°C, shower until 10am, light wind, overcast	Low Tide	08:50	Inner Donegal Bay: 09:15 Lough Eske: 10:00 Lough Craig: 10:30 Lough Mourne: 10:40

Date	Weather Conditions	Tide Status	Tide Peak	Location Start Times
27/02/2026	5°C, scattered showers, light wind, overcast	High Tide	15:00	Inner Donegal Bay: 13:00 Lough Eske: 13:30 Lough Craig: 14:00 Lough Mourne: 14:15
	8°C, mostly clear, no rain, no wind	Low Tide	10:35	Inner Donegal Bay: 09:00 Lough Eske: 09:25 Lough Craig: 09:50 Lough Mourne: 09:15
	8°C, no wind, no rain, mostly clear	High Tide	14:50	Inner Donegal Bay: 12:50 Lough Eske: 13:35 Lough Craig: 13:50 Lough Mourne: 14:10
	7°C, clear, no wind, dry	Low Tide	10:15	Inner Donegal Bay: 10:30 Lough Eske: 11:00 Lough Craig: 11:30 Lough Mourne: 12:00
16/03/2026	13°C, mostly clear, dry, strong wind	High Tide	16:30	Inner Donegal Bay: 17:30 Lough Eske: 17:00 Lough Craig: 16:45 Lough Mourne: 16:30

Table 7-17 - Summary of wintering bird survey results from 2023-2024, 2025 and 2025-2026. Peak count is the month where the highest number of that species were recorded across all survey locations.

Species	Peak Counts											
	Inner Donegal Bay			Lough Eske			Lough Mourne			Lough Craig		
	2023-2024	2025	2025-2026	2023-2024	2025	2025-2026	2023-2024	2025	2025-2026	2023-2024	2025	2025-2026
Black-headed Gull	19	55	26	2	0	0	0	0	0	0	0	0
Black-tailed Godwit	6	0	0	0	0	0	0	0	0	0	0	0
Common Gull	2	10	6	0	0	3	0	0	0	0	0	0
Coot	0	0	0	1	0	1	0	0	0	0	0	0
Cormorant	3	1	2	3	1	3	2	0	0	0	0	1
Curlew	2	2	1	0	0	0	0	0	0	0	0	0
Feral duck sp.	0	0	0	1	0	0	0	0	0	0	0	0
Goldeneye	0	0	0	0	3	0	0	0	0	0	0	0
Great Black-backed Gull	0	0	2	0	0	0	0	0	0	0	0	0
Great Northern Diver	0	2	1	0	1	0	0	0	0	0	0	0
Grey Heron	1	2	1	1	0	0	0	0	1	0	0	0
Guillemot	0	0	2	0	0	0	0	0	0	0	0	0
Herring Gull	9	5	3	0	0	2	0	0	0	0	0	0
Lesser Black-backed Gull	0	0	1	0	0	0	0	0	0	0	0	0
Light-bellied Brent Goose	22	0	0	0	0	0	0	0	0	0	0	0
Little Egret	1	1	1	0	0	0	0	0	0	0	0	0
Little Grebe	2	0	2	3	3	2	0	0	0	0	0	0
Mallard	0	5	6	11	17	24	0	2	0	8	0	2
Moorhen	0	0	0	1	2	1	0	0	0	0	1	0
Mute Swan	0	3	0	5	4	2	0	0	0	0	0	0
Oystercatcher	0	0	4	0	0	0	0	0	0	0	0	0
Red-breasted Merganser	0	0	2	0	0	0	0	0	0	0	0	0
Redshank	0	2	1	0	0	0	0	0	0	0	0	0

Species	Peak Counts											
	Inner Donegal Bay			Lough Eske			Lough Mourne			Lough Craig		
	2023-2024	2025	2025-2026	2023-2024	2025	2025-2026	2023-2024	2025	2025-2026	2023-2024	2025	2025-2026
Shelduck	5	0	0	0	0	0	0	0	0	0	0	0
Whooper Swan	0	0	0	5	0	0	0	0	0	0	0	0

Breeding Raptors

Breeding raptor surveys were conducted at four vantage points that were identified as having suitable breeding raptor habitat in proximity of the proposed development from May – July 2024.

A pair of Kestrels (*Falco tinnunculus*) were recorded flying through the Barnesmore Gap on the northwest side of the N15. No Kestrels were recorded landing during the surveys.

A pair of Buzzard (*Buteo buteo*) were recorded flying over an area of coniferous forest at the southern side of the Barnesmore Gap. A third individual was recorded flying occasionally among the pair. The pair of Buzzard were recorded landing in conifer trees at the edge of the conifer woodland approx. 157m south of the proposed development boundary.

A summary of the breeding raptor surveys is presented in Table 7-18 and the metadata for the surveys are presented in Table 7-19. Breeding raptor vantage point locations are presented in drawing 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-EN-0721 in Volume 3 of this EIAR.

Table 7-18 - Breeding raptor survey summary

Common name	Scientific name	Breeding Status*
Buzzard	<i>Buteo buteo</i>	Probably Breeding: P air observed in suitable nesting habitat in breeding season (P)
Kestrel	<i>Falco tinnunculus</i>	Probably Breeding: P air observed in suitable nesting habitat in breeding season (P)
Merlin	<i>Falco columbarius</i>	Flying over (F)
White-tailed Sea Eagle	<i>Haliaeetus albicilla</i>	Flying over (F)

*Breeding Status as per Breeding Status Codes available from <www.bto.org>

Table 7-19 - Breeding Raptor Survey metadata

Date	Weather Conditions	Start Time	End Time	Vantage Point	Species Recorded During Survey
30/05/2024	11°C, moderate - strong NNW wind, showers, 70% cloud cover	07:00	10:00	1	Wren, Common Sandpiper, Mistle Thrush, Hooded Crow, Meadow Pipit
		07:00	10:00	2	White-tailed Sea Eagle, Merlin
31/05/2024	10°C, gentle NNW wind, no rain, good visibility, 40% cloud cover	07:00	10:00	3	Merlin, Buzzard, Kestrel
		07:40	10:40	4	Buzzard, Grey Wagtail, Blackcap, Meadow Pipit.
26/06/2024	19°C, strong S wind, no rain, 100% cloud cover	16:15	19:15	3	White-tailed Sea Eagle
27/06/2024	13°C, moderate SW wind, showers, 100% cloud cover	06:45	09:45	1	Merlin
27/06/2024	10°C, moderate wind, near constant rain with intermittent dry spells, visibility ok when dry, rain all previous day, 100% cloud cover	07:00	10:00	2	Meadow Pipit, Swallow
28/06/2024	13°C, moderate SW wind, showers, 80% cloud cover	06:45	09:45	4	Buzzard
16/07/2024	19°C, no rain, very light wind, 70% cloud cover	07:00	10:00	4	None
		07:00	10:00	3	None
17/07/2024	13°C, no rain, very light wind (NW), 80% cloud cover	07:00	10:00	1	None
		07:00	10:00	2	None

Breeding Waders

Breeding wader surveys were undertaken in conjunction with the breeding raptor surveys as described above. Survey effort for breeding waders was focussed on areas of suitable breeding habitat, including Croaghonagh Bog and uplands south of the Barnesmore Gap. No evidence of breeding waders was recorded on Croaghonagh Bog or any other site with suitable breeding wader habitat within 550m of the proposed development.

Birds could be negatively impacted through accidental pollution, disturbance, habitat loss and injury/mortality. **'Birds' have been included as a Key Ecological Receptor under KER 9: Birds.**

Freshwater Pearl Mussel

The Freshwater Pearl Mussel surveys undertaken by AtkinRéalais for the proposed development recorded live specimens at two of the 18 sites that were surveyed. Both sites where Freshwater Pearl Mussel were recorded were located in the main channel of the River Eske and were found to support good numbers of mussels and provide high-quality habitat for this species.

All of the remaining survey sites in the Eske catchment were located upstream of Lough Eske and provided little to no suitable habitat for Freshwater Pearl Mussel.

No evidence of Freshwater Pearl Mussel (live or dead shells) was found at any of the sites in the Mourne Beg or Finn catchments. With the exception of the main channel of the River Finn, the sites in the Mourne Beg and Finn catchments provided little to no suitable habitat for this species.

Freshwater Pearl Mussel are vulnerable to water quality impacts. **Freshwater Pearl Mussel have been considered under KER 2: Aquatic Ecosystems and Associated Aquatic Fauna.**

Fisheries and Aquatic Fauna

Surveys for fisheries and aquatic fauna were undertaken in conjunction with the habitat surveys, mammal surveys and Freshwater Pearl Mussel surveys, as described above. There are known Salmon redds at the location of the existing Lough Eske Bridge (IFI, pers. comm.). There are no instream works planned at this location. Instream works are required for culvert installations. Table 7-20 provides a description of the habitat suitability for fisheries at the culvert installation locations.

Table 7-20 - Description of watercourses and their suitability for fisheries habitat at culvert locations

Structure Reference	Structure Type	Chainage	Description	Fisheries habitat suitability
PC07	Culvert	2940	This is a drainage ditch which had stagnant water at the time of the survey. It drains to the River Eske. It is likely that this ditch undergoes periodic drying out.	Given the small size, periodic flows and likely drying out of this ditch, this channel does not provide suitable nursery, holding or spawning habitat for fish.
PC08	Culvert	4275	This is a drainage ditch that drains directly to the River Eske. It is likely that this ditch undergoes periodic drying out.	Given the lack of suitable substrate and the likely drying out of this ditch, this channel does not provide suitable nursery, holding or spawning habitat for fish.
PC09	Culvert	4820	The small stream has a 2m wide channel. The substrate is mostly bedrock with some very consolidated fine gravel to silt. During multiple site visits, the water has a milky, eutrophic appearance and a smell of grey water. While there was some	The size of this watercourse, the bedrock substrate and water quality issues means this watercourse is unlikely to provide habitat for salmonids or lamprey.

Structure Reference	Structure Type	Chainage	Description	Fisheries habitat suitability
			aquatic moss, there was abundant filamentous algae.	
PC10	Culvert	5330	This is a wet channel with flowing water that drains directly to the Lough Eske and Ardnamona Wood SAC. Is it likely that this ditch undergoes periodic drying out.	Given the lack of suitable substrate and the likely drying out of this ditch, this channel does not provide suitable nursery, holding or spawning habitat for fish.
PC11	Culvert	6420	This is a drainage ditch with standing water.	Given the lack of suitable substrate and the likely drying out of this ditch, this channel does not provide suitable nursery, holding or spawning habitat for fish.
PC13	Culvert	6800	This is a small stream of fast flowing water. The substrate consists of bedrock with some boulders and cobbles.	Given the shallow depth of the channel and the riverbed substrate, the location of the culvert does not provide suitable nursery, holding or spawning habitat for fish.
PC14	Culvert	6970	This is a small stream of fast flowing water. The substrate consists of bedrock with some boulders and cobbles.	Given the shallow depth of the channel and the riverbed substrate, the location of the culvert does not provide suitable nursery, holding or spawning habitat for fish.
PC15	Culvert	7220	This is a drainage ditch with no flowing water. It is likely that this ditch undergoes periodic drying out.	Given the lack of suitable substrate and the likely drying out of this ditch, this channel does not provide suitable nursery, holding or spawning habitat for fish.
PC17	Culvert	25050	This is a very small stream with an unstable substrate dominated by large cobbles.	Given the shallow depth of the channel and the riverbed substrate, the location of the culvert does not provide suitable nursery, holding or spawning habitat for fish.
PC03	Culvert	Clar Link 350	This is a drainage ditch with no flowing water. It is likely that this ditch undergoes periodic drying out.	Given the lack of suitable substrate and the likely drying out of this ditch, this channel does not provide suitable nursery, holding or spawning habitat for fish.

In general, Fisheries and Aquatic Fauna are vulnerable to water quality impacts and habitat loss. **Fisheries and Aquatic Fauna are included as a Key Ecological Receptor under KER 2: Aquatic Ecosystems and Associated Fauna.**

7.6.3 Invasive Species

During the field surveys, five species restricted under Regulation 49 of the Habitats Regulations, namely Japanese Knotweed (*Reynoutria japonica*), Giant Knotweed (*Reynoutria sachalinensis*), Himalayan Knotweed (*Koenigia polystachya*), Rhododendron (*Rhododendron ponticum*) and Himalayan Balsam (*Impatiens glandulifera*), were recorded at various locations along the route of the proposed development. A large infestation of Himalayan Balsam was recorded growing on the northern bank of the River Finn in Ballybofey/Stranorlar. Cherry Laurel was recorded in very large areas to the southwest of Lough Eske. While not restricted under Regulation 49 of the Habitats Regulations, Cherry Laurel is considered to be an invasive species as it outcompetes native species and suppresses regeneration by forming thick stands and avoids herbivory by wildlife (Maguire et al., 2008).

Invasive species can negatively impact native biodiversity. Accordingly, **'Invasive Species' has been included as a Key Ecological Receptor (KER 10).**

7.7 Key Ecological Receptors

This section provides details of the Key Ecological Receptors that were identified during the desk study and field surveys. KERs have been identified based on specific habitats and species of ecological significance, whether they exist in or as part of a designated site or not. Impacts to the receptors will be the same regardless of their designation, although the highest level of importance was given where there are species or habitats of higher importance that will be impacted by the proposed development. This approach was used to be as practical as possible and to avoid unnecessary repetition during this assessment. Habitats and species which are designated as part of European sites are assessed specifically in the NIS which accompanies this planning application.

Table 7-21 below presents a list, description, and evaluation of the Key Ecological Receptors.

Table 7-21 - Evaluation of the Key Ecological Receptors for the Proposed Development

Key Ecological Receptor	Description	Importance/Ecological Valuation (TII, 2009)
KER 1: Woodlands	This includes all areas of woodlands that will be impacted by the proposed development. While there are areas of woodland within the boundary of the Lough Eske and Ardnamona Wood SAC that will be impacted, these areas of woodland are not designated as Qualifying Interests of the SAC. There are no designated or non-designated Annex I woodland habitats that will be impacted by the proposed development, as described in Section 7.6.1. One area of woodland, within the Loughesack Demesne, is within the boundary of mapped Ancient and Long-Established Woodland (Perrin & Daly, 2010). Woodland habitats and the species that reside within and rely upon these habitats are vulnerable to habitat loss, habitat fragmentation and impacts resulting from the spread of invasive species.	County Importance on the basis that the proposed development passes through an area of mapped Ancient and Long-Established Woodland within Loughesack Demesne. Surveys undertaken in this area recorded the habitat, where the proposed development traverses, as Mixed Broadleaved Woodland (WD1) and Mixed Broadleaved/Conifer Woodland (WD2). Species recorded in this area included Conifers, including Cypress trees, Ash, immature Holly and Rhododendron. No areas along the proposed development, including within European or Nationally designated sites, or within Loughesack Demesne contained Annex I woodland habitat where it interacts with the proposed development. As the proposed development won't impact designated or undesignated Annex I woodland habitat, an evaluation of County Importance for this KER is considered appropriate.
KER 2: Aquatic Ecosystems and Associated Aquatic Fauna	This includes all watercourses within the Zone of Influence of the proposed development, including those forming European and Nationally designated sites, such as the River Eske, the Lowerymore River, the River Finn, the Inner Donegal Bay transitional waterbody and the Foyle and Faughan Estuaries. This KER also encompasses Freshwater Pearl Mussel, fish species (e.g. Salmon), Marine mammals, macroinvertebrates, and other species reliant on these aquatic habitats for their life cycle. Aquatic habitats and species are vulnerable to pollution and water quality impacts and aquatic species are also vulnerable to disturbance from artificial lighting as well as habitat loss.	International Importance on the basis that European designated sites are within the Zone of Influence of the proposed development and include aquatic habitats and species that are internationally important.
KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines	The abandoned railway corridor within the proposed development boundary, as well as treelines and hedgerows that form part of the agricultural landscape within the Zone of Influence all provide linear ecological corridors which supports a mosaic of habitats, including grasslands, scrub, woodlands and peatlands. These habitats offer refuge and connectivity across the landscape. These features are vulnerable to habitat loss, habitat fragmentation and impacts resulting from the spread of invasive species.	County Importance on the basis that the railway verges form an ecological corridor with viable areas of natural and semi-natural habitats. Railway corridors and hedgerows have also been identified in the <i>Donegal County Development Plan 2024-2030</i> , whereby it is a policy to protect established/historic railway corridors and hedgerows throughout the county.
KER 4: Upland habitats	This includes all areas of peatland and heath habitat within the proposed development boundary, including those forming European or Nationally designated sites, and habitats of County or Local biodiversity value, including peatlands designated as part of the Croaghonagh Bog SAC, the Barnesmore Bog NHA and other areas of non-designated Annex I peatland and heath habitats.	International Importance on the basis that designated sites for upland habitats overlap with the proposed development boundary, including at Croaghonagh Bog SAC and Barnesmore Bog NHA. The Barnesmore Bog NHA is of National Importance but is vulnerable to the same impacts as the Croaghonagh Bog SAC, of International Importance. Peatland and heath habitats are defining features of the Donegal landscape and are recognised for biodiversity, carbon

Key Ecological Receptor	Description	Importance/Ecological Valuation (TII, 2009)
		storage, flood control and cultural heritage. Barnesmore Gap is highlighted in the <i>Draft Donegal Biodiversity Action Plan 2026-2030</i> as an important area for peatland and heath habitats. While there are no areas of peatland habitat that will be lost as a result of the proposed development, there are areas of Annex I heath habitat that have the potential to be lost as a result of the proposed development.
KER 5: Otter	Otter occurs along the watercourses crossed by the proposed development. While no holts or couches were recorded during the ecological surveys, Otter could be impacted through the increase in noise, lighting and visual disturbance, as well as through habitat loss as a result of the proposed development.	International Importance on the basis that this species is a Qualifying Interest of the River Finn SAC, which is crossed by the proposed development. Otter of non-international importance (i.e. not Qualifying Interests of European designated sites) are vulnerable to the same impacts.
KER 6: Badger	The study area contains active setts as well as areas of foraging activity, highlighting the species' use of the study area. Badger could be impacted by disturbance, habitat loss and direct mortality as a result of the proposed development.	Local Importance (Higher Value) as this species is protected under the Wildlife Acts and is present within the proposed development boundary.
KER 7: Bats	Bats and their roosts are protected wherever they occur, and the habitats found within and adjacent to the study area provide high-quality commuting and foraging habitat. Bats are vulnerable to habitat loss, especially the loss of roosting habitat, and disturbance.	Local Importance (Higher Value) as these species are listed on Annex IV to the Habitats Directive and protected under the Wildlife Act and are present within the proposed development boundary.
KER 8: Red Squirrel	Red squirrel is present within the study area, relying on well-connected woodland habitats for foraging and nesting. Red Squirrel could be impacted through habitat loss, disturbance and injury or mortality during construction.	Local importance (Higher Value) as this species is protected under the Wildlife Act but was not present in significant numbers.
KER 9: Birds	The habitats within the Zone of Influence of the proposed development support wintering waterbirds and breeding raptors. The proposed development by its nature will not result in the loss of habitat for breeding raptors, although there is potential for the proposed development to result in the loss of habitat for breeding passerine species. Birds could be impacted by disturbance, habitat loss for certain bird species as well as habitat degradation via water quality impacts.	Local Importance (Higher Value) as species listed on Annex I to the Birds Directive were not recorded in Internationally or Nationally Important numbers during the wintering bird surveys carried out for the proposed development and no breeding habitat for raptors on the Birds of Conservation Concern Red or Amber List will be lost as a result of the proposed development.
KER 10: Invasive Alien Plant Species	Invasive Alien Plant Species have been selected as a Key Ecological Receptor because of the presence of Japanese Knotweed, Giant Knotweed, Himalayan Knotweed, Rhododendron and Himalayan Balsam in the footprint of the proposed development. This species can impact negatively on the biodiversity, preventing the regeneration of native species and necessitating the use of herbicides.	N/A as the potential spread of invasive alien plant species have the potential to impact negatively on biodiversity locally.

7.8 Do Nothing

If the proposed development does not proceed, there will be no loss of aquatic or terrestrial habitats. The baseline environment, as described, is of important value to the aforementioned species, and without the proposed development, impacts associated with the proposed development, such as noise, lighting, fragmentation of habitats or potential pollution event, would not be introduced to the area.

7.9 Description of Potential Impacts (Unmitigated)

7.9.1 Effects on European Sites

Thirteen European designated sites were identified in the Zone of Influence for the proposed development. Pathways for impact from the proposed development were identified for eleven of these 13 European sites. These are considered under KER 1: 'Woodlands', KER 2: 'Aquatic Ecosystems and Associated Aquatic Fauna', KER 4: 'Upland habitats', KER 5: 'Otter', KER 9: 'Birds' and KER 10: 'Invasive Alien Plant Species'. As likely significant effects could not be excluded at the screening stage, a Natura Impact Statement (NIS) has been prepared as part of the application for development consent. The NIS presents all of the predicted effects on these sites and their Qualifying Interests and also provides a detailed analysis and evaluation of these effects in the context of the relevant Conservation Objectives. The NIS also prescribes mitigation measures to address any negative effects identified. Therefore, there is some overlap between this chapter of the EIAR and the NIS for the proposed development including mitigation measures. However, both the EIAR and NIS for the proposed development are standalone documents which do not rely on each other.

7.9.2 General Impacts on Key Ecological Receptors

7.9.2.1 Habitat Loss

Construction

The proposed development is generally 3m wide with a 1m verge on either side. A 5m wide corridor will be cleared to facilitate the greenway. The greenway is 37.5km long, with 11.4km following the abandoned railway corridor from the southwest of Barnesmore Gap to Lough Mourne and a further 11.3km along the abandoned railway corridor through forestry and agricultural land from Lough Mourne to Ballybofey/Stranorlar. The vast majority of the route is through agricultural land or is clear and, in places, used as a farm track. There is a larger area of vegetation clearance required in Loughesk Demesne due to the topography of the site. Many other areas along the proposed development require minor areas of tree and vegetation clearance.

The proposed development will predominantly result in the loss of Improved Agricultural Grassland (GA1), Amenity Grassland (GA2), Wet grassland (GS4), Scrub (WS1), Wet Heath habitat (HH3) and woodland habitats (WD1, WD2, WD4, WN1, WN6). There will also be some loss of Hedgerow (WL1) and Treeline (WL2) habitat where the proposed development is required to 'punch through' in order to traverse field boundaries. The loss of each habitat is presented in Table 7-22 below

Table 7-22 - Habitat Loss

Level 3 Fossitt Habitat	Baseline	Lost	Retained/Created/ Enhanced
Area Habitats (ha)			
WS2 Immature woodland	0.02	0	0
WS1 Scrub	9.59	3.61	1.04
WN6 Wet willow- alder-ash woodland	1.37	0.24	0.06

Level 3 Fossitt Habitat	Baseline	Lost	Retained/Created/ Enhanced
WN5 Riparian woodland	0.65	0.03	0
WN2 Oak-ash-hazel woodland	0.36	0.01	0
WN1 Oak-birch- holly woodland	1.37	0.08	0.05
WD5 Scattered trees and parkland	0.05	0.02	0
WD4 Conifer plantation	4.04	0.55	0.13
WD2 (Mixed) broadleaf/ conifer woodland	2.39	0.57	0.18
WD1 (Mixed) broadleaved woodland	6.84	1.36	0.53
PB4 Cutover bog	0.51	0.03	0
PB2 Upland blanket bog	7.16	0	0
HH3 Wet heath	10.7	0.24	0
HH1 Dry siliceous heath	0.01	0	0
HD1 Dense bracken	0.25	0.06	0.04
GS4 Wet grassland	38.71	22.23	13.91
GA2 Amenity grassland (improved)	1.52	0.53	0.11
GA1 Improved agricultural grassland	13.28	8.79	5.81
FS1 Reed and large sedge swamps	0.2	0.04	0
FL4 Mesotrophic lakes	0.05	0	0
FL2 Acid oligotrophic lakes	0.05	0	0
ED3 Recolonising bare ground	3.36	1.97	0.33
ED2 Spoil and bare ground	9.16	6.14	0.8
BL3 Buildings and artificial surfaces	5.65	0.99	0.04
Total Area (ha)	117.29	47.49	23.03
Linear Habitats(km)			
WL5 Treelines	14.36	4.02	2.77
WL1 Hedgerows	4.21	0.98	15.14
FW4 Drainage Ditches	3.08	1.10	43.20
FW2 Depositing/ lowland rivers	0.18	0.02	0.00
FW1 Eroding/ upland rivers	1.24	0.32	0.00
BL1 Stone walls and other stonework	0.24	0.09	0.00
Total Length (km)	23.3	6.53	61.11

Habitat loss will also occur during the construction of the trailheads, compounds and temporary working areas. Habitats that will be lost at the proposed trailhead locations include Improved Agricultural Grassland (GA1), Amenity Grassland (GA2), Wet grassland (GS4), Scrub (WS1), Built Land and Artificial Surfaces (BL3), Mixed Broadleaved/Conifer Woodland (WD2) and Wet willow-alder-ash woodland (WN5). Similarly, habitats lost to facilitate the compounds primarily include Improved Agricultural Grassland (GA1), Wet grassland (GS4)

and Built Land and Artificial Surfaces (BL3), with minor areas of Spoil and Bare Ground (ED2), Recolonising Bare Ground (ED3), Dense Bracken (HD1), Mixed Broadleaved Woodland (WD1), Conifer Plantation (WD4) and Scrub (WS1). The trailheads in Donegal Town, Loughesk Demesne, Biddy's O'Barnes, and Ballybofey/Stranorlar will first facilitate construction compounds or temporary working areas prior to their conversion into trailheads. Habitats lost at all other compound locations and temporary working areas will undergo replanting and enhancement measures.

Habitat loss has the potential to impact KER 1: Woodlands, KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines, KER 4: Upland habitats, KER 6: Badger, KER 7: Bats, KER 8: Red Squirrel and KER 9: Birds.

There are 91 structures proposed along the greenway. The construction of watercourse crossings including culverts and bridges has the potential to impact KER 2: Aquatic Ecosystems and Associated Aquatic Fauna and KER 5: Otter.

7.9.2.2 Habitat Fragmentation and Barrier Effect

Construction

In general, the earthworks, fencing and vegetation removal during construction may fragment the ecological corridors within the area and temporarily inhibit the movement of species, such as Otter, Badger and other terrestrial species. These impacts are anticipated along the proposed development.

Artificial lighting of the construction area also presents the risk of light disturbance for nocturnal species, particularly Otter, bats and fish by fragmentation of commuting/foraging corridors, disruption to circadian rhythms and increased risk of predation.

Prolonged or repetitive disturbances have the potential to cause barriers to connectivity for species moving past the construction area in the terrestrial or aquatic environment.

Operation

The proposed development primarily runs through rural and agricultural areas with trailheads and links at established urban or tourist areas, such as Donegal Town and Biddy's O'Barnes. However, for much of the length of the proposed development, there will be an increase in human presence from the baseline. There is also potential increase in the presence of dogs along the route of the proposed development.

Where fencing is proposed at areas along the proposed development, this has the potential to restrict animal movement, such as Badger and Otter if not designed to allow mammals to pass through.

The majority of the proposed development will not be lit, however lighting is proposed at the trailheads at Donegal Town, Biddy's and Stranorlar, as well as the lengths of greenway closest to the towns: Ch.0-1050 (Donegal Town) and Ch.27500 – 30050 (Ballybofey / Stranorlar and Sessiaghoneill link). Public lighting will also be provided in underpasses along the route to maintain user safety. It is not anticipated that lighting will be required at minor side road crossings however these will be assessed on an individual basis.

Therefore, the proposed development has the potential to cause noise and artificial lighting disturbance to the surrounding area during the operational phase. These impacts have the potential to negatively affect KER 5 'Otter', KER 6 'Badger', KER 7: 'Bats' and KER 9 'Birds'.

7.9.2.3 Habitat Degradation – Water Quality

Construction

The proposed development includes 91 structures in total, comprising of minor structures (culverts), new river bridges, existing structures (road and watercourse crossings), one new underpass under the N56 and two new underpasses under the N15. A description of these structures is provided in Section 4.3.6 of this EIAR. The new river bridges include clear span structures, and the existing watercourse crossings include masonry bridges that require repair and/or upgrade.

The construction/upgrade of these structures over watercourse crossings could result in negative effects on water quality as a result of sedimentation and/or the spillage of cementitious materials and pollutants into watercourses through surface water runoff.

Works adjacent to watercourses and water dependent habitats which could have negative effects on water quality on the River Eske, River Finn, Lowerymore River, Donegal Bay and the Foyle and Faughan Estuaries, thereby impacting habitats and species located in these aquatic environments.

During construction in and around watercourses the following may impact water quality.

- Surface water run-off can contain high levels of suspended sediments and other pollutants. Such run-off, if not attenuated and treated prior to discharge, has the potential to cause significant ecological impacts. Large amounts of fine sediment deposition can smother benthic habitats, leading to changes in biological composition.
- Concrete, grout or other pollutants may spill directly into the local environment or be washed into watercourses in construction site run-off. These materials are highly alkaline and, consequently, can drastically alter the pH of the receiving water body. This can lead to profound ecological impacts and can affect the condition of habitats by causing damage to pH-sensitive species.
- Vehicles, plant and equipment which will be used during construction rely on hydrocarbons such as diesel, petrol and lubricating oils. Leaks from poorly maintained vehicles, plant, equipment, or storage tanks risk the input of hydrocarbons into the environment.
- In the absence of appropriate mitigation, hydrocarbons from the construction site may be washed into surface waters in construction site run-off. This has the potential to cause negative ecological impacts on freshwater habitats. Hydrocarbons can have direct toxic effects, including reducing the ability of organisms to absorb water and nutrients. Hydrocarbons can also alter the nutrient balance and microbiota in soil and water, which can benefit some species while detrimentally affecting others. Such changes have the potential to alter the ecological community structures and ecological integrity of habitats.
- Inadequate treatment of wastewater from on-site toilets and washing facilities also provides for potential water quality impacts which could lead to ecological effects. Faecal contamination can alter the nutrient balance in soils and water, causing significant changes in microbial communities and reductions in oxygen levels. This can have significant effects on the biological composition of receiving habitats.

Operation

The introduction and increase in the numbers of greenway users including people and dogs may lead to an increase in dog fouling and human waste along the proposed development. Responsible dog owners will clean up after their dogs, however, there will be a proportion that does not. Dog faeces contain high levels of nitrogen and phosphorous. Surface runoff from the greenway contaminated with dog faeces could increase nutrient levels and oxygen demand in receiving surface waterbodies, negatively impacting water quality. However, given the buffer zones between the greenway and the watercourses, the environmental degradation that would occur as a result of desiccation, UV radiation and temperature changes, and the dilution capacity of the watercourses, any negative effects would be imperceptible.

Welfare facilities at the trailheads could also be a source of pollution to waterbodies, lack of appropriate maintenance or an incident of vandalism could result in human waste and chemicals entering the waterbodies. The input of nutrients to water courses and waterbodies via animal and human waste could result in negative effects to aquatic habitats and species and to species which are dependent on these habitats.

Sustainable Urban Drainage Systems (SuDS) is required for the proposed development to manage surface water runoff. This drainage will largely consist of over the edge drainage along the length of the greenway. However, there are areas, particularly at the trailheads, where there is some potential for water quality impacts to the receiving environment from

surface water runoff during the operational phase which could result in pollutants entering watercourses and discharging to connected watercourses.

Development in the vicinity of peatland habitats, particularly Croaghonagh Bog, has the potential to affect the surrounding peatland habitat by altering groundwater flows. Chapter 8 Lands and Soils contained a detailed assessment of the risk associated with the proposed development and drainage of the surrounding bog habitats. The proposed development will not affect water levels within peatlands surrounding the greenway.

7.9.2.4 Habitat Degradation – Shading

Operation

The water course crossings have the potential to cause shading on the River Eske, the Lowerymore River and River Finn. Shading will occur to freshwater habitat primarily under the footprint of the proposed development, but the area will vary at different times of day and year (due to changes in angle and intensity of the sun). Aquatic species, such as Freshwater Pearl Mussel and spawning salmon would be vulnerable to shading impacts.

According to research carried out on the effects of shading to estuarine wetlands from bridges, in order to avoid shading impacts to the water and in-river vegetation, the soffit height:deck width ratio is required to be 0.7 or above (Broome et al., 2005). The new watercourse crossings for the proposed development will be 4m wide. Therefore, the soffit heights are required to be at least 2.85m high to meet the 0.7 ratio requirement, thereby avoiding shading impacts. Any watercourse crossing with a soffit height of less than 2.85m and a width of 4m will have potential for shading impacts. A brief description of the new structures options is provided in Section 4.3.6.2 of this EIAR. Drawings are presented in Volume 3 of this EIAR. All new structures for the proposed development pass the 0.7 soffit height:deck width ratio requirement.

7.9.2.5 Habitat Degradation – Spread of Invasive Species

Construction phase activities could result in the spread of invasive species to, from, and within the proposed development. These species could become established in new locations and lead to long term degradation of other habitats and negatively impact biodiversity during operation.

7.9.2.6 Direct mortality

Construction

There is potential for direct mortality as a result of site clearance, tree felling and vegetation removal. Birds are particularly vulnerable during the nesting season which occurs March - August inclusive. Construction works including vegetation removal and structure repair during this period has the potential to lead to the loss of nests and direct mortality to birds in nests.

Badger are present along the railway line and could build shelters within the footprint between the time of the surveys to inform the EIAR and the construction phase

The removal of trees or structures supporting bat roosts has the potential to result in injury or mortality of roosting bats.

7.9.2.7 Disturbance

Construction

Construction of the proposed development will result in temporary noise, vibration, lighting and visual disturbance and has the potential to affect birds, including breeding and wintering birds, Badger, Otter, Red Squirrel and Bat species where they occur in suitable habitat in proximity to the proposed development. These species have the potential to be impacted both within and outside the construction footprint.

Operation

The proposed development primarily runs through rural and agricultural areas with trailheads and links at established urban or tourist areas, such as Donegal Town and Biddy's O'Barnes. However, for much of the length of the proposed development, there will be an increase in human presence from the baseline. There is also potential increase in the presence of dogs along the route of the proposed development.

Increased presence of humans and dogs has the potential to result in disturbance impacts to birds, including wintering birds and birds of prey, causing birds to avoid suitable foraging habitat adjacent to the route. However, the habitats along the route of the greenway that would be subject to disturbance are widespread in the vicinity of the proposed development and the wider landscape. Surveys undertaken for the proposed development indicate that the habitats adjacent to the route are not important for birds of conservation concern. Other terrestrial species that may be impacted by increased disturbance include Badger, Otter, and Bats.

The majority of the proposed development will not be lit, however lighting is proposed in at the trailheads at Donegal Town, Biddy's and Stranorlar, as well as the lengths of greenway closest to the towns; Ch.0-1050 (Donegal Town) and Ch.27500 – 30050 (Ballybofey / Stranorlar and Sessiaghoneill link). Lighting will also be provided in underpasses along the route to maintain user safety. It is not anticipated that lighting will be required at minor side road crossings however these will be assessed on an individual basis.

Therefore, the proposed development has the potential to give rise to changes in noise and artificial lighting levels, resulting in noise and artificial lighting disturbance to the species listed above along the proposed development and in the surrounding area during the operational phase.

7.9.2.8 Introduction of Invasive Species

Construction

Construction activities have the potential to result in the spread of invasive species within and beyond the proposed development footprint. In the absence of control measures, there is a possibility that species may be inadvertently spread during construction, through the movement of equipment and contaminated soil to, from, or within the site. Especially in sensitive sites, invasive species, such as Rhododendron or Japanese knotweed that are present in the area, could rapidly spread and outcompete native species. An Invasive Species Management Plan, outlining the procedures to be followed for the management of Invasive Alien Plant Species has been prepared and is presented in Appendix G of the Construction Environmental Management Plan.

Operation

During the operation of proposed development, human traffic has the potential to spread invasive species by dispersing seeds within the proposed development.

7.9.3 Impacts on Key Ecological Receptors

Impacts on the Key Ecological Receptors as defined in the preceding sections are described in Table 7-23.

Table 7-23 - Impact Characterisation for Key Ecological Receptors based on TII (2009) and CIEEM (2018).

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
KER 1: Woodlands	- Habitat loss - Habitat fragmentation - Spread of invasive species	- Habitat fragmentation and barrier effect - Spread of invasive species	<u>Construction Phase</u> The construction of the proposed development will require vegetation clearance within areas of mixed broadleaved woodland, mixed broadleaved/conifer woodland, conifer plantation, scattered trees and parkland, oak-birch-holly woodland, riparian woodland and wet willow-alder-ash woodland. The areas of each habitat that will be lost are presented in Table 7-22. This has the potential to result in habitat loss and habitat fragmentation. No Annex I woodland habitats will be lost, however, the proposed development does pass through an area of Ancient and Long-established Woodland in the Lougheask Demesne. This is a significant impact at the local level, considering the small areas of these habitats being lost in the context of the similar habitat in the vicinity of the proposed development. <u>Operational Phase</u> The conversion of natural and semi-natural habitats to a greenway has the potential to result in the fragmentation and barrier effect of hedgerows and treelines that support wildlife as well as spread of invasive species as a result of increased human presence. This is considered to be a permanent slight negative impact at the local level.
KER 2: Aquatic Ecosystems and Associated Aquatic Fauna	- Barrier effect - Disturbance - Reduction in water quality	- Habitat degradation - Disturbance - Shading	<u>Construction Phase</u> The construction of the proposed development within the aquatic environment is limited to the installation of culverts in minor watercourses and drainage ditches. All culverts will be constructed offline. Offline construction involves creating a new channel and redirecting the watercourse to the new channel once the culvert is completed. While no suitable spawning habitat was recorded at these culvert locations, there is potential for habitat fragmentation. This could result in a long-term significant impact at the international level, if Freshwater Pearl Mussel was affected. Noise, light, and vibration during construction, including during the construction of the proposed River Eske and River Finn crossings, has the potential to result in disturbance impacts to aquatic species, resulting in avoidance of certain areas and preventing species from moving through their ecological corridors. This would result in a temporary negative impact at the international level. There is a risk of pollution to the watercourses crossed by the proposed development and to waterbodies downstream of the proposed development including Donegal Bay during the construction of the proposed development. Habitat degradation due to pollution may present long-term impacts on the aquatic habitats and sensitive species in the surrounding environment. Given many of the waterbodies are designated as part of European designated sites, this would

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
			constitute a long-term significant impact at the international level, if Freshwater Pearl Mussel was affected. Operational Phase There is a risk of pollution to the watercourses crossed by the proposed development and to waterbodies downstream of the proposed development including Donegal Bay. In particular, dog fouling presents a source of pollution to watercourses during the operational phase. Given the buffer zones between the greenway and the watercourses, the environmental degradation that would occur as a result of desiccation, UV radiation and temperature changes, and the dilution capacity of the watercourses, negative effects associated with dog fouling will not occur. Artificial lighting during the operational phase, which is proposed along the greenway in Donegal Town and Ballybofey/Stranorlar has the potential to result in disturbance to aquatic species, which may alter foraging habits, commuting routes and habitat utilisation. This is considered to be a significant permanent negative impact at the international level. The construction of new bridges over watercourses may result in shading impacts to species such as Freshwater Pearl Mussel. This has the potential to result in habitat degradation and considering the nature of the receptor, this is considered a significant permanent negative effect at the international level.
KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines	- Habitat loss - Habitat fragmentation	Habitat fragmentation and barrier effect	Construction Phase The construction of the proposed development will require approximately 5.5km of linear habitat clearance over the length of the proposed development. This includes approximately 1.6km of linear habitat (e.g. small areas of existing hedgerows to be removed/trimmed for visibility and where the proposed development is required to 'punch through' for access) and 3.8km of shrubs and small trees that have recolonised the abandoned railway corridor. The beech treelines that border the abandoned railway corridor will be retained. This targeted vegetation clearance of linear habitats has the potential to result in habitat loss and habitat fragmentation for species using these habitats. The removal of linear habitat will be limited to the area within the greenway footprint. The loss of linear habitats will constitute a permanent slight negative impact at the local level. Operational Phase Increased human activity and the presence of dogs along the greenway has the potential to result in habitat fragmentation. This is considered to be a long-term negative impact at the local level.
KER 4: Upland habitats	- Habitat Loss - Reduction in soil nutrients & water quality	- Reduction in soil nutrients & water quality - Habitat fragmentation and barrier effect	Construction Phase The proposed development will require vegetation clearance within areas of wet heath (approx. 0.24Ha) to facilitate the construction of the greenway, including at the location where the proposed development connects the trailhead at Biddy's O'Barnes within the abandoned railway corridor to the east of the Lowerymore River. Wherever this habitat occurs, this habitat has affiliation to Annex I habitat 'Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]' and will be

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
			lost as a result of the proposed development. This is considered to be a significant permanent negative impact as it will result in the loss of wet heath habitat. Operational Phase Peatlands are sensitive to changes in groundwater levels through drainage. As stated in Section 7.9.2.3, there is no risk of the proposed development to affect water levels in peatlands adjacent to the route. of the Given the sensitivity peatland and heath habitats to groundwater levels, this KER is sensitive to drainage impacts. Increased human activity and the presence of dogs along the greenway has the potential to result in disturbance to wildlife utilising these habitats. This is considered to be a permanent but slight negative effect at the local level.
KER 5: Otter	- Habitat fragmentation and barrier effect - Disturbance - Reduction in water quality	- Habitat fragmentation and barrier effect - Habitat degradation - Disturbance	Construction Phase The construction of new watercourse crossings, including over the River Eske and River Finn, as well as fencing and site clearance, has the potential to deter Otter from utilising watercourses and from accessing habitats in the wider area. This has the potential to temporarily sever otter territory during the construction phase. Given that no Otter resting places were recorded in the vicinity of the proposed development and the widespread availability of suitable terrestrial and aquatic habitat, this is considered to be a temporary slight negative impact at the local level, as the impact would occur for a short space of time. Noise, light, and visual disturbance has the potential to result in Otter avoiding aquatic habitats during construction. This has the potential to temporarily sever otter territory during the construction phase. Disturbance during the construction phase is a temporary slight negative impact at the local level, as the impact would occur for a short space of time. There is a risk of pollution to the watercourses crossed by the proposed development and to waterbodies downstream of the proposed development including Donegal Bay. This may negatively impact the fish populations in the watercourses, resulting in a reduction in prey availability for Otter. This is considered to be a potential short-term negative impact at the county level. Operational Phase Watercourses will remain accessible for Otter during operation and fencing will be provided along certain stretches of the proposed development. Fencing along specific lengths of the proposed development, such as adjacent to the Sessiagh stream, has the potential to prevent Otter from accessing supporting terrestrial habitat. Such impacts have the potential to create a barrier to connectivity for Otter. This is considered to be a permanent negative impact at the local level, considering that the greenway crosses watercourses as specific points. There is a risk of pollution to the watercourses crossed by the proposed development and to waterbodies downstream of the proposed development. This is a potential permanent impact at the county level.

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
			Increased human activity, the presence of dogs and artificial lighting along stretches of the greenway such as in Donegal Town and Ballybofey/Stranorlar, has the potential to result in disturbance to Otter. This is significant permanent negative impact at the local level.
KER 6: Badger	• Direct mortality • Settle loss • Habitat loss • Habitat fragmentation and barrier effect • Disturbance	• Habitat fragmentation and barrier effect • Disturbance	<u>Construction Phase</u> During the badger surveys undertaken for the proposed development, 35 setts were recorded. Ten of these setts will be closed and all of these were classified as either inactive or disused. No active setts will be permanently closed as part of the proposed development, although temporary exclusion during the construction phase is required for four active setts. One active main sett is 25m from the red line boundary and requires a temporary exclusion zone due to its proximity to the construction works. Direct mortality has the potential to occur as a result of sett destruction or by falling into and becoming trapped in excavations. Direct mortality, sett loss, and habitat loss is considered to be a significant permanent negative impact at the local level. Noise, light, and visual disturbance has the potential to result in Badger avoiding foraging or resting habitats during construction. This has the potential to temporarily sever badger territory during the construction phase. This is considered to be a not significant temporary negative impact at the local level. <u>Operational Phase</u> The proposed development will not be fully fenced in its entirety. Nevertheless, fencing along specific lengths of the proposed development, such as along the abandoned railway embankment north of the River Finn, has the potential to prevent Badger from accessing supporting habitat. Such impacts has the potential to create a barrier to connectivity for Badger. This is considered to be a significant permanent negative impact at the local level. Increased human activity, the presence of dogs and artificial lighting along stretches the greenway such as in Donegal Town and Ballybofey/Stranorlar, has the potential to result in disturbance to Badger, which may alter foraging habits, commuting routes and habitat utilisation. This is considered to be a significant permanent negative impact at the local level.
KER 7: Bats	• Direct mortality • Habitat loss • Habitat fragmentation and barrier effect • Disturbance	• Habitat fragmentation and barrier effect	<u>Construction Phase</u> There is a confirmed bat roost in the old masonry arch bridge west of Lough Mourne. Any works to this bridge have the potential to result in direct mortality and habitat loss which are considered to be significant permanent negative impact at the local level. Bats are present wherever there is suitable habitat, including along the existing hedgerows, treelines and the abandoned railway corridor. The loss of vegetation and its conversion to a greenway is insignificant in terms of the total area covered by bats feeding each night, and there will be no measurable change in food availability. Noise, light, and visual disturbance has the potential to result in bats avoiding in certain areas during construction. Construction activity will not take place during the hours of darkness during the period bats are most active. Therefore, noise, light and visual disturbance will not affect foraging bat activity.

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
			<u>Operational Phase</u> The nature of the proposed development as a linear habitat will ensure the route travels along the side of a linear habitat, such as a hedgerow. Where minor vegetation removal is required to pass through linear habitats, the greenway is approximately 4m wide which will not disrupt bat foraging habitat or sever connectivity. Bats will not be prevented from accessing suitable habitat and there is an abundance of alternative foraging habitat within the surrounding landscape. The operational phase of the proposed development will result in an increase in artificial lighting being introduced near Donegal Town, Biddy's O'Barnes and Ballybofey/Stranorlar. An increase in artificial lighting can cause bats to avoid lit areas and alter foraging habits. This is considered to be a significant permanent negative impact in these areas where some species of bats could be deterred from using the area.
KER 8: Red Squirrel	- Habitat loss - Disturbance	Disturbance	<u>Construction Phase</u> During the ecology surveys undertaken for the proposed development, four dreys were recorded. All dreys were recorded outside the landtake boundary and these trees will not be felled to facilitate the proposed development. At the location where these dreys were recorded, the proposed development utilises the abandoned railway corridor, which is already a clear track. However, there is potential for targeted tree felling to occur to facilitate construction works. Therefore, there is potential for Red Squirrel to build dreys in these trees between the time that has elapsed between the completion of the ecology surveys and the commencement of the construction works. As Red Squirrel are known to be present in suitable habitat adjacent to the proposed development boundary, direct mortality may occur as a result of active drey destruction during tree felling works. Habitat loss will also occur during tree felling operations within suitable habitat for this species. This is considered to be a potential significant permanent negative impact at the local level. Noise, light, and visual disturbance has the potential to result in Red Squirrel avoiding the area during construction, or by preventing them from accessing their foraging habitat in the surrounding area. However, given the availability of suitable foraging and commuting habitat, this is considered to be a not significant temporary negative impact at the local level. <u>Operational Phase</u> Increased human activity along the greenway has the potential to result in disturbance impacts to Red Squirrel, which may alter foraging habits and habitat utilisation. Therefore, this is considered to be a slight negative impact at the local level, as the source of disturbance would be limited to the area along the greenway. There is potential for the proposed development to facilitate the movement of grey squirrel from Ballybofey to important red squirrel habitat in Ardnamona Wood/Lough Eske. The main link connecting these two areas is through the Barnesmore Gap Valley. There is no existing continuous linear tree cover along the abandoned railway corridor through the Barnesmore Gap. The landscape design for the proposed development does not include proposals to establish tree corridors along this stretch of the proposed development. The landscape design along

Key Ecological Receptor	Construction phase impacts	Operational phase impacts	Ecological significance if unmitigated
			Lough Mourne and through the Barnesmore Gap provides involves the retention of existing grassland habitat, rather than linear treeline habitats. The proposed development will not facilitate movement of grey squirrel from Ballybofey to important red squirrel habitat in Ardnamona Wood/Lough Eske.
KER 9: Birds	• Direct mortality • Habitat loss • Habitat fragmentation and barrier effect • Disturbance • Reduction in water quality	• Habitat fragmentation and barrier effect • Disturbance • Reduction in water quality	<u>Construction Phase</u> Direct mortality may occur as a result of site clearance, tree felling and vegetation removal, particularly during the nesting season (March-August inclusive) when works could lead to the loss of nests. This would not affect the conservation status of species that typical of these habitats and is therefore not significant, however, in accordance with the Wildlife Acts, measures should be taken to avoid the loss of nests. The construction phase of the proposed development will result in noise, light, and visual disturbance. Disturbance could cause nest failure of nests or the displacement of birds, and is considered to be a temporary negative impact at the local level. There is a risk of pollution to the watercourses crossed by the proposed development and to waterbodies downstream of the proposed development including Donegal Bay. Habitat degradation due to pollution may present long-term impacts on waterbird roosting and foraging habitat downstream of the proposed development. This is considered to be a significant short-term negative impact at the local level, considering the sources of pollution and the size of the waterbodies concerned. <u>Operational Phase</u> The operational phase of the proposed development will result in increased traffic and human presence within the proposed development boundary. Disturbance during the operational phase considered to be a slight negative impact at the local level, considering it would be limited to users on the greenway and that no important areas for wintering birds or species vulnerable to disturbance were recorded during the surveys. The human presence along the route and adjacent planted habitats may deter birds of prey from hunting small birds in these habitats. Given that overall prey populations for raptors will not be reduced, this is considered to be a not significant long-term neutral impact at the local level.
KER 10: Invasive Species	• Habitat degradation - spread of invasive species	• Habitat degradation - spread of invasive species	The importation and movement of soil, materials and machinery could lead to the introduction of invasive species during the construction phase. During the operational phase, the movement of people and maintenance activities could lead to the spread of invasive species. The spread of invasive species would constitute a significant permanent negative impact at the local level.

7.10 Mitigation Measures

This section describes the measures that are in place to mitigate any harmful or negative impacts associated with the proposed development and the identified Key Ecological Receptors, as described in the preceding sections. Construction phase mitigation measures are described first, followed by Operational phase mitigation. Mitigation measures which relates specifically to the Key Ecological Receptors is described.

The proposed development has been developed having regard to EU and Irish legislation and all relevant guidelines in relation to ecology and engineering best practice for the planning and construction. These guidelines provide practical measures that can be incorporated into the design to minimise impacts and protect the receiving environment. The design has followed the basic principles outlined above to eliminate the potential for ecological impacts, where possible, and to minimise such impacts where total elimination is not possible. The design has followed the TII Publications (Standards) and the TII Environmental Assessment and Construction Guidelines.

7.10.1 General Construction Phase Mitigation

The following general mitigation measures will be employed during the construction of the proposed development:

- The contractor will appoint a suitably qualified Ecological Clerk of Works (ECoW) for the duration of the construction contract to ensure that the mitigation and monitoring proposed in this Chapter are implemented during the construction phase. The ECoW must possess training, experience and knowledge appropriate to the role, including:
 - An NFQ Level 8 qualification or equivalent or other acceptable qualification in an ecological discipline; and,
 - Demonstrable appropriate practical experience as an ECoW in the protection of European sites.
- A Construction Environmental Management Plan (CEMP) has been developed for the proposed development (Appendix 4.1) and will be produced by the successful contractor(s). The CEMP will set out the Contractor's overall management and administration of the construction phase. The CEMP will be developed by the Contractor during the pre-construction phase, to ensure commitments included in the statutory approvals are implemented.
- In order to prevent pollution of surface water during the construction of the proposed development, which could potentially give rise to negative effects on biodiversity and freshwater habitats, all of the mitigation measures contained in the EIAR Chapters 9 (Hydrology) and 14 (Landscape and Visual Amenity) shall be implemented.
- The Contractor will prepare a site-specific Method Statement detailing how the works will be carried out. The Foreperson shall read, sign and abide by each site-specific Method Statement. A 'toolbox talk' will be conducted by the ECoW to induct the Works Team on the ecological considerations listed in the site-specific Method Statement by the Foreperson.
- The Contractor will appoint a Site Environmental Manager (SEM) prior to the commencement of works. This person shall be responsible for carrying out environmental monitoring of the works and ensuring that the mitigation measures proposed in this report (as well as the CEMP and site-specific Method Statements) are adhered to.
- Construction is limited to the hours of 08:00-18:00 Monday to Friday with reduced hours on Saturday (08.00 – 14.00) and that the site will be closed on Sundays and during public holidays. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of Donegal County Council. Works shall not be permitted on Sundays or Bank Holidays. Standard construction hours being limited to daylight

hours reduces impacts associated with noise, lighting and vibration during the hours when mammals are typically active and foraging.

- Temporary compound fencing will be erected prior to the commencement of works to function as tree protection fencing and to prohibit any works within the Root Protection Areas (RPAs) identified by the project Arboriculturist. All tree protection fencing will comply with '*BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations*' (BSI, 2012).
- The compound fencing will be set back from existing hedgerow and treeline boundaries to avoid habitat loss and protect retained vegetation. The required stand-off distance, including the extent of Root Protection Areas, will be determined by the Environmental Clerk of Works (ECoW) in consultation with the Arboriculturist. Existing land boundaries will be retained. Where minor vegetation removal within hedgerows is required to 'punch through' for access on a compound site, these areas of cleared hedgerow will be replanted following completion of construction.

7.10.2 Non-specific Mitigation Measures

7.10.2.1 Water Quality

7.10.2.1.1 Construction Phase

All surface water runoff will be directed to existing watercourses. Where existing drains are not available, new shallow v-ditches will be constructed which will convey surface water to the nearest watercourse. No new outfalls will be constructed in the River Eske, as described in Section 7.10.3.2. Attenuation will be provided at the trailheads which will ensure that surface water runoff does not exceed greenfield runoff rates.

During construction, the following guidance documents for construction work on, over or near water will be adhered to:

- C532 Control of water pollution from construction sites: guidance for consultants and contractors (CIRIA, 2001)
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers.
- CIRIA C648 Control of water pollution from linear construction projects: technical guidance (CIRIA, 2006)
- Construction, Replacement or Alteration of Bridges and Culverts: A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945 (OPW, 2019)
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2005d)
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016)
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board)

Where construction is located within 50m of a watercourse the Contractor shall:

Prior to commencement of works the contractor shall prepare a site-specific work plan work plan that includes:

- Drawings of planned works, machinery access corridors of corridors, haul roads, delivery areas, concrete batching and wash out areas and wheel wash areas, environmental constraints and mitigation measures to address such;
- A method statement;
- An emergency response plan in case of accidental spillages;
- The ECoW and the SEM will approve the site-specific work plan.

Hydrocarbons and other chemicals

- All vehicles and plant shall be refuelled off-site.
- All fuelling of machinery shall be undertaken on an impermeable base in bunded areas at least 50m from a watercourse, drain or ditch.
- All fuelling equipment shall be regularly inspected and serviced.
- Any petrol- or diesel-fuelled pumps or other machinery shall be located within temporary bunded units.
- All fuel, oils, chemicals, hydraulic fluids, on-site toilets etc. shall be stored in access-controlled areas on the construction site compound, on an impermeable base which shall be bunded to 110% capacity, appropriately secured and shall be located away from drains, watercourses or other sensitive areas.
- All plant and construction vehicles shall be inspected daily for oil leaks and a full-service record shall be kept for all plant and machinery.
- Maintenance and repairs shall be undertaken on an impermeable surface located at least 50m from a waterbody, drain or ditch,
- All construction plant (pumps, compressors, generators etc) shall be provided with adequately sized spill trays.
- Spill kits shall be available on-site.
- Spill kits shall be provided at all refuelling points and fuel/chemical storage areas.
- Staff shall be trained in the use of spill skits and spill kits.
- All soils contaminated by spills shall be treated on-site. Where this is not feasible contaminated soils will be removed to a suitably licenced disposal facility.
- All waste oils, empty oil containers and hazardous wastes shall be disposed of in accordance with the Waste Management Act, 1996 (as amended).
- Owing to the presence of contaminants within the construction site, excavation shall be limited to removing the required amount of earth only.

Site Access and Vehicle Movements

- Temporary haul roads shall be constructed between earthworks and the river.
- The subgrade of haul roads shall be prepared by light compaction. A geotextile underlay shall be installed.
- A 100-200mm deep granular surface shall be provided at haul roads.
- A 2-3% cross fall shall be provided away from the river. Swales shall be provided to direct runoff from haul roads away from the river to settlement cells.
- Clean water diversions (swales or interceptor ditches shall be provided upslope of excavated areas to divert flows around excavated surfaces to prevent run-on.
- A continuous perimeter bund shall be provided at the downslope edge of excavated areas.
- Wheel wash areas shall be located near the site exit on an impermeable surface.
- All vehicles shall pass through wheel wash area before exiting the site.
- The wheel wash area bunds and settlement tanks shall be inspected daily and repaired as required.
- Sludge from settlement tanks shall be periodically removed and disposed of at an appropriately licensed facility.
- All fuelling of machinery shall be undertaken on an impermeable base in a bunded area at least 50m from the edge of the river.

- All fuels, oils, hydraulic fluids and construction chemical shall be stored in access-controlled areas.
- Fuel and chemical storage areas shall have bunded impermeable base and shall be located away from drains, watercourses or other sensitive areas.
- Spill kits shall be provided at all refuelling points and fuel/chemical storage areas.
- All fuelling equipment shall be regularly inspected and serviced.
- All construction plant (pumps, compressors, generators etc) shall be provided with adequately sized spill trays.
- All plant and construction vehicles shall be inspected daily for oil, fuel and hydraulic fluid leaks and a full-service record shall be kept for all plant and machinery.
- Maintenance and repairs of plant & vehicles shall be undertaken on an impermeable surface located at least 50m from a watercourse, drain or ditch.
- The works area (including site compounds) will be limited to the minimum required to undertake the necessary elements of the proposed development.

Concrete Works

The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which has a deleterious effect on water chemistry and aquatic habitats and species. As the use of concrete cannot be avoided, the following control measures will be employed:

- Hydrophilic grout and quick-setting mixes or rapid hardener additives shall be used to promote the early set of concrete surfaces exposed to water.
- When working near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used.
- Any plant operating close to the water or water-dependent habitat such as bogs will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near surface waters and bogs.
- Placing of concrete near watercourses will be carried out only under the supervision of the Ecological Clerk of Works (ECOW).
- The weather forecast will be consulted prior to commencing concrete pours. No such works will be undertaken if inclement weather is forecast such that precipitation may make it difficult to maintain a dry working area.
- There will be no spills of concrete, cement, grout or similar materials hosed into surface water drains. Such spills shall be contained immediately, and runoff prevented from entering watercourses.
- Concrete waste and wash-down water will be contained and managed on site to prevent pollution of all surface watercourses.
- On-site concrete batching and mixing activities will only be allowed at the identified construction compound areas.
- Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the manufacturer).
- Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival to site.
- All concrete washout shall occur at designated washout areas on bunded impermeable surfaces.

- Concrete washout areas shall be located at least 50m from a watercourse, ditch, drain or sensitive habitat.
- Concrete washout areas shall be inspected daily for leaks and overflows.
- Chute washout locations will be provided with a suitably sized, contained impermeable area. This area can be a portable skip or lined excavation. The contents of the cement washout area will be disposed of offsite.
- Hardened concrete waste will be removed and disposed of at an appropriately licensed facility.

Sedimentation and Surface Water Runoff

Where earthworks are required within 30m of a waterbody, such as at the various watercourse crossings, areas in proximity to watercourses not being crossed, adjacent to Lough Eske and adjacent to Lough Mourne, the following erosion, sedimentation and drainage controls shall be adopted:

- Prior to earthworks commencing, all ditches and drains shall be temporarily culverted to avoid movement of vehicles across watercourses.
- Riparian vegetation will be fenced to a minimum distance of 10m from the river's edge.
- Where riparian vegetation within 10 m of a rivers edge must be impacted, adequate protection of soils shall be provided using a biodegradable geotextile staked into the ground using wooden pegs until vegetation re-establishes.
- Areas of bank reinstatement shall be covered with hessian to encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in-situ as the vegetation grows back. Where it is not possible to reinstate vegetation, efforts shall be made in surrounding areas to offset removal through improvement. The landscape design is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031 includes planting which will compensate for minor loss of vegetation.
- A geotextile silt fence shall be installed continuously along the downslope perimeter of all disturbed areas adjacent to a watercourse, extending for the full length where soil disturbance occurs.
- The upslope area for fence segments shall not exceed 0.1 hectares.
- Silt fences shall be anchored by excavating a 150mm wide by 150mm deep trench. The geotextile shall be placed in the trench, and the trench shall be backfilled and compacted to prevent underflow.
- Silt fences shall be supported by wooden or steel posts at a maximum of 2m intervals.
- The minimum embedment for silt fence posts shall be 450mm.
- The geotextile fabric shall be attached to the posts by stapes or steel wire on the upslope side.
- The height of the silt fence shall be a minimum of 600mm.
- J-hooks will be provided at 30 – 50m intervals. A sediment ponding area will be provided behind each J-hook.
- Silt fences shall be inspected daily and after storms. Runs of sagging fence shall be tensioned and the silt fence re-anchored as required.
- Silt fences will be cleaned when sediment height reaches 1/3 height of the fence.
- Sections of the silt fence that are damaged shall be replaced immediately.
- Coir logs/strawbales shall be installed in concentrated flow paths and temporary sandbag, or rock check dams shall be constructed at outfalls.
- Surface water flowing onto the construction area will be minimised through the provision of berms, diversion channels or cut-off ditches.

- Protection of waterbodies and bogs from silt load will be carried out through the use of gully silt/sediment filters and shallow berms in hardstanding areas to provide adequate treatment of runoff to watercourses.
- Settlement tanks/ponds, silt traps/bags and bunds will be used. Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap.
- Where works are adjacent to waterbodies and water dependent habitats (e.g. bogs), silt fences will be installed around the works boundary to contain any potential silt or sediment run-off.
- Compound/storage facilities will be fenced off at a minimum distance of 5m from the top of the edge of the watercourse banks and bogs. Any works within the 10m buffer zone will require measures, such as silt fences, to be implemented to ensure that silt laden or contaminated surface water runoff from the compound does not discharge directly to any watercourse or water dependent habitat.
- The construction discharge will be treated such that it will not reduce the environmental quality standard of the receiving watercourses.

Spoil Stockpiling

The following mitigation will apply to soil being stockpiled with 50m of a watercourse:

- Sacrificial grips shall be installed to direct runoff to settlement cells prior to treatment/discharge.
- Silt fences shall be provided on the stream side of stockpiles at downslope boundaries.
- The silt fence shall be set back from the toe by at least 6 m to maintain a ponding/clean-out zone.
- Stockpile heights and slope faces shall be greater than or equal to 3 to 1 on faces to minimise the runoff footprint,
- Continuous sediment barriers shall be provided around the downslope perimeter using silt fences or gravel bags)
- Non-active stockpiles shall be with secured with waterproof woven geotextile covers. These shall cover exposed faces entirely and a minimum of 300mm overlap for seams shall be provided,
- Stockpile covers shall be anchored or weighted against wind,
- Turbid runoff shall be routed to a settling area (temporary lagoon/tank or vegetated filter strip) before any controlled discharge.

Repair and Repointing of Masonry Structures Over Water

Repair and repointing of existing masonry structures over water will be carried out on S12 only, due to the presence of a known bat roost in the masonry arch barrel. All other masonry structures over watercourses will be repaired and upgraded using the concrete saddling method, as described Section 4.5.7.9 of this EIAR. The following mitigation measures specific to masonry repair and repointing over water at S12 will be adhered to:

- A Section 46/47 Permit under the Foyle Fisheries Act, 1952, for the disturbance of the riverbed habitat, is required in advance of any instream works associated with the masonry repair and repointing works to S12.
- All concrete repair and repointing will be undertaken by hand, using hand-held tools.
- Only one bucket of mortar will be brought to the works area at any time.
- A mobile catch-net or platform will be used beneath the deck and along the banks abutments as required to prevent masonry, wet concrete, removed vegetation or other materials falling into the channel,
- The catch-net/ platform and positioning will be approved by the ECoW.

- Masonry repair and repointing at height will be carried out using ladder, MEWP, Underbridge Unit or scaffolding.
- A site-specific risk assessment shall be undertaken in consultation with the Loughs Agency prior to undertaking repairs to the bridge (S12) over the Mourne Beg River.
- The risk assessments shall determine the necessity for and nature of bio-security protocols to be adopted during the works.
- The ECoW and the SEM will create a site-specific work plan for completing each bridge repair that details specific measures to be adopted to prevent water pollution and hydromorphological changes.
- Working platforms over the water surface shall have a continuous surface and shall have no gaps.
- Working platforms shall have a raised protective edge to prevent tools and equipment falling into the channel.
- Where feasible cantilevered or suspended working platforms will be used in preference to scaffolding.
- Impermeable, bunded concrete batching areas shall be located a minimum of 30m away from the waterbody.
- Floating silt screens, coir logs or straw bales shall be installed downstream of the bridge prior to works commencing.

Concrete Saddling to Masonry Structures over Watercourses

The proposed development includes the repair and maintenance of 6 No. existing masonry structures over watercourse, which were built to facilitate the abandoned railway. All masonry structures, with the exception of S12, will be repaired and upgraded using the concrete saddling method. The concrete saddling method is described in Section 4.5.7.9 of this EIAR. The purpose of the concrete saddling method is to avoid in-stream works to the watercourses, particularly in the River Eske at S01 due to the presence of Freshwater Pearl Mussel in the riverbed around the existing bridge piers. General water quality mitigation measures, as described above in Section 7.10.2.1, will apply.

In addition to the water quality mitigation measures proposed above, where concrete saddling is proposed (i.e., S01, S08, S09, S16 and S18), a Terracurtain screen will be securely anchored to the inside of the working area and shall be installed for the full length of the works on both sides of the masonry bridges for dust suppression. No water will be used for dust suppression on the bridge to prevent water quality impacts associated with surface water runoff. An impermeable membrane will be laid against the soffit walls prior to the pouring of concrete during concrete saddling works. No suspended scaffolding or debris netting is required as all construction works will be undertaken within the footprint of the existing structure.

Construction of Watercourse Crossings (Bridges)

The proposed development includes the construction of four new river bridge crossings (S04, S06, S10 and S20). The mitigation measures presented above in relation to water quality protection will apply in all cases.

Where bridge foundations are to be constructed, the following additional mitigation shall apply:

- Clean water diversions (swales or interceptor ditches) shall be provided upslope of excavated areas to divert flows around excavated surfaces to prevent run-on.
- A geotextile silt fence shall be installed continuously along the downslope perimeter of all disturbed areas adjacent to a watercourse, extending for the full length where soil disturbance occurs.
- Excavations shall be dewatered by a sump pump and discharged to a settlement tank.
- Straw bales, floating silt screens or coir logs shall be installed downstream of works.
- Formwork for foundations shall have watertight joints.

- Biodegradable shutter oils shall be used.
- Suitable debris netting shall be provided beneath the deck and along the banks in front of the proposed new bridge abutments as required to prevent masonry or other materials falling into the channel.

Mitigation measures specific to the proposed River Eske Crossing (S04) will also apply, as follows:

- The new bridge over the River Eske has been designed as a clear span structure.
- The piers are set back 5.8m on the north riverbank and 7.8m on the south riverbank.
- The location of the bridge has been selected to avoid Annex I habitats and minimise the loss of seminatural habitats.
- A site-specific risk assessment shall be undertaken in consultation with the National Parks and Wildlife Service and the Inland Fisheries Ireland the prior to installing bored pile foundations.
- Steel plates or a compacted granular surface underlain by geotextile shall be installed as a drilling/crane platform drilling platforms and drill rig positioning areas.
- Environmentally friendly drilling fluids shall be used in preference to Bentonite.
- Drilling pumps and mud pumps shall be provided with a bunded, impermeable surface.
- Pumps and hoses shall be inspected daily for leaks and repaired/replace as required.
- Slurry management operations will be provided with a level, bunded, impermeable surface.
- Permanent steel casings shall be installed at boreholes.

Construction of Culverts

There are 91 structures in total including bridges, culverts, underbridges and one overbridge. Ten culverts are subject to the Section 50 Consent process under the Arterial Drainage Act, 1945. The remaining culverts are small field drains and ditches and Section 50 permits for installing small pipe culverts are not required. For these small culverts, the bed of the ditch or drain will be cleared of vegetation and levelled and the pipe will be lowered into place to convey water under the greenway.

The ten culverts that require a Section 50 permit will be constructed offline. Offline construction involves creating a new channel and redirecting the watercourse to the new channel once the culvert is completed. The process for constructing the offline culverts is as follows:

- The installation of the ten culverts shall only take place during the period July to September unless otherwise agreed with Inland Fisheries Ireland or the Loughs Agency.
- The offline culverts will be constructed in new channels. The new channels and culverts will be constructed in the dry. Once the new channels and culverts are completed, the existing watercourse will be diverted into the new channel and the former channel will be filled in.
- The stream banks will have a slope of at least 1:5 and will be covered with topsoil and coir mats or similar to allow the area to revegetate and prevent erosion or the release of sediment into the stream while vegetation establishes.
- Where the watercourse bed is composed of gravels, the new bed will be lined with stone and gravels in a like for like replacement.
- When the watercourse is being diverted into the new channel, the downstream end will be opened first, allowing water to fill the channel slowly and prevent a surge of water which could lead to a sediment plume.

- When the water levels in the new channel have stabilised, the upstream end of the new channel will be opened and the old channel will be closed.
- Where there is a risk of sedimentation downstream of the culvert, a mat made of biodegradable material such as sedimat will be fitted at the downstream end of the new channel in accordance with the manufacturer's instructions. A straw bale is sufficient to contain sediment.

Welfare Facilities

Construction compounds will be established along the greenway route at Donegal Town, Biddy's O'Barnes and Ballybofey/Stranorlar. These compounds are to include site offices, worker welfare facilities (e.g. restrooms and shelters), storage space and room for plant and equipment and circulation space. Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.

Given the full and proper implementation of these water quality protection measures, the construction, operation, and maintenance of the proposed development will not give rise to significant effects.

7.10.2.1.2 Operational Phase

Sustainable Urban Drainage Systems (SuDS)

The drainage design for the proposed development will be designed in accordance with the following TII publication standards:

- TII DN-GEO-03047 Rural Cycleway Design (Offline & Greenway) – February 2025
- TII DN-DNG-03022 Drainage Systems for National Roads – February 2024
- TII DN-DNG-03064 Drainage of Runoff from Natural Catchments (including Amendment No.1 dated June 2015) – June 2015
- TII DN-DNG-03062 Edge of Pavement Details (including Amendment No.1 dated June 2015) – June 2015

As per TII DN-DNG-03022, the design intent is to achieve the efficient removal of surface water to provide safety, provide effective sub-surface drainage to maximise the lifespan of the pavement and earthworks, and minimise the impact of the runoff on the receiving environment.

To achieve those three major objectives, the proposed greenway will utilise:

- New over-the-edge drainage ditches for the interception of surface water from the greenway
- New pre-earthworks drainage ditches for the interception and diversion of surface runoff from adjacent land away from the greenway.
- New filter drains within the verge where the greenway is in cut.
- New carrier drains where surface water needs to be conveyed below roads.
- Attenuation swales for the attenuation of runoff from the greenway surface.
- Pipe or box culverts where the greenway crosses watercourses and field ditches and bridge structures for major watercourse crossings.
- If there are any locations where existing ditches can be utilised, these may be incorporated into the drainage design if the capacity within the channels is sufficient.
- For the trailheads, the design will include for permeable, flood resilient materials such as Grasscrete or similar porous paving for new areas of car parking and resin bound gravel for new areas of congregating spaces. Additional impermeable surfacing will be minimised and attenuation in the form of swales or basins will be provided.

SuDS – Greenway Drainage Design

- Along the proposed development corridor, drainage will largely consist of over the edge drainage along the length of the development. Along the abandoned railway corridor, existing ditches will be cleaned and regraded if necessary, and additional attenuation swales added to control the runoff to existing watercourses. In offline sections the drainage will be designed to connect to existing watercourses, making use of existing drainage channels as far as possible and providing new attenuation where required. In some areas, pre earthworks drainage is required at the toe of the embankment to catch runoff from adjacent lands, this will be in the form of filter drains or ditches. Filter drains will also be provided for low points in cut, and carrier drains in situations where the outfall from the swale may have to cross the greenway prior to enable discharge to a watercourse.
- Swales are shallow, vegetated ditches designed to manage surface water runoff, prevent erosion, and enhance water quality. These will be installed along the greenway route, particularly in areas where natural drainage solutions are needed.
- Infiltration trenches are linear excavations usually filled with permeable granular material, that allows for the temporary storage of water before it infiltrates into the ground. These will be installed along the greenway route where space is constrained and the provision of a swale is not feasible.
- A crossfall of 2% has been provided along the length of the greenway pavement to facilitate drainage and prevent standing water. Crossfall on verges will be kept to a minimum to allow for infiltration and to limit the overall runoff.
- Where the proposed greenway intercepts a watercourse, a pipe, box culvert, or bridge structure will be required to maintain the connectivity of watercourses. Where pipes, culverts, and bridges are required as part of the greenway drainage design, an application has been made to the Office of Public Works (OPW) for Section 50 consents where required.
- All surface water runoff will be directed to existing watercourses. Where existing drains are not available, new shallow v-ditches will be constructed which will convey surface water to the nearest watercourse. No new outfalls will be constructed into the River Eske, as described in Section 7.10.3.2. Attenuation will be provided at the trailheads which will ensure that surface water runoff does not exceed greenfield runoff rates.

SuDS – Trailhead Drainage Design

- The proposed trailheads will be designed to maximise permeable surfacing where possible, in order to reduce the runoff rate, reduce level of attenuation required and minimise the risk of flooding. Where additional impermeable surfacing is proposed, drainage will be attenuated by a swale or a basin and released at the greenfield runoff rate to mimic the existing hydraulic conditions and minimise impacts on the receiving environment.
- All new car parking areas are proposed to be constructed from a cellular porous paving solution such as Grasscrete or Truckcell, which provides approximately 90% permeability and captures hydrocarbon spills such that each pocket can be emptied and refilled with soil/grass seed in the event of die-back. A small number of gullies will be provided to account for the slight reduction in permeability, and these will convey runoff to attenuation swales or basins prior to discharge.
- In terms of hydrocarbon spillages, one of the unique aspects of cellular permeable paving is that any spillage is limited to a self-contained “pocket” and will create die-back in the grass of this “pocket”. However, it will be limited to a local scale and will be apparent at ground level. Maintenance would therefore require only that the “pocket” is emptied and refilled with soil and grass seed.
- There are areas of existing impermeable car parking (bitumen macadam) at the Donegal Town and Stranorlar trailheads, which are largely proposed to be retained along with the existing drainage regime. To provide some betterment, the drainage

regime will be formalised to include for gullies at surface level and attenuation to greenfield runoff prior to discharge.

- For the amenity areas where greenway users will congregate, permeable resin bound gravel is proposed to minimise the impact of additional runoff.

Welfare Facilities

Sanitary facilities will be provided at Donegal Town, Biddy's O'Barnes, and Ballybofey / Stranorlar, and will include toilets, accessible toilets and baby changing facilities. These facilities will be maintained and serviced by Donegal County Council.

7.10.2.2 Lighting

7.10.2.2.1 Construction Phase

Where lighting is required during construction, the lights will only illuminate work areas when necessary and will avoid illuminating any woodland habitats, trees, hedgerows and watercourses outside the required area. Directional lighting will be utilised to minimise light spill into surrounding habitats, including watercourses, treelines, and hedgerows.

7.10.2.2.2 Operational Phase

Lighting will be required at the trailheads and the sections closest to Donegal Town and Ballybofey/ Stranorlar (Ch.0-1050 (Donegal Town) and Ch.27500 – 30050 (Ballybofey / Stranorlar and Sessiaghoneill link). These sections include bridges over the River Eske and River Finn. The lighting will be in accordance with the Institution of Lighting Professionals and Bat Conservation Trust guidance (ILP, 2023), and will include the following elements:

- All lighting will be a warm-white colour of 2200K or less.
- Lamp post lighting will be LED and have no upward light spill and a sharp horizontal cut off.
- Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns.
- Lux levels on roads and paths will be set to the minimum required by BS 5489-1:2020, P4.
- Lighting at trailheads, including Biddy's, will be restricted to targeted locations around the carpark boundary, illuminating the carpark area only. The closest lamp post to the Lowerymore River is at least 20m and will be separated from the river by planted screening.
- Where lighting is required on bridges, such as the existing River Eske crossing and the proposed River Finn crossing, lighting will be limited to discreet recessed ground lights which will act as waymarkers with no downward light spill onto any watercourses. No lighting will be provided on the proposed River Eske crossing or the proposed River Lowerymore crossing.

7.10.2.3 Fencing and Landscaping

During the construction phase, temporary compound fencing will be erected prior to the commencement of works to function as tree protection fencing and to prohibit any works within the Root Protection Areas (RPAs) identified by the project Arboriculturist. All tree protection fencing will comply with 'BS 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*' (BSI, 2012).

The compound fencing will be set back from existing hedgerow and treeline boundaries to avoid habitat loss and protect retained vegetation. The required stand-off distance, including the extent of Root Protection Areas, will be determined by the ECoW in consultation with the Arboriculturist. Existing land boundaries will be retained. Where minor vegetation removal within hedgerows is required to 'punch through' for access on a compound site, these areas of cleared hedgerow will be replanted following completion of construction.

A tree survey and tree protection plan will be carried out in advance of site clearance. Tree protection fencing will be erected around trees which are to be retained and will include the Root Protection Area in accordance with BS 5837. The Arborist will have at least five years' experience in the survey and assessment of trees in accordance with BS 5837. The Arborist will be retained as required by the principal contractor to monitor and advise on any works within the RPA of retained trees to ensure successful tree retention and planning compliance. No storage of materials, plant movement or soil deposition will occur within these exclusion zones.

Following the completion of the construction phase, lands temporarily acquired will be reinstated to existing agricultural condition. Where access is proposed affecting existing property boundaries, these areas will be reinstated on a like for like basis and may require the replanting of hedgerows/trees, as required.

During the operational phase, fencing and landscape planting is proposed along certain stretches of the route of the proposed development. In general, the construction of new fencing will be minimised, and existing boundaries will be retained where possible. Dense vegetation exists alongside the route, and it is proposed that no fence will be installed in these areas to promote cohesion with the surrounding natural environment. Standard post and rail fence will be used along the boundary of the greenway for sections of the route where dense existing vegetation does not exist, and stock proof fencing will be installed in areas where livestock are found in adjacent fields. The landscaping plan includes the widespread planting of native Irish species of trees and shrubs, natural wildflower regeneration, woodland flora planting and wetland creation. The landscape design is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031.

Where fencing is proposed, the fencing will end 10cm above ground level to allow small animals including otter to cross the greenway.

The existing hedgerows and treelines that form the boundaries of the railway corridor and field boundaries will be retained. Vegetation clearance will be minimised along the length of the greenway itself, and will only be undertaken within the footprint of the greenway. The only work that will take place outside the fence line but within the proposed development boundary is the proposed landscape planting. All of the existing vegetation outside of the earthworks zone will be retained.

The species listed below are examples of the species that can be used for the proposed hedgerows. These species are native, tolerant to exposure and mostly fast growing. The final specification can include other species depending on availability and will be signed off by the ECoW in advance of ordering the plants.

Evergreen

- Holly - *Ilex aquifolium*
- Gorse - *Ulex europaeus*
- Wild privet - *Ligustrum vulgare*

Deciduous

- Hawthorn - *Crataegus monogyna*
- Broom - *Cytisus scoparius*
- European Spindle - *Euonymus europaeus*
- Burnet Rose - *Rosa spinosissima* (*R. pimpinellifolia*)
- Dog rose - *Rosa canina*
- Grey willow - *Salix cinerea*
- Hazel - *Corylus avellana*
- Elder - *Sambucus nigra*

Where woodland flora planting is proposed, shade-tolerant species will be planted, for example:

- Ramsons - *Allium ursinum*
- Primrose - *Primula vulgaris*
- Bluebells - *Hyacinthoides non-scripta*
- Wood Anemone - *Anemone nemorosa*

Based on the landscape design, approximately 5.5km of linear habitat will require clearance over the length of the proposed development to facilitate construction. This includes approximately 1.6km of linear habitat (e.g. small areas of existing hedgerows to be removed / trimmed for visibility and where the proposed development is required to 'punch through') and 3.8km of overgrown vegetation (i.e. overgrown shrubs and immature trees within the abandoned railway corridor). Approximately 17km of linear habitat will be planted, including individual tree planting, proposed hedgerows and treelines for screening. The landscape design is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031.

The proposed development's landscaping design ensures that habitat connectivity is not severed and habitat loss is minimal. In addition to the above, this also includes:

- Tree planting to provide commuting habitat along the proposed development and to guide fauna to other linking tree lines/hedges and woodland. A network of vegetation within the proposed development boundary will provide additional biodiversity within the landscape given the abundance of low value GA1 and GA2 in the landscape.
- The verges along the proposed development will be allowed to revegetate naturally with locally occurring native species.
- Reseeding with commercially available grass seed or wildflower mixes will be avoided.
- Excavated soil will be reused on site, including for required embankments to support the construction of the proposed development.
- Areas where vegetation has been removed and soil will be reused on site; this will be allowed to revegetate naturally. This includes the embankment areas.
- Outside of urban areas, where trees are planted, no herbicides or mulch will be applied, and native flora will be allowed to regenerate naturally.
- Wetland habitats, such as ponds, will be incorporated into the design of the drainage areas where attenuation is proposed. The wetlands will not affect the primary flood storage function of these areas. Guidance on the construction of reed beds is available in:
 - Sears, J., White, G., Self, M., Brown, A. & Blyth, S. (2013) *Bringing reedbeds to life – The wildlife, management and conservation of reedbeds*. British Wildlife, 25, pp. 1–10.
- Use of herbicides will be carefully controlled to treat invasive species, to keep the tracks clear of vegetation growth and in particular circumstances elsewhere where vegetation control measures are necessary.

A full, detailed appraisal of the habitats that will be lost, retained, created and enhanced is provided in the Biodiversity Net Gain assessment, which accompanies this planning application under separate cover.

7.10.2.4 Signage and Bins

Signage will be provided to require that dogs are maintained on a lead for the duration of their visit to the greenway and that dog owners are required to pick up and dispose of dog excrement using the bins provided. This signage will be included at trail heads and at regular intervals along the route. The subject matter of the signage and suggested locations are presented below in Table 7-24. Signage will inform greenway users of the importance of the general area to biodiversity and request responsible behaviour for all those using the amenity.

To avoid an excessive amount of signage being installed and potentially ignored by users, the final locations of signs will be coordinated by Donegal County Council.

Table 7-24 - Subject Matter and suggested locations of proposed signage.

Subject	Locations
Dogs must be kept on leads at all times.	At the trailheads. The entrances to the greenway from the trailheads.
Leave no trace messaging, in particular cleaning up after dogs.	At regular intervals along the route. Adjacent to Lough Mourne and Lough Eske.
No access to private lands	At field gates.

Waste bins, which will also function as dog fouling receptacles, will also be located at the 3 major trailheads. Donegal County Council will be responsible for the waste management of these bins and receptacles.

7.10.3 Specific Mitigation Measures

7.10.3.1 KER 1 Woodlands

As the proposed development largely follows the existing railway corridor or is through open agricultural land, vegetation removal of woodlands will be minor to facilitate the 5m wide greenway. The landscape design, as presented in Chapter 14, includes widespread planting which will compensate for minor loss of woodlands. In areas where there is a risk to tree root protection areas, such as north of the River Eske crossing in Ardnamona Wood, root protection measures, such as a cellular-confinement system, will be constructed in consultation with a qualified Arborist.

7.10.3.2 KER 2 Aquatic Ecosystems and Associated Aquatic Fauna

Aquatic ecosystems are sensitive to construction- and operational-related pressures with water quality impacts cascading through the trophic chain and affecting key species. Measures to safeguard water quality have been detailed in 7.10.2.1, however, additional species-specific mitigation is required to address other pathways of impact relevant to this KER. These measures are outlined below.

Fish

- Instream works, which are limited to the construction of ten culverts and masonry repointing to structure S12, will be undertaken between the months of July – September only, in accordance with *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* (IFI, 2016).
- A Section 46/47 Permit under the Foyle Fisheries Act, 1952, for the disturbance of the riverbed habitat, is required in advance of any instream works associated with the masonry repair and repointing works to S12.

Freshwater Pearl Mussel

Freshwater Pearl Mussel were recorded at two survey sites. In order to protect pearl mussel and water quality in general, no instream works or works on the riverbanks are proposed on the River Eske at any location. In addition to the water quality measures outlined in 7.10.2.1, Freshwater Pearl Mussel are vulnerable to introduced shading impacts. Moorkens (2000) stated in their assessment of Freshwater Pearl Mussel water quality requirements, that optimal mussel sites were exposed and trees did not shade the mussels. According to Broome et al. (2005), in order to avoid shading impacts to aquatic habitats, bridge soffit height:deck width ratio should be 0.7 or above and optimal bridge design is at least 2.85m from the bed and oriented in a north-south direction. The proposed crossing over the River Eske, which will be 4m wide, will be orientated in a north-south direction and the soffit height is at least 15.3m from the riverbed. Due to the orientation of the proposed structure in a north-south direction and the soffit height:deck ratio of 3.8, there are no shading impacts anticipated to Freshwater Pearl as a result of the proposed development. No riparian planting of trees is

proposed at the watercourse crossing locations where Freshwater Pearl Mussel were recorded and the existing environment will be retained ensuring the existing levels of light and shading are maintained.

In addition to the water quality protection measures, as described in Section 7.10.2.1, the following will apply:

- No instream works of any kind will take place on the existing bridge over the River Eske at Ch. 750 (S01). Concrete Saddling will be used on all masonry arches bridges over watercourses (with the exception of S12 for the reasons outlined in Table 7-23 above.
- No instream works of any kind will take place at any location along the River Eske. There will be no excavation of or cutting into the River Eske riverbank to facilitate the offline surface water drainage. No new outfalls will be constructed in the River Eske. Surface water runoff will be collected in shallow v-ditches that will end in a swale. Water will then percolate naturally into the soil, evaporate, or during heavy rainfall, flow through the riparian zone vegetation and into the river.

7.10.3.3 KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines

As the proposed development largely follows the existing railway corridor or is through open agricultural land, vegetation removal of linear habitats such as the abandoned railway corridor, hedgerows and treelines will be minor to facilitate the 5m wide greenway. The landscape design, as presented in Chapter 14 and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031, includes widespread planting which will compensate for minor loss of linear habitats. In areas where there is a risk to tree root protection areas, such as within the abandoned railway corridor south of Ballybofey/Stranorlar, root protection measures, such as a cellular-confinement system, will be constructed in consultation with a qualified Arborist.

7.10.3.4 KER 4: Upland Habitats

Where the abandoned railway corridor is intact, much of the corridor is in use as a farm access track or existing walking trails. However, there are parts of the abandoned railway corridor that have been recolonised by vegetation. Therefore, the proposed development will require minor vegetation removal to allow for the 5m wide greenway. The habitat surveys did not identify any Annex I habitats designated as part of any European designated site that will be impacted by the construction or operation of the proposed development. While there is overlap between the proposed development boundary and the Croaghonagh Bog SAC, the habitat that was recorded in this area was limited to Wet Heath habitat. The Croaghonagh Bog SAC is designated for Blanket Bog habitat only and therefore, there will be no land-take of designated Annex I peatland habitat in any European site as a result of the proposed development.

There is overlap between the proposed development and the Barnesmore Bog NHA through the Barnesmore Gap. This is limited to Wet Grassland (GS4) habitat. Therefore, there will be no land-take of designated Annex I peatland habitat in any Nationally designated site as a result of the proposed development.

Upland habitats such as peatlands and heath are groundwater dependent water terrestrial ecosystems (GWDTEs). As these habitats were recorded adjacent to the proposed development at various points between the trailhead at Biddy's O'Barnes and Lough Mourne, there is potential for water quality impacts to upland habitats. The water quality mitigation measures outlined in Section 7.10.2.1 will provide adequate mitigation to protect against water quality impacts that have the potential to arise as a result of the proposed development.

With particular regard to the Croaghonagh Bog SAC, due to the proximity of the proposed development to this European site and the groundwater dependent nature of the habitat, scheme drainage elements, such as filter drains to keep the greenway surface free from surface water, have the potential to alter natural groundwater levels and flows in this adjacent European site.

During a site visit undertaken in May 2026, the edge of the bog immediately adjacent to the proposed development and up to 40m from the edge inwards were observed to be friable and in a dry condition. A series of machine cut surface drains were observed within the up to 40m section, which appeared dry and not hydraulically active at the time of the visit. A series of gravel-lined open road drainage channels were observed at each of the four corners of the road bridge to drain the road of surface water. The historic railway line at this location was observed to contain silt and surface water. The source of surface water in this area is unclear; however, it seems more likely that the source is the road drainage channels rather than the bog, based on site observations. In accordance with DN-GEO-03047 (TII, 2025) and DN-GEO-03022 (TII, 2024), filter drains are proposed along the greenway at this location to maintain a surface free from runoff. These will outfall to watercourses west of Lough Mourne.

To avoid impacts on this European site, and to avoid establishing a hydraulic gradient towards the drains from the bog, the filter drains between Ch. 17250 – 18200 will be positioned on the far side of the greenway surface to the bog, be no deeper than 1.5m and be wrapped in an impermeable membrane. This is to allow for surface water runoff only and not subsurface drainage or seepage from the bog.

7.10.3.5 KER 5: Otter

Evidence of Otter were recorded throughout at various locations along the proposed development, indicating that this species utilises different habitats. While no holts or couches were confirmed during the surveys, precautionary mitigation measures will be adopted, as follows:

- A pre-construction survey will be undertaken by the Contractor's Ecologist two to three weeks prior to construction to ensure that no Otters have taken up residence within 150m of the proposed development. Should a holt or couch be found, the ECoW will seek direction from the NPWS and any necessary measures arising shall be completed prior to the commencement of works. Any additional mitigation measures prescribed following the preconstruction survey will comply with *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (TII, 2006b). Where potential holts are identified, a period of monitoring over several days may be required to determine whether holts are active, inactive or disused. If an active holt is discovered, the NPWS will be consulted before commencement of work to the watercourse. Otters do not tolerate disturbance at or near holts that are in active use.
- Trenches and excavations will have ramps fitted to prevent fauna becoming trapped.
- Due to the proximity between the proposed development and suitable Otter habitat in Lough Eske, River Eske and the River Finn, fencing will be designed to allow the passage of Otter between suitable terrestrial and aquatic habitats and will include the following:
 - Where fencing is required, modified sheep-wire fencing will be used with a 10cm gap between the mesh and the ground. This will allow for the passage of mammals including Otter, while being restricted enough to prevent access by dogs and livestock.

7.10.3.6 KER 6: Badger

In addition to the construction phase and non-specific mitigation measures described above, the following mitigation measures will be implemented to ensure the protection of KER 6 Badger:

- All works will be undertaken in accordance with '*Guidelines for the treatment of badgers prior to the construction of national road schemes*' (TII, 2005c).
- A pre-construction survey will be carried out by the Contractor's Ecologist prior to the commencement of any works to search for signs of activity within 50m of the works. This will include pre-construction monitoring of setts previously recorded within 50m of the proposed development.

- Eleven inactive/disused badger setts were recorded during the ecology surveys undertaken for the proposed development. Ten of these setts were recorded within 6m of the proposed development boundary and one was recorded within 15m of the proposed development boundary. Exclusion of badgers from disused or currently inactive setts, may be entertained during any season. Confirming that a sett is inactive during the breeding season (i.e. with no possibility of cubs below ground) will usually require a brief period of sett monitoring (e.g. five or more days of checking activity either with sticks or with sand pads on the spoil heaps to identify footprints).
- Four active outlier/subsidiary setts, all within 4m of the proposed development boundary, were recorded during the ecology surveys carried out for the proposed development. These setts will require temporary exclusion from the setts for the duration of the construction works. Temporary exclusion from an active sett can be carried out from July – November only. Exclusion from the sett must be carried out under supervision by the ECoW. The setts can be reinstated following the completion of the construction works.
- Four active outlier/subsidiary setts, all between 20-35m from the proposed development, but within the land-take area, were recorded during the ecology surveys undertaken for the proposed development. These setts will not be lost as a result of the proposed development but pre-construction monitoring is required in case of disturbance to badger.
- One active main sett within 30m of the proposed development was identified during the ecological surveys. A 30m exclusion zone must be set up around this sett between July – November and a 50m exclusion buffer zone but be set up between December – June. No works shall be undertaken within the exclusion zone. This work must be carried out under supervision from by the ECoW.
- If a new sett is identified within the vicinity of the proposed development works prior to or during construction, the works at this location will cease immediately. A 30m or 50m buffer exclusion zone shall be established around the sett, depending on the time of year and nature of the sett. No works shall be undertaken within the exclusion zone.

7.10.3.7 KER 7: Bats

The following mitigation measures relating to the protection of Bats will apply during the construction phase:

- There is 1 No. confirmed roost in a crevice under the arch barrel of a masonry bridge along the abandoned railway line. The location of this bridge is at Ch. 18320, west of Lough Mourne. It is proposed to temporarily exclude the roost during the works to avoid disturbing bats during construction. A derogation licence has been granted by the NPWS (Appendix 7.2). It is a condition of this licence that the mitigation measures outlined in the Licence Application report are carried out and strict adherence must be paid to all proposed mitigation measures. These mitigation measures regarding the exclusion of the roost will be implemented as follows:
 - The roost will be clearly marked by the licenced ecologist and easily identifiable. The ECoW will advise the contractor of the presence of the bat roost as part of a Toolbox Talk. Repointing will not begin until the people doing the repointing have attended the Toolbox talk.
 - The confirmed roost will be temporarily excluded to avoid disturbing bats during construction. The implementation of the mitigation measures will be supervised by the ecologist named on the licence application form. The exclusion of the roost will be undertaken between March and October, to avoid impacting hibernating bats. Depending on the programme, it may be possible to exclude the roost during the winter months when the bats are not present. This would be preferable and would avoid the need to exclude bats from the roost when they might be present.

- The roost will be inspected by the ecologist with an endoscope no more than three weeks in advance of the works. The ecologist will be licenced to undertake invasive surveys that could disturb bats.
- If the crevice can be inspected in its entirety and the licenced ecologist can confirm with confidence that no bats are present, the crevice entrance will be stuffed with material such as cloth or plastic to prevent bats entering it for the duration of the construction phase.
- If a bat or bats are found in the roost, or if the entirety of the features cannot be examined, a one-way bat exclusion device consisting of a plastic base with a plastic cone fitted over the feature. It will be fixed at the top and be open at the bottom. This will allow bats to leave the roost but not return. The base will be fixed to the arch barrel using screws.
- The roost and bat exclusion device will be checked weekly to ensure that the material excluding the roost or the one-way bat exclusion device is still in place and secure.
- The installation of the one-way bat exclusion device, if it is required, will be undertaken under the supervision of the licence holder. The installation of the one-way bat exclusion device and the repointing will be supervised by the licence holder. The role of the ECoW will be to ensure that the bat exclusion device is secured and sealed properly.
- Once the works are completed, the material blocking the roost, or the bat exclusion device (if required) will be removed. Two self-cleaning crevice type bat boxes made of woodcrete or similar will be fitted to the structure. Placement of the bat boxes will be confirmed by the ECoW.

Preconstruction inspection surveys will be undertaken at all structures and trees described in Table 7-14 above. The surveyor will hold a derogation licence to disturb roosting bats. Where the previously identified features can be inspected using and torch and/or endoscope and no bats are found, the feature will be filled with material such as cloth or plastic to prevent bat entering the features before the works take place. The preconstruction survey will be undertaken from a safe and appropriate working platform.

- If bats are found during pre-construction inspection surveys in features not previously confirmed as bat roosts, no works will be undertaken to the tree or structure and advice from the NPWS will be sought.
- Felling of trees with bat roosting potential will only take place in September, October, and March to avoid maternity roosts and hibernating bats.
- Lighting during the construction phase of the proposed development, as outlined in 7.10.2.2 will reduce artificial lighting impacts on bats.
- Where bat roosts are found during pre-construction surveys, 2 No. bat boxes will be provided for every roost that is disturbed.
- All works will be undertaken in accordance with '*Guidelines for the treatment of bats in the Planning of national road schemes*' (TII, 2005a)
- Lighting will be required at the trailheads and the sections closest to Donegal Town and Ballybofey/ Stranorlar (Ch.0-1050 (Donegal Town) and Ch.27500 – 30050 (Ballybofey / Stranorlar and Sessiaghoneill link). These sections include bridges over the River Eske and River Finn. The lighting will be in accordance with the Institution of Lighting Professionals & Bat Conservation Trust guidance (ILP, 2023), and will include the following elements:
 - All lighting will be a warm-white colour of 2200K or less.
 - Lamp post lighting will be LED and have no upward light spill and a sharp horizontal cut off.
 - Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns.

- Lux levels on roads and paths will be set to the minimum required by BS 5489-1:2020, P4.
- Lighting at trailheads, including Biddy's, will be restricted to targeted locations around the carpark boundary, illuminating the carpark area only. The closest lamp post to the Lowerymore River is at least 20m and will be separated from the river by planted screening.
- Where lighting is required on bridges, such as the existing river Eske crossing and the proposed River Finn crossing, lighting will be limited to discreet recessed ground lights which will act as waymarkers with no downward light spill onto any watercourses. No lighting will be provided on the proposed River Eske crossing or the proposed River Lowerymore crossing.
- Appendix 4.2 *Maintenance and Management Plan* of this EIAR includes the provision of a Biodiversity and Landscape Management Plan, within which lighting has been considered.

7.10.3.8 KER 8: Red Squirrel

The following mitigation measures relating to the protection of Red Squirrel will apply during the construction phase:

- Four dreys were identified during the ecology surveys undertaken for the proposed development, three of which were recorded within 50m of the proposed development. None of the trees where dreys were identified are scheduled for removal as part of the proposed development. The landscape design, which outlines the vegetation scheduled for removal, is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031.
- A pre-construction survey will be carried out by a suitably qualified ecologist two to three weeks prior to the commencement of any works to check for occupancy of existing dreys and to ensure there are no new dreys within 50m of the works.
- If new dreys are located on trees to be affected by site clearance, no works will be undertaken to the tree and advice from the NPWS will be sought.
- All known dreys within 50m of the proposed development will be monitored over at least three mornings (dawn) in suitable weather conditions which is recommended for establishing use, either using direct observations, video or suitably sited trail cameras.
- If active dreys are found, the commencement of works including site clearance will be undertaken from mid-October to January, when there is least chance of encountering young squirrels.
- If any dreys are required to be removed, in order to compensate for the destruction of one drey, three artificial dreys will be erected in areas of suitable habitat. Suitable placement and installation of the artificial dreys will be supervised by a suitably qualified ecologist on the ground at least three weeks prior to the destruction of the drey under licence from NPWS.

7.10.3.9 KER 9: Birds

In addition to the water quality measures outline in Section 7.10.2.1, and landscaping measures in Section 7.10.2.3, site clearance including vegetation removal will take place between September and February inclusive to avoid nesting birds. If site clearance is required during the nesting bird season (March-August inclusive), the area will be checked by the ECoW. If nesting birds are found to be present, the site clearance works will cease until the chicks have fledged, or, until the NPWS have been consulted to determine the course of action. Vegetation planting as described above will provide new nesting habitat and dipper / grey wagtail nesting boxes will be provided as further nesting bird mitigation. The locations of these dipper/grey wagtail nesting boxes will be installed inside the following bridges as presented in Table 7-25 below.

Table 7-25 - Locations for Dipper/Grey Wagtail Nest Boxes

Structure Description	Structure Number	Chainage	Watercourse
Old railway overbridge (Lough Mourne)	S12	Ch. 18360	Mourne Beg stream
Old Railway underbridge (Ballybofey)	S16	Ch. 26745	Sessiagh_01
Small redbrick archbridge	No ID	Ch. 25085	Goland stream

The construction phase and non-specific mitigation measures are described above in Section 7.10.1 and Section 7.10.2, respectively, will eliminate beyond reasonable scientific doubt, potential effects of the proposed development on wintering birds.

Given the full and proper implementation of the mitigation measures prescribed here, and the construction phase and non-specific mitigation measures, the proposed development will not give rise to significant effects on breeding or wintering birds, and no further mitigation is required.

7.10.3.10KER 10: Invasive Species

Japanese Knotweed, Giant Knotweed, Himalayan Knotweed, Rhododendron and Himalayan Balsam were recorded at various locations along the route of the proposed development. The following measures will be implemented with regards to KER Invasive Species.

- The control and management procedures outlined in the Invasive Species Management Plan, presented in Appendix G of the CEMP, will be adhered to during the construction of the proposed development.
- The Contractor shall prepare a detailed Biosecurity Protocol describing their proposed approach to ensuring that invasive species are not imported or spread during the construction of the proposed development. The Contractor's Biosecurity Protocol shall be in accordance with *The Management of Invasive Alien Plant Species on National Roads – Standard* (TII, 2020a) and *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance* (TII, 2020b). The Biosecurity Protocol shall include, as a minimum, the following measures to prevent the spread of invasive species:
 - Good construction site hygiene will be employed to prevent the introduction and spread of problematic IAPS (e.g., Japanese knotweed and Himalayan Balsam) by thoroughly washing vehicles prior to leaving any site.
 - All plant and equipment employed on the construction site (e.g., excavators, etc.) will be thoroughly cleaned down in designated areas only using a power washer unit prior to arrival on site to prevent the spread of IAPS.
 - Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present.
 - Landscaping of the proposed development shall use native species of plants of national provenance only and, insofar as possible, soil reused from on-site excavations. If soil/substrate needs to be imported to the site for the purposes of the proposed development, the Contractor shall ensure that the imported soil/substrate is free from invasive species.

7.10.4 Residual Impacts on Key Ecological Receptors

Table 7-26 below assesses the significance of the residual impacts on the Key Ecological Receptors following the inclusion of the mitigation, compensation and enhancement measures described in Section 7.10.1 – Section **Error! Reference source not found.**

Table 7-26 - Assessment of significance of residual impacts based on TII (2009) and CIEEM (2018).

Key Ecological Receptor	Pre-mitigation impacts Construction	Pre-mitigation impacts Operation	Ecological significance following mitigation
KER 1: Woodlands	- Habitat loss - Habitat fragmentation - Spread of invasive species	- Habitat fragmentation and barrier effect - Spread of invasive species	<u>Construction Phase</u> Following the implementation of mitigation measures in relation to landscaping, including the planting of areas of woodland adjacent to the River Eske, the loss and fragmentation of woodland habitat will have negative impact at the local level. This impact will reduce over time as the planting matures. The mitigation measures provided in relation to invasive species is considered that the proposed development will result in a permanent positive impact as invasive species will be eradicated from public lands. <u>Operational Phase</u> Following the implementation of mitigation measures in relation to landscaping, including the planting of areas of woodland adjacent to the River Eske, the fragmentation of woodland habitat will have permanent negative impact at the local level. As the woodland planting matures, this impact will be permanent positive impact at the local level. The mitigation measures provided in relation to invasive species is considered that the proposed development will result in a permanent positive impact as invasive species will be eradicated from public lands.
KER 2: Aquatic Ecosystems and Associated Aquatic Fauna	- Barrier effect - Disturbance - Reduction in water quality	- Habitat degradation - Disturbance - Shading	<u>Construction Phase</u> Following the implementation of mitigation measures in relation to culvert and bridge design, timing of the works, water quality and lighting, the construction of the proposed development will have a neutral impact on this KER. <u>Operational Phase</u> Following the implementation of mitigation measures in relation to water quality, drainage design, signage and the provision of bins, the operation of the proposed development will have a neutral impact on this KER. Fencing will prevent people and dogs accessing the watercourses. There will be no impacts from disturbance to this KER during the operation of the greenway. Structures will not create shading impacts on Freshwater Pearl Mussel; therefore, the operation of the proposed development will have a neutral impact on this KER.
KER 3: Linear terrestrial habitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines	- Habitat loss - Habitat fragmentation	Habitat fragmentation and barrier effect	<u>Construction Phase</u> Following the implementation of mitigation measures in relation to landscaping, including the planting of areas of woodland adjacent to the River Eske, the loss and fragmentation of linear habitat will have negative impact at the local level. This impact will reduce over time as the planting matures. <u>Operational Phase</u> Following the implementation of mitigation measures in relation to landscaping, including the planting of areas of woodland adjacent to the River Eske, the fragmentation of woodland habitat will have permanent negative impact at the local level. As the woodland planting matures, this impact will be permanent positive impact at the local level.

Key Ecological Receptor	Pre-mitigation impacts Construction	Pre-mitigation impacts Operation	Ecological significance following mitigation
KER 4: Upland habitats	- Habitat Loss - Reduction in soil nutrients & water quality	- Reduction in soil nutrients & water quality - Habitat fragmentation and barrier effect	<u>Construction Phase</u> The temporary habitat loss associated with the installation of fencing along the red line boundary within this KER will have a non-significant temporary negative impact on this KER at the local level. This is associated with the machinery required to install the fencing. Once the fencing is installed, the habitat will recover. The loss of wet heath habitat at the River Lowerymore crossing at Biddy's O'Barnes will constitute a permanent significant negative impact on this KER at the local level. The proposed development will not lead to the drainage of these habitats; therefore, the construction of the proposed development will have a neutral impact on this KER. <u>Operational Phase</u> The proposed development will not impacts groundwater levels in the habitats surrounding the greenway, therefore, the operation of the proposed development will have a neutral impact on this KER. Following the implementation of mitigation measures in relation to fencing and water quality, including the provision of bins, the operation of the proposed development will have a neutral impact on this KER.
KER 5: Otter	- Habitat fragmentation and barrier effect - Disturbance - Reduction in water quality	- Habitat fragmentation and barrier effect - Habitat degradation - Disturbance	<u>Construction Phase</u> Following the implementation of mitigation measures in relation to the pre-construction survey, excavations, water quality, noise, vibration, visual disturbance, lighting and fencing, the construction of the proposed development will have temporary slight impact on this KER at the local level. Some disturbance to Otter habitat is inevitable, however this is not significant. The impact on water quality will be neutral. <u>Operational Phase</u> Following the implementation of mitigation measures in relation to fencing, signage, lighting and water quality, including the provision of bins, habitat fragmentation and disturbance will have a neutral impact on this KER. The risk of water quality impact affecting prey availability during the operational phase is a neutral impact.
KER 6: Badger	- Direct mortality - Sett loss - Habitat loss - Habitat fragmentation and barrier effect - Disturbance	- Habitat fragmentation and barrier effect - Disturbance	<u>Construction Phase</u> Following the implementation of mitigation measures in relation to the pre-construction survey, excavations, and lighting and fencing, the construction of the proposed development will have a temporary slight impact on this KER at the local level. Some disturbance to Badger habitat is inevitable, however this is not significant. The risk of direct mortality is reduced to nil. <u>Operational Phase</u> Following the implementation of mitigation measures in relation to fencing, signage and lighting, the operation of the proposed development will have a neutral impact on this KER.
KER 7: Bats	- Direct mortality - Habitat loss	Habitat fragmentation	<u>Construction Phase</u> Following the implementation of mitigation measures in relation to the roost exclusion, pre-construction inspection survey, timing of the construction, lighting and landscaping, the impacts of habitat loss, habitat

Key Ecological Receptor	Pre-mitigation impacts Construction	Pre-mitigation impacts Operation	Ecological significance following mitigation
	- Habitat fragmentation and barrier effect - Disturbance	and barrier effect	fragmentation and disturbance will have a temporary negative impact on bats at the local level. The mitigation and derogation licences which is in place for temporarily closing the roost will ensure that the impact on bats, including the confirmed roost will not be significantly affected. There is no risk of direct mortality to bats. Operational Phase Following the implementation of mitigation measures in relation to provision of lighting, the operation of the proposed development will have a neutral impact on this KER.
KER 8: Red Squirrel	- Habitat loss - Disturbance	Disturbance	Construction Phase Following the implementation of mitigation measures in relation to the pre-construction survey, timing of the construction, lighting and landscaping, the construction of the proposed development will have a temporary slight impact on this KER at the local level. Some disturbance to red squirrel habitat is inevitable, however this is not significant. Operational Phase Following the implementation of mitigation measures in relation to the provision of artificial dreys, landscaping and lighting, the operation of the proposed development will have a permanent slight negative impact at the local level. The mitigation measures will ensure that any disturbance to Red Squirrel is limited to the areas immediately adjacent to the greenway and will not be significant.
KER 9: Birds	- Direct mortality - Habitat loss - Habitat fragmentation and barrier effect - Disturbance - Reduction in water quality	- Habitat fragmentation and barrier effect - Disturbance - Reduction in water quality	Construction Phase Following the implementation of mitigation measures in relation to the timing of the works, water quality, landscaping and lighting, the construction of the proposed development will have a neutral impact on this KER. There will be no risk of direct mortality. Operational Phase Following the implementation of mitigation measures in relation to the provision of dipper and grey wagtail boxes, water quality, landscaping and lighting, the operation of the proposed development will have a neutral impact on this KER.
KER 10: Invasive Species	Habitat degradation - spread of invasive species	Habitat degradation - spread of invasive species	Construction Phase The mitigation measures provided in relation to invasive species is considered that the proposed development will result in a permanent positive impact as invasive species will be eradicated from public lands. Operational Phase The mitigation measures provided in relation to invasive species is considered that the proposed development will result in a permanent positive impact as invasive species will be eradicated from public lands.

7.11 Assessment of Cumulative Impacts

Cumulative effects are those which accrue to Key Ecological Receptor as a result of incremental changes caused by other existing or proposed plans or projects together those caused by the proposed development. For the purposes of this assessment, the cumulative impact assessment considers cumulative impacts on biodiversity which are:

- (a) Likely.
- (b) Significant.
- (c) Relating to a future event, reasonably foreseeable.

Chapter 20 'Interactions and Cumulative Effects' in Volume 2 of this EIAR presents an in-depth assessment of potential cumulative effects. The cumulative effects of the project as a whole on Biodiversity, which are "Tier 1 cumulative effects" as described in Chapter 20 of this EIAR have been addressed in this chapter under the KERs.

None of the developments identified during the cumulative assessment were determined to result in significant negative cumulative effects with regard to biodiversity.

7.12 Conclusion

With the implementation of the avoidance and mitigation measures set out in this Chapter, the CEMP, the construction and operation of the proposed development will not have a significant negative impact on biodiversity in the Zone of Influence.

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