

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COOM GREEN ENERGY PARK GRID CONNECTION

VOLUME 2 – MAIN EIAR

CHAPTER 9 – BIODIVERSITY

Prepared for:

Coom Green Energy Park Limited



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Core House, Pouladuff Road, Cork, T12 D773, Ireland

T: +353 21 496 4133 | E: info@ftco.ie

CORK | DUBLIN | CARLOW

www.fehilytimoney.ie

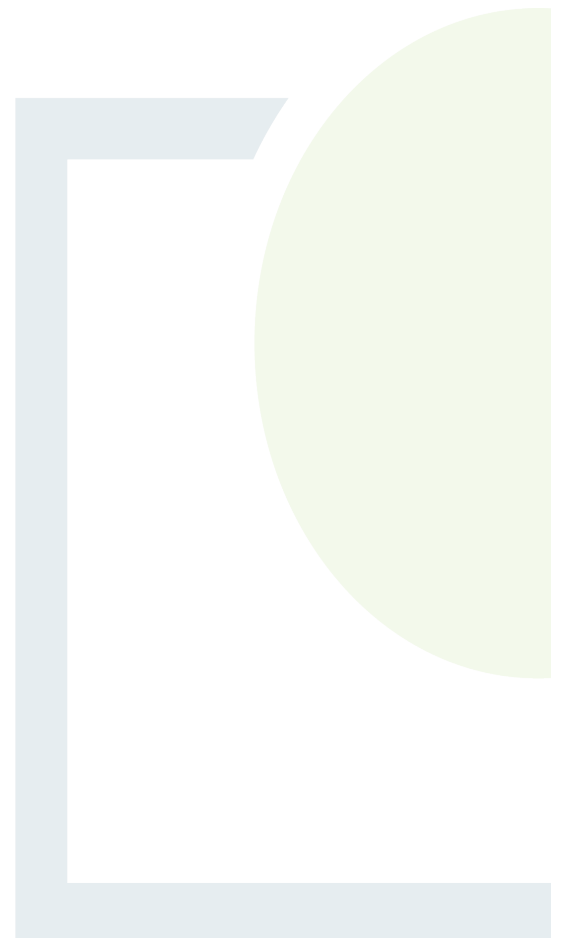


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9. BIODIVERSITY (FLORA AND FAUNA)

9.1 Introduction

This chapter has been prepared to assess the potential effects on biodiversity of the construction, operation and decommissioning of the Coom Green Energy Park (CGEP) Grid Connection including 110kV substation, near Bottlehill, Co. Cork (hereafter referred to as the 'Proposed Development'). The Proposed Development is part of the CGEP, which is a permitted development (ACP Ref: 308885-20) consisting of a 22-turbine wind farm, 110 kV substation, 20 no. battery energy storage containers and all associated ancillary works. Figure 2.1 in Volume 4 of the EIAR, below displays the Proposed Development and the previously consented CGEP. The Proposed Development pertains to the CGEP grid connection, as outlined below:

- A 110 kV Underground Cable (UGC) Grid Connection Route from the permitted onsite substation at Lackendarragh to the existing Barrymore 110 kV substation located near Rathcormac, Co. Cork (also referred to herein as the '110 kV'). Specifically, this is the installation of 13.9 km of permanent high voltage (110 kV) and communication cabling underground between the proposed onsite 110 kV electrical substation at Lackendarragh North and the existing Barrymore 110 kV substation and all associated ancillary works.
- A 33kV Underground Cable (UGC) Collector Network Route between the western and eastern arrays of the permitted Coom Green Energy Park (CGEP) development (also referred to herein as the '33 kV'). This is the installation of approximately 15.8 km of underground medium voltage (33kV) electrical and communication cabling between the western and eastern arrays of the permitted CGEP and all associated ancillary works.
- A 110kV onsite substation at Lackendarragh, in line with the latest EirGrid functional specifications (also referred to herein as 'Substation') and associated compound to meet current transmission network specifications;
- All associated infrastructure, services and site works including excavation, earthworks, soil management, drainage and sediment control to facilitate the works;
- Forestry felling of 17.8 ha to facilitate construction and operation of the Proposed Development.

The key focus of the chapter is to:

- Undertake a desktop review of available ecological data for both the receiving environment and greater area, including a review of European sites within the zone of influence of the Proposed Development (as part of a separate Appropriate Assessment Screening and Natura Impact Statement) and nationally designated sites.
- Document ecological field surveys of the receiving environment.
- Identify biodiversity, flora and fauna present within the development boundary and footprint of all elements of the Proposed Development.
- Evaluate the ecological significance of the receiving environment.
- Appraise the potential impacts (including any cumulative impacts) of the Proposed Development on the biodiversity of the receiving environment.
- Consider measures to mitigate the potential negative impact(s) of the Proposed Development on the biodiversity of the receiving environment.



9.1.1 Competent Experts

An ecological appraisal of the Proposed Development was undertaken by Fehily Timoney and Company (FT) to inform this chapter. The lead author of this chapter is Maddy van der Poel (FT Ecologist, MSc Forestry and Conservation). The chapter was reviewed by Rita Mansfield (Associate Director, BSc (Hons) Applied Ecology; H.Dip Environmental Protection and Pollution Control).

Ecological surveys, habitat / botanical surveys (including invasive species surveys), and mammal surveys (including bats) were carried out by Senior Ecologist Ben O'Dwyer (BSc in Wildlife Biology from Institute of Technology Tralee). The baseline aquatic ecology assessment was conducted by Ross Macklin of Triturus Environmental Ltd.

Table 9-1 lists the contributors to the Biodiversity Chapter for the Proposed Development.

Table 9-1: Contributors to the Biodiversity Chapter

Surveyor	Contribution	Biography
Rita Mansfield	EIAR Biodiversity Chapter Reviewer	Rita holds a BSc.(Hons) in Applied Ecology and a H. Dip Environmental Protection and Pollution Control. Rita is experienced as a technical ecology lead within the environmental and planning services sector. She is a qualified ecologist with 24 years' experience with responsibility for environmental impact assessment, planning applications (conventional and strategic infrastructure development), Natura Impact Statements, foreshore licensing, and stakeholder engagement for large scale plans and projects in Ireland, including for wind energy developments. Rita has undertaken and managed a wide range of ecological field assessments including mammal, herpetofauna, bird, fishery, invertebrate and habitat assessments. Rita has held numerous licences under the Wildlife Act and Habitats Directive for disturbance to species which included mitigation (e.g. construction of artificial otter holt, bat exclusion). Rita has provided advice on ecological / environmental design to various private and public sector clients.
Ben O'Dwyer	Habitat & Botanical Survey Ornithology surveys Marsh Fritillary Survey Bat Roost Survey Mammal Survey	Ben is a Senior Project Ecologist with Fehily Timoney with over 9 years' experience in ecological assessment and holds a BSc (Hons) in Wildlife Biology from Institute of Technology Tralee (now MTU). Ben has prepared EclAs, EIAR Biodiversity chapters, AA Screening reports and Natura Impact Statements for numerous large scale infrastructure projects in the renewable energy, commercial, waste management and transport sectors. He is an experienced and versatile field surveyor and his experience across a broad range of habitats and projects in Ireland has given him an extensive knowledge of protected sites and species across the country.



Surveyor	Contribution	Biography
Maddy van der Poel	Report Author	Maddy holds a degree M.Sc. (Hons) in Forestry and Nature Conservation from Wageningen University in the Netherlands. She has six years postgraduate experience and is a Senior Ecologist with Fehily Timoney. Maddy has experience in a wide range of field surveys including bird, bat, mammal, habitat, invasive species, and freshwater surveys. She has prepared EclAs, Biodiversity chapters and Natura Impact Statements for large infrastructure projects.
Ross Macklin	Aquatic Surveys, Assessment and Baseline Reporting	Ross is Aquatic/Fisheries Ecologist & Director at Triturus Environmental Ltd. He is currently completing a Ph.D. in Environmental Science from University College Cork and holds a B.Sc. (Hons) in Applied Ecology from University College Cork. Ross is a member of Chartered Institute of Ecology and Environmental Management and a registered member Institute of Fisheries Management. Ross has over 18 years' professional experience in Ireland. He specialises in freshwater fisheries ecology, biology and water quality. He has considerable experience in a wide range of ecological and environmental projects including EIAR, EclA and AA/NIS reporting, as well as biodiversity, water quality monitoring, invasive species and fisheries management. He also has expert identification skills in macrophytes, freshwater invertebrates, protected aquatic habitats and protected aquatic species including freshwater pearl mussel. His diverse project list includes work on renewable energy developments, flood relief schemes, road schemes, blueways/greenways, biodiversity projects, fisheries management projects and catchment wide water quality management.
Bill Brazier	Aquatic Surveys, Assessment and Baseline Reporting	Bill is an aquatic ecologist with over 13 years' professional experience in Ireland. He specialises in freshwater fisheries ecology, biology and water quality. He has considerable experience in a wide range of ecological and environmental projects including EIAR, EclA and AA/NIS reporting, as well as biodiversity, invasive species and fisheries management. His diverse project list includes work on wind farm developments, flood relief schemes, road schemes, blueways/greenways and biodiversity projects. He is currently completing his Ph.D. on the genetics, reproductive biology and invasive potential impact of common carp (<i>Cyprinus carpio</i>) in Irish waters. Bill holds a B.Sc. (Hons) in Applied Freshwater & Marine Biology from Galway-Mayo IT. Bill completed aquatic surveys and reporting for the Annagh Project.



Surveyor	Contribution	Biography
Paul Rowe	Ornithology surveys	<p>Paul Rowe has been actively immersed in the birding world for over 30 years, birdwatching in Ireland and also abroad. Over that time, he has acquired an in depth knowledge of Irelands avifauna, from field identification, song and calls, habitat preferences and behavioural habits, as well as abundance and distribution throughout Ireland. For many years he has submitted counts and records for I-WeBS (Irish Wetland Bird Survey), as well as scarce and rare bird records, mainly in the Munster region. Paul completed a four-year project in the Irish Bird Atlas 2007-2011 in which he was designated a 10km square grid in Co. Cork monitoring and recording the breeding and wintering birds in the grid over the four-year period. He is an Ornithological surveyor with a wide experience in field surveying including Vantage Point surveys, breeding bird transects, hinterland surveys and winter waterbirds surveys. Paul has been involved with many proposed and existing wind farm projects over the years throughout Munster and the midlands. He completed the British Trust for Ornithology (BTO) course 'Bird Survey Techniques for Environmental and Ecological Professionals' in November 2022. He has seen over 2000 of the world's bird species.</p>
Danny Franklin	Ornithology author	<p>Danny holds a B.Sc. (Hons) in Zoology, University College Cork (UCC) and a M.Sc (Hons) in Wildlife Conservation and Management, University College Dublin (UCD). He has four years postgraduate experience and is a Project Ecologist with Fehily Timoney. Danny has three years of ecological consultancy experience in the forestry industry preparing Appropriate Assessment documents as part of the Forestry Service licencing process.</p>
Kate O'Regan	Bat surveyor	<p>Kate O'Regan is a Project Ecologist with Fehily Timoney and Company. She holds a first-class MSc in Marine Biology and firstclass BSc. in Zoology from University College Cork. Since joining Fehily Timoney, she has prepared Natura Impact Statements and Ecological Impact Assessments for waste facilities and road improvement schemes along with ornithological reports and collision risk models for renewable energy projects. Kate has previous experience in data management, statistical analysis, mapping and technical report writing. Kate has also completed a wide range of fieldwork including ornithological, bat, freshwater aquatic, intertidal, subtidal, insect and mammal surveys.</p>



Surveyor	Contribution	Biography
Orla Cummins	Bat surveyor	<p>Orla Cummins is a Graduate Ecologist with Fehily Timoney and Company. She holds a first-class BSc in Ecology and Environmental Biology from University College Cork.</p> <p>Since joining Fehily Timoney, she has undertaken a wide range of fieldwork, encompassing bat surveys (static detector deployment & activity surveys), marsh fritillary, mammal, habitat and ecological walkover surveys.</p> <p>She has prepared Appropriate Assessment Screening reports, Ecological Impact Assessments and baseline reports including ornithology and bat reports, in addition to analysis of bat survey data, mapping and data management.</p>

9.1.2 Legislative Context

All species and habitats likely to be significantly impacted by this development, including those provided with National and International protection under the following legislative and policy documents have been considered in this Impact Assessment.

9.1.2.1.1 European Legislation

This EIAR is provided in accordance with the EU EIA Directive 2011/92/EU, as amended by EIA Directive 2014/52/EU (assessment of the effects of certain public and private projects on the environment) and the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The provisions of the EIA Directive have been transposed into Irish law by the provisions of the Roads Act 1993 (as amended by the European Union (Roads Act 1993) (Environmental Impact Assessment) (Amendment) Regulations 2019) (S.I. No. 279 of 2019)).

The EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) (as amended) (the 'Habitats Directive') together with the EU Birds Directive (Council Directive 2009/147/EC on the Conservation of Wild Birds) (as amended) (the 'Birds Directive') are the main legislative instrument for the protection and conservation of biodiversity within the European Union (EU).

The Habitats Directive (Council Directive 92/43/EEC) provides legal protection for habitats and species of European importance. Special Areas of Conservation (SAC) are areas designated under the Habitats Directive to conserve habitats listed in Annex I of the Directive and plant and animal species listed in Annex II. Collectively these are referred to as the 'Qualifying Interests' or 'QIs' of the SAC. The Habitats Directive also identifies plant and animal species within Annex IV which are subject to strict protection anywhere they occur.

The Birds Directive (Directive 2009/147/EC) provides for the identification of a network of Sites in all member states to protect birds at their breeding, feeding, or roosting areas. The Birds Directive identifies in Annex I species that are rare, in danger of extinction, or vulnerable to changes in habitat and which require special protection and areas for their conservation: Special Protection Areas (SPA).

The Habitats Directive and Birds Directive have been transposed into Irish law, by Part XAB of the Planning and Development Act 2000 (as amended) and by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.



The EU Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy) (as amended) requires all Member States to protect and improve water quality in all waters in order to achieve good ecological status by 2015 or, at the latest, by 2027. This was transposed into Irish Law by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) and by the European Communities Environmental Objectives (Surface Waters) Regulations 2009 as amended and European Union Environmental Objectives (Freshwater Pearl Mussel) (Amendment) Regulations 2009 as amended and the European Communities (Salmonid Waters) Regulations 1988 (S.I. No. 293 of 1988) as amended (albeit effectively superseded by the European Communities Environmental Objectives (Surface Waters) Regulations 2009) . The Directive applies to rivers, lakes, groundwater, and transitional coastal waters. The Water Framework Directive requires management plans to be prepared on a river basin basis and specifies a structured method for developing these plans. Ireland's third cycle River Basin Management Plan 2022-2027 ('The Water Action Plan 2024: A River Basin Management Plan for Ireland') was published on 03rd September 2024.

9.1.2.1.2 National Legislation

The primary domestic statute providing for wildlife protection in Ireland is the Wildlife Act of 1976 as amended (the 'Wildlife Act').

All bird species are protected under the Wildlife Acts from offences including intentional killing or injury and disturbance during the breeding season (to include eggs, young, and nests which are also protected). A range of mammal species, two amphibian species, one butterfly species, and one reptile species are all similarly protected from intentional killing or injury, whilst the breeding or resting Sites of these species are also protected. The Wildlife (Amendment) Act, 2000 broadens its scope to include fish and aquatic invertebrate species. The Act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The Act also requires that public bodies, in the performance of their functions, have regard to the National Biodiversity Action Plan. The Wildlife (Amendment) Act 2023 introduced a new reporting obligation on public bodies whose statutory functions could have an impact on biodiversity. The Wildlife (Amendment) Act 2023 introduced a new public sector duty on biodiversity. The legislation provides that every public body, as listed in the Act, is obliged to have regard to the objectives and targets in the National Biodiversity Action Plan.

A number of vascular (i.e. flowering) and non-vascular plant species (i.e. nonflowering) are afforded legal protection under the Flora (Protection) Order, 2022 (S.I. No. 235 of 2022) enacted under Section 21 of the Wildlife Act, 1976. It is an offence to cut, pick, collect, uproot, or otherwise take, injure, damage, or destroy any specimens of the species listed under the Flora (Protection) Order.

The Third Schedule to the European Communities (Birds and Natural Habitats) Regulations 2011, as amended lists invasive alien plant species. These regulations make it an offence to plant, disperse, allow or cause to disperse, spread, or otherwise cause to grow any of the scheduled species. The more recently published European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374 of 2024) complements the Third Schedule of the European Union (Birds and Natural Habitats) Regulations 2011 by providing a legal framework for managing invasive alien species, particularly those of Union and National concern.



Beyond the national statutes which transpose the Water Framework Directive into national law, there are several older national Acts which are intended for the protection of fisheries and the aquatic environment as follows:

- Section 171 of the Fisheries (Consolidation) Act 1959 creates the offence of throwing, emptying, permitting or causing to fall onto any waters deleterious matter. Deleterious matter is defined as not only as any substance that is liable to injure fish but is also liable to damage their spawning grounds or the food of any fish or to injure fish in their value as human food or to impair the usefulness of the bed and soil of any waters as spawning grounds or other capacity to produce the food of fish.
- Under Section 3 of the Local Government (Water Pollution) Act, 1977 (as amended by Sections 3 and 24 of the 1990 Act) it is an offence to cause or permit any polluting matter to enter waters.

9.1.3 Relevant Guidance

The methodology for this Biodiversity Chapter has been devised in consideration of the following relevant guidance:

- Bat surveys for professional ecologists: Good practice guidelines (4th ed.) (Collins, 2023)
- Guidelines on Information to be contained in Environmental Impact Assessment Reports (EPA 2022)
- Guidance notes for the reduction of obtrusive light. Guidance Note 01/20. Institution of lighting professionals, Regent House, Regent Place, Rugby, Warwickshire, UK (Institution of Lighting Professionals, 2020)
- Bat Mitigation Guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks & Wildlife Service, Department of Housing, Local Government and Heritage, Ireland Marnell, F. Kelleher, C & Mullen, E. (2022)
- A Guide to Habitats in Ireland; The Heritage Council (Fossitt, 2000)
- 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. TII (2006a)
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes. TII (2006b)
- Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes TII (2006c).
- Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post Construction of National Road Schemes. TII (2006d)
- Environmental Impact Assessment of National Road Schemes – A Practical Guide (Revision 1). TII (2008a)
- Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. TII (2008b)
- Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. TII (2008c)
- Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes. TII (2008d)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes. TII (2009)
- The Management of Invasive Alien Plant Species on National Roads – Standard. TII (2020a)



9.1.4 Policy

Ireland's 4th National Biodiversity Action Plan 2023–2030 (NBAP) in accordance with the Convention on Biological Diversity, is a framework for the conservation and protection of Ireland's biodiversity, with an overall objective of securing the conservation of biological diversity in Ireland (including, where possible, its enhancement and sustainable use) and to contribute to collective efforts for conservation of biodiversity globally. There is a list of objectives and actions of the NBAP that are supported by the Proposed Development in Chapter 5 in Volume 2 of this EIAR.

Cork County Development Plan (2022-2028) has several objectives related to biodiversity, habitats, and ecosystem functioning. These are considered in Chapter 15 - Biodiversity and Environment with the aim of the chapter to *'Ensure that the natural environment, biodiversity and ecosystems are protected, delivering benefits essential for all sectors of society and that Cork County contributes to efforts to reverse the loss of biodiversity and the degradation of ecosystems and the environment'*. The following policies are of particular relevance to this EIAR biodiversity chapter:

- BE 15-1: Support and comply with national biodiversity protection policies
- BE 15-2: Protect sites, habitats and species
- BE 15-6: Biodiversity and New Development
- BE 15-7: Control of Invasive Alien Species
- BE 15-8: Trees and Woodlands
- BE 15-13: Noise and Light Emissions

9.1.5 Consultation

The full list of the bodies consulted as part of the environmental assessment of the Proposed Development are presented in Chapter 5- EIA Scoping and Consultation in Volume 2 of this EIAR. Specific to biodiversity, the following environmental stakeholders were contacted:

- Environmental Protection Agency (EPA)
- Department of Housing, Local Government and Heritage (DAU Unit)
- Irish Wildlife Trust
- Irish Peatland Conservation Council
- Inland Fisheries Ireland
- Birdwatch Ireland
- Bat Conservation Ireland



Of those listed above, only a response from Irish Peatland Conservation Council was received (5th March 2025). It outlined the following key points and suggestions for consideration:

- Consideration for the impact on destruction of peatland landscapes on wildlife (birds, damselflies, dragonflies and butterflies) listed on the species red list that inhabit peatlands.
- The inclusion of peatland restoration/rehabilitation and environment stabilisation in the development.
- Consideration to include the following research report “The Habitats of Cutover Raised Bog, George F. Smith & William Crowley, Irish Wildlife Manual 128, NPWS, 2020” into the project’s literature review, due to the potential of non-high-bog areas becoming active raised bog SACs.
- Having regard to all National and European legislation and conventions related to peatlands.
- Having regard to the Environmental Protection Agency funded project BOGLAND.
- Consideration on the impact regarding nitrogen and its effects on nature habitats, as well as the implementation of long-term monitoring of emission rates/vectors to inform future projects.
- Consideration for the protection of ground nesting birds and that vegetation removal is illegal from 1st of March to 31st of August.
- The carrying out of training of construction workers regarding vegetation destruction.
- Consideration of the investigation of carbon inputs/outputs.
- Identify the methods proposed to mitigate carbon, assess the impact from drainage, quantify the volume of peat removal and restore habitats.
- The carrying out of ornithology surveys for species on the Bird Red List (emphasis on Curlew) and investigation of all red listed species within the National Biodiversity Data Centre, as well as mitigation works if a susceptible species is identified.
- Having regard to the impact on wetland sites (WMI_C0218, WMI_C0219, WMI_C0220, WMI_C0221, WMI_C0222) and liaising with Wetland Surveys Ireland.
- Ensure there is no loss of fen habitat.
- Consideration to include the following research report “Use of Peat Depth Criteria: Accounting for the lost peatlands – IUCN UK Peatland Programme” into the project’s literature review.
- Mitigation of the risk of spreading invasive species due to people/vehicle movements.

The IPCC’s comments have informed the project design and mitigation strategy. Specific safeguards to protect the wet heath mosaic habitat are detailed in Section 9.5.1.1.2 as well as water quality measures as prescribed in Section 9.5.1.1.3 and Chapter 11 Hydrology and Water Quality.



9.2 Methodology

9.2.1 Study Area

Under the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018), the study area for the Proposed Development has been defined having regard to the spatial and temporal scale of potential biophysical changes in the environment which might occur as a result of the development and throughout its lifetime. In identifying biodiversity which may be affected by the project, the following was identified:

- Habitats and species geographically overlapping with any of the actions or aspects of the project in any of its phases, or adjacent to them;
- Habitats and species within the likely Zone of Influence of the project;
- Habitats and species whose connectivity or ecological continuity can be affected by the project.

As such, the study area extends beyond the footprint of the works and associated red line planning boundary and considers potential for direct and indirect links to ecological receptors and associated ecological structure and function. From this, the key ecological receptors (KER)¹ are identified and are considered further in terms of their sensitivity to the effect as informed by best available guidance / data.

9.2.2 Zone of Influence

The Zone of Influence is defined as the area and resources that may be affected by biophysical changes caused by the Proposed Development both directly and indirectly. The key variables determining whether Key Ecological Receptors (KERs) will be subject to impacts through development are likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. This will depend on their sensitivity to change in the environment (CIEEM, 2018). The following have been considered to establish the Zone of Influence;

- the distance of the Proposed Development to the ecological receptors,
- the potential effect pathways to the ecological receptors
- the sensitivities of the ecological receptors within the receiving natural environment.
- Ecological connectivity between the project and the wider landscape.

The Zone of influence has been established on receptor-pathways, professional judgment, best practice and the precautionary principle.

¹ According to the National Roads Authority guidelines (NRA 2009), key ecological receptors will be features of sufficient value to be material in the decision-making process for which potential effects are likely. According to the NRA Guidelines, key ecological receptors are therefore defined as features of Local (Higher Value), County, National, or International Importance.



9.2.3 Desktop study

The desk study was carried out to collate information on the ecology within the Zone of Influence that will potentially be impacted by the Proposed Development. Information on species listed on Annexes II and IV to 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 online interactive map viewer provided information relating to designated sites of nature conservation importance within the Zone of Influence. The NBDC and NPWS provided rare and protected species data from the last decade of the 10 km grid squares that intersect the Proposed Development (W69, W79 and W89). The desk study undertaken for this chapter included a review of available ecological data from the following sources (accessed in March 2026):

- National Parks and Wildlife Service (NPWS) Floral Protection Order (FPO) map viewer - Bryophytes
- NPWS FPO map viewer - Vascular Plants
- NPWS Habitats Directive - Article 17 GIS and Metadata map viewer (2019)
- NPWS Birds Directive - Article 12 GIS and Metadata map viewer
- Geological Survey Ireland (GSI) area maps
- EPA website datasets (soil, surface water quality, ground water quality, designated sites)
- National Biodiversity Data Centre (NBDC) maps (Maps - Biodiversity Maps)
- Inland Fisheries Ireland Data hub: <https://opendata-ifigeo.hub.arcgis.com/>
- European Breeding Bird Atlas (<https://ebba2.info/>)
- Map of Irish Wetlands (<https://www.wetlandsurveys.ie/miw-intro>)
- Botanical Society of Britain and Ireland 10 square hectad (<https://bsbi.org/maps>)
- Crayfish Plague Surveillance Programme (NCPSP)

As outlined in Section 9.1, the Proposed Development is the proposed grid connection for the previously consented CGEP (Figure 2.1, Volume 4 of the EIAR). Therefore, there is overlap of the CGEP boundary and the linear footprint of the Proposed Development. Data captured by Inis Environmental Consultants, as presented in Section 8 of the Coom Green Energy Park EIAR (2020), is considered relevant and has informed this impact assessment. While these survey results are no longer valid (CIEEM, 2019), the precautionary approach has been adopted and all species previously recorded are assumed to still remain present on site and have been included in this assessment.

9.2.4 Field survey

Field surveys were undertaken in 2024, 2025 and 2026. The surveys aimed to identify the presence of threatened, protected and invasive species, and to record the habitats present. The surveys provided baseline information regarding the existing ecology of the study area. The surveys undertaken are listed in Table 9-2.



Table 9-2: Ecological surveys undertaken for the Proposed Development

Survey	Date	Surveyor
Habitats and flora	9 and 11 September 2025	FT
Marsh Fritillary	9 and 11 September 2025	FT
Amphibian habitat suitability	9 and 11 September 2025	FT
Bat GLTA inspection	17 September 2025	FT
Bat emergence survey	23 September 2025	
Bat winter inspection	6 and 23 February 2026	
Non volant mammals	9 and 11 September 2025	FT
Wintering Hen Harrier Survey	19 December 2024 17 and 23 January 2025 6, 20, 25 and 28 February 2025 5, 6, 10, 11, 19, 20, 24 and 25 March 2025	FT and Paul Rowe
Breeding birds	28 and 30 June 2025 1 July 2025	Paul Rowe
Kingfisher and dipper survey	17 September 2025	FT
Otter	14, 15 and 16 April 2025	Triturus Environmental Ltd.
Aquatics	14, 15 and 16 April 2025	Triturus Environmental Ltd.
Freshwater Pearl Mussel	23 February 2026	FT

9.2.4.1.1 Habitats and Flora

All habitats within the Proposed Development and a 30 m buffer were classified based on desktop assessment, detailed aerial imagery and Tailte Éireann landcover mapping following the Best Practice Guidance for Habitat Survey and Mapping (Smith et al, 2011). The desktop assessment was further validated and updated through the habitat and botanical survey undertaken by Fehily Timoney ecologists as detailed in Table 9-2.

The habitats within the study area were identified and classified according to Fossitt (2000). The plant species present in each habitat type were recorded. All species were readily identifiable during the field surveys, which were completed during the appropriate botanical season. Plant nomenclature for vascular plants follows ‘New Flora of the British Isles’ (Stace, 2019). Botanical species were assessed in accordance with their occurrence on the Flora (Protection) Order 2022 and The Ireland Red List No. 10: Vascular Plants. Other species records were assessed according to the Irish Red Data Lists.

Invasive plants, including species listed on the Third Schedule to the Habitats Regulations, and other species which can negatively impact biodiversity were recorded and mapped during the habitat survey.



9.2.4.1.2 Non volant mammals

Mammal surveys were undertaken within the study area by Fehily Timoney ecologists. These surveys focused on areas with high suitability for mammals such as treelines, riparian areas, scrubland etc. All field sightings and field signs observed were recorded such as tracks, trails, droppings, resting places or other marking signs of hedgehog (*Erinaceus europaeus*), stoat (*Mustela erminea*), hare (*Lepus europaeus*), red squirrel (*Sciurus vulgaris*), badger (*Meles meles*), pine marten (*Martes martes*), or pygmy shrew (*Sorex minutus*) Survey techniques followed the following best practice guidance:

- National Roads Authority (2005). Ecological surveying techniques for protected flora and fauna during the planning of national road schemes.
- National Roads Authority (2006). Guidelines for the treatment of badgers prior to the construction of national road schemes.
- Battersby, J. (Ed.) (2005). UK mammals: Species status and population trends.
- Harris, S., Creswell, P., Jefferies, D., Cheeseman, C., & Mallinson, P. (1989). Surveying badgers (Occasional Publication No. 9).
- Scottish Natural Heritage (2015). Surveying for badgers: Good practice guidelines (Version 1).
- Reid, N., McDonald, R. A., Montgomery, W. I., & Hayden, T. J. (2007). Status of hares in Ireland: Hare survey of Ireland 2006/07 (Irish Wildlife Manuals No. 30).
- O’Meara, D. B., Sheehy, E., Lawton, C., & O’Meara, J. (2020). All-Ireland squirrel and pine marten survey 2019 (Irish Wildlife Manuals No. 121).
- The Mammal Society (2018). European hedgehog: UK BAP mammals—Interim guidance for survey methodologies, impact assessment and mitigation.

Otter

Otter (*Lutra lutra*) surveys were undertaken in conjunction with the aquatic survey. Surveys were undertaken in accordance with the NRA’s (2005) ‘Ecological Surveying Techniques for Protected Flora and Fauna During the Planning of National Road Schemes’, JNCC’s (2004) ‘Common Standards Monitoring Guidance for Mammals’, Chanin (2003) *Monitoring the Otter Lutra lutra and* (Reid et al, 2013) National Otter Survey of Ireland 2010/12. The presence of otter was determined by systematically searching 150m upstream and downstream of each of the fourteen survey sites as undertaken by Triturus Environmental (2025) (Appendix 9.1 in Volume 3 of this EIAR).

9.2.4.1.3 Avifauna surveys

Breeding bird surveys

Breeding bird surveys were based on the British Trust for Ornithology (BTO) Breeding Bird Survey guidelines (Bibby et al, 2000). Surveyors recorded all birds seen or heard as they walked methodically along the seven selected transect routes. Birds seen and heard were noted in three distance categories from the red line boundary of the Proposed Development (measured at right angles to the transect line within 25 m, between 25 m-100 m and over 100 m) and those seen in flight only. Recording birds in distance bands gives a measure of bird detectability and allows relative population densities to be estimated if required. All individual bird species and their quantities were noted.

Hen Harrier

Hen Harrier Roost Survey



Winter roost survey methods followed those in the Irish Hen Harrier Winter Survey (IHHWS) (O'Donoghue, 2019) and Hardey et al. (2013). A 1 km study area was used as core foraging range based on habitat suitability (SNH, 2016). VPs are presented in Figure 9.3 in Volume 4 of this EIAR.

For each target area, two surveyors simultaneously conducted VP surveys starting three hours prior to dusk and continuing until observations are no longer feasible in the dark per IHHWS guidelines (O'Donoghue, 2019). IHHWS guidelines state that surveyors must be present at minimum 40 minutes before dusk, so survey effort exceeded that required by IHHWS guidelines. Surveyors recorded all hen harrier flight lines and roosting behaviour.

Riverine Habitat Appraisal

Potential nesting habitats and features which could be used by these species were searched for within areas of suitable habitat along watercourses overlapped by and adjacent to the proposed grid connection, this included four locations: Toor River (1) (52.0757574,-8.5231826), Toor River (2) (52.0712373,-8.5145912), River Bride (52.0629583, -8.4613873), and Farran North River (52.1004508,-8.2624604). The survey methodology followed 'Ecological Surveying Techniques for Protected Flora and Fauna During the Planning of National Road Schemes' (NRA 2009) and 'Waterways Breeding Bird Survey' (BTO, 2024) methodology.

9.2.4.1.4 Bats

Ground level assessment (GLTA)

The bat suitability assessment was undertaken within the Proposed Development and a 40 m buffer focusing on built and natural features. Potential roosts were surveyed from ground level with a torch and binoculars, searching for the presence of bats or bat evidence, and any Potential Roost Features (i.e. PRFs) identified by the Bat Tree Habitat Key Project (Andrews & BTHK, 2020) such as bridges, structures, or tree features such as rot holes, hazard beams, frost cracks and splits, partially detached bark, knot holes, tear outs, gaps between overlapping branches. Features are identified as either PRF-I (features suitable for individual bats or small numbers of non-breeding bats) or PRF-M (features suitable for multiple bats, such as maternity or hibernation colonies) (Collins, 2023).

Emergence surveys

A bat emergence survey of potential roosting features was carried out during suitable weather conditions, starting at sunset and continuing for a minimum of two hours, to record bats emerging from potential roost features. Surveyors were positioned with a complete view of the structure and used a bat detector to identify bat activity, species, flight direction, and emergence. For structures with high roost suitability (PRF-M), at least two surveys between May and August should be carried out.

Winter Inspection

The hibernation suitability assessment were conducted in accordance with Collins (2023). This involved a close and systematic inspection of all cracks, crevices and voids for hibernating bats using torches, mirrors and endoscopes to assess for the presence of hibernating individuals or signs such as staining or droppings.

The inspections were undertaken during the optimal hibernation window (January–February), focusing on periods following cold spells when bats are least likely to be active and most likely to be found within the structure.



9.2.4.1.5 Amphibians

All waterbodies within the proposed development and a 40 m buffer were assessed for potential to support frogs and newts adhering to TII guidance (2008b).

9.2.4.1.6 Marsh Fritillary

As part of ecological walkover assessments for the Proposed Development, habitats were assessed for suitability to support Marsh Fritillary having regard to the National Biodiversity Data Centre Marsh Fritillary Habitat Condition Form: i.e. sites with the presence of the butterfly's foodplant, devil's-bit scabious *Succisa pratensis*. The survey methodology followed that described in the NBDC Marsh Fritillary Larval Web Recording Form and surveys were carried out under dry weather conditions.

9.2.4.1.7 Aquatic survey

The aquatic survey undertaken by Triturus Environment Ltd included 14 sampling sites at watercourses crossed by the Proposed Development and upstream and downstream. The survey focused on both instream and riparian habitats at each aquatic sampling location and included a fisheries habitat appraisal, white-clawed crayfish survey, macrophyte and aquatic bryophyte survey and biological water quality sampling (Q-sampling). The full methodology is described in the aquatic survey report is attached in Appendix 9.1, Volume 3 of the EIAR.

9.2.4.1.7.1 Freshwater Invertebrates

White-clawed Crayfish

White-clawed crayfish (*Austropotamobius pallipes*) surveys were undertaken at the aquatic survey sites in April 2025 under a National Parks and Wildlife (NPWS) open national licence as prescribed by Sections 9, 23 and 34 of the Wildlife Act (1976-2023), to capture and release crayfish to their site of capture. As per Inland Fisheries Ireland aquatic biosecurity recommendations, the crayfish sampling started at the uppermost site(s) of the Green Energy Park catchment/sub-catchments in the survey area to minimise the risk of transfer invasive propagules (including crayfish plague) in an upstream direction.

Hand-searching of instream refugia and sweep netting was undertaken according to Reynolds et al. (2010). An appraisal of white-clawed crayfish habitat at each site was conducted based on physical habitat attributes (Gammell et al., 2021; Peay, 2003), water chemistry and incidental records in mustelid spraint.

Freshwater Pearl Mussel

A Stage 1 (presence/absence) survey for the Freshwater Pearl Mussel (*Margaritifera margaritifera*) was conducted at all proposed WFD watercourse crossings in accordance with the Irish Wildlife Manual No. 12 (Anon, 2004). The habitats suitability assessment was based on the requirements defined by Hastie et al. (2000) and the criteria by Skinner et al. (2003). Field surveys were performed under optimal conditions, including bright weather and high in-stream visibility. Following an inspection of river stretches that had potential habitat, the riverbed was systematically examined visually with a bathyscope. Strict biosecurity measures were adhered to. Based on the findings of the Stage 1 survey, a Stage 2 survey was deemed unnecessary.



9.2.4.1.8 Survey limitations

The GLTA inspection of the existing structure over the River Bride undertaken in September 2025 assessed the bridge as PRF-M. Under BCT (2023) guidelines, two emergency surveys are typically required for PRF-M structures. However, given the timing only one survey could be undertaken within the optimal survey period. To compensate for this, a precautionary approach was adopted which included two winter hibernation inspections in February 2026. No evidence of bat activity or individual was recorded.

Therefore, potential impacts will be offset by scheduling the cable installation at this location during the winter months (November - March). This avoids the maternity and active season and ensures no disturbance to potential summer occupants.

9.2.5 Assessment methodology

The ecological evaluation and impact assessment methodology presented in this chapter has been undertaken in accordance with the methodology set out in Chapter 3 of Guidelines for Assessment of Ecological Impacts of National Roads Schemes (TII, 2009).

9.2.5.1 *Evaluation of ecological resources*

The evaluation of ecological resources follows the criteria outlined in Section 3.3 of TII (2009). These guidelines provide a geographic framework for determining the importance of ecological receptors, with levels of importance assigned on the following:

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

The guidelines clearly define the criteria used to assign each level of importance. For example, receptors of Local Importance (Lower Value) typically comprise habitats and species that are widespread, of low ecological significance, and of importance only within the local context. In contrast, receptors of International Importance include sites designated for nature conservation as part of the Natura 2000 network (Special Areas of Conservation or Special Protection Areas) or areas supporting the best examples of habitats or internationally important populations of protected species.

All habitats and species within the Zone of Influence and wider study area were evaluated using this framework. On this basis, Key Ecological Receptors (KERs) were identified and classified according to their assigned level of ecological importance.



9.2.5.2 *Characterisation of ecological impacts*

The characterisation of ecological impacts has been undertaken with reference to the EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports. Ecological impacts are characterised using the following parameters:

- Magnitude and spatial extent of the impact (including the geographical area affected and the size of the population likely to be affected);
- Nature of the impact;
- Transboundary nature of the impact;
- Intensity and complexity of the impact;
- Probability of occurrence;
- Expected onset, duration, frequency and reversibility of the impact;
- Potential for the impact to cumulate with effects arising from other existing and/or approved projects; and
- The ability to effectively reduce the impact through mitigation measures.

Definitions for the duration and frequency of impacts are applied as set out in EPA (2022) and are listed below:

- Momentary – seconds to minutes
- Brief – less than one day
- Temporary – up to one year
- Short-term – one to seven years
- Medium-term – seven to fifteen years
- Long-term – fifteen to sixty years
- Permanent – over sixty years

The assessment considers impacts arising during both the construction, operational and decommissioning phases of the Proposed Development and includes consideration of direct, indirect, temporary, permanent, reversible, irreversible, and cumulative effects, where relevant.

9.2.5.3 *Assessing the Significance of Effects*

The significance of ecological effects has been determined in accordance with TII (2009), where the significance of effects is assigned based on the characterisation of impacts irrespective of the value of the receptor.



9.3 Baseline Environment

The following sections describe the results of the assessment of available published material that was carried out as part of the desk study coupled with the findings of ecological field surveys which were conducted to establish the current state of the environment (baseline scenario) and the likely evolution thereof through natural changes within the study area.

9.3.1 Designated Sites

9.3.1.1.1 European Sites

Special Areas of Conservation (SAC) are protected under the European Union (EU) ‘Habitats Directive’ (92/43/EEC), as implemented in Ireland by S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) and Part XAB of the Planning and Development Act 2000 (as amended). Special Protection Areas (SPA) are designated under the EU Birds Directive (2009/147/EC) (‘The Birds Directive’).

In establishing the study area to assess the baseline scenario for designated sites regard was had to Practice Note PN01 Appropriate Assessment Screening for Development Management (OPR, 2021) and the source-pathway-receptor approach was adopted.

A stand-alone Appropriate Assessment Screening Report (AA) and Natura Impact Statement (NIS) was prepared for the Proposed Development. It was determined that only the Blackwater River (Cork/Waterford) SAC (002170) has potential to be affected by impact pathways from the Proposed Development. As likely significant effects could not be excluded at the screening stage, a NIS was prepared. The NIS presents the predicted effects on this site and its Qualifying Interests and prescribes mitigation measures to address the negative effects identified. It was concluded that with the prescribed mitigation, there would be no residual effects of the Proposed Development on the Blackwater River (Cork/Waterford) SAC.

Table 9-3: European sites and possible likely significant effects.

Site Code	Site Name	Distance (KM)	Likely significant effects identified in AA Screening
002170	Blackwater River (Cork/Waterford) SAC	Within the Proposed Development footprint	Yes
004094	Blackwater Callows SPA	4.3	No, ex-situ impacts ruled out and no hydrological connectivity.
004162	Mullaghanish to Musheramore Mountains SPA	40.8	No, ex-situ impacts for Hen Harrier ruled out.
004095	Kilcolman Bog SPA	19.5	No, ex-situ impacts ruled out and no hydrological connectivity.
004161	Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA	48.1	No, ex-situ impacts for Hen Harrier ruled out.



9.3.1.1.2 Nationally Designated Sites

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 afforded some protection under planning policies and objectives.

There are no NHAs within 15 km of the Proposed Development. There are thirteen pNHAs present within 15 km of the Proposed Development, namely the Blackwater River Callows pNHA, the Bride/Bunaglanna Valley pNHA, the Araglin Valley pNHA, the Blackwater Valley (Killavullen) pNHA, the Awbeg Valley (Castletownroche) pNHA, the Blackwater Valley (Ballincurrig Wood) pNHA, the Blackwater Valley (Kilcummer) pNHA, the Blackwater Valley (Killathy Wood) pNHA, the Blackwater Valley (Cregg) pNHA, the Blackwater Valley (The Beech Wood) pNHA, the Cregg Castle pNHA, and the Convamore, Ballyhooly (near Fermoy) pNHA.

However, only one, the Blackwater River Callows pNHA, is within the same catchment as the Proposed Development and is therefore vulnerable to impacts from the Proposed Development.

There are two designated sites within the Zone of Influence of the Proposed Development, the European site, the Blackwater River (Cork/Waterford) SAC and the nationally designated site, the Blackwater River Callows pNHA. **These sites are covered under the KERs 'Aquatic habitats', 'Otter', 'Fisheries', and 'Avifauna'.**

9.3.2 EPA Watercourses

The Proposed Development crosses 67 watercourses, however only four crossings are EPA mapped watercourses, with two crossings over the same watercourse. The remaining watercourse crossings are unmapped drainage ditches and field drains. The map of watercourse crossings locations is presented in Figure 11.4 in Volume 4 of the EIAR. Based on the aquatic survey undertaken by Triturus Environmental Ltd. in 2025, the descriptions of the watercourses and riparian habitat at the proposed watercourse crossing locations within the EPA mapped watercourses are detailed below in Section 9.3.2.1.1- 9.3.2.1.4 and Appendix 9.1, Volume 3 of the EIAR.



9.3.2.1.1 Watercourse Crossing 2 - Shanowen Trib 1 Stream

This watercourse was a small lowland depositing stream (FW2) and had been historically straightened and locally straightened resulting in a homogenous channel 1m wide with 1m high banks. The stream suffered from low flows at the time of survey and was 0.05m deep with a profile of very shallow slow-flowing riffle. The bed comprised heavily bedded and silted small boulder, cobbles and gravels with some low rates of siltation. The site supported occasional water mint (*Mentha aquatica*) with the liverwort (*Riccardia chamedryfolia*) present on instream cobble. The riparian areas featured mature hawthorn (*Crataegus monogyna*), gorse (*Ulex europaeus*) and bramble (*Rubus fruticosus* agg.) adjoining improved pasture (GA1).



Plate 9-1: Sample site for watercourse crossing location Shanowen Trib 1 Stream (Triturus Environmental Ltd, 2025)



9.3.2.1.2 Watercourse Crossing 46 - River Bride

This watercourse crossing location is on the River Bride at Bride Bridge, upstream of its confluence with the Coom River. The natural upland watercourse (FW1) flowed over exposed bedrock resulting in deep pools between bedrock cascades. The river was 6-10m wide and 0.1-0.6m deep with gently sloping, well-vegetated banks. The substrata were dominated by bedrock with frequent cobble and mixed gravels. Boulders were scattered. Filamentous algae cover was high (c.70% of the bed), indicative of enrichment pressures. However, siltation was low given the high energy nature of the channel. Given high flow rates, macrophytes were scarce with only localised water crowfoot (*Ranunculus sp.*) and hemlock water dropwort. Instream boulders also supported occasional bryophytes including *Rhynchostegium riparioides* and *Fontinalis squamosa*. The wet riparian areas were dominated by willow (*Salix spp.*) and hawthorn with occasional iris (*Iris pseudacorus*). The site was bordered by improved pasture (GA1) and coniferous afforestation (WD4) with mature scrubby buffers.



Plate 9-2: Sample site for watercourse crossing location at the River Bride Bridge (Triturus Environmental Ltd, 2025)



9.3.2.1.3 Watercourse Crossing - 52 Toor River (downstream)

The watercourse crossing located on the upper reaches of the Toor River was small upland river channel (FW1) and had been historically deepened but retained good sinuosity with a profile of deep glide and riffle and localised shallow pool on meanders. The river was 1.5-2m wide and 0.1-0.5m deep with 1m high banks. The bed comprised boulder, cobble and mixed gravels but these were heavily silted with the substrata being moderately bedded. This was mainly due to unfenced cattle access to the small river upstream (poaching) where significant volumes of eroded silt were entering the river. Water-crowfoot (*Ranunculus sp.*) was occasional instream. Larger instream boulders supported locally frequent *Fontinalis antipyretica*. The channel margins supported occasional marsh marigold (*Caltha palustris*) and hemlock water-dropwort (*Oenanthe crocata*). The riparian areas featured frequent scattered grey willow, gorse and bramble. Wet hollows in the adjoining willows supported tussock sedge (*Carex paniculata*), soft rush (*Juncus effusus*), hemlock water dropwort, marsh marigold and hairy bittercress (*Cardamine hirsuta*). The site was bordered by improved pasture (GA1) and coniferous afforestation (WD4).



Plate 9-3: Sample site for watercourse crossing location at the Toor River (downstream) (Triturus Environmental Ltd, 2025)



9.3.2.1.4 Watercourse Crossing 54 - Toor river (upstream)

This watercourse crossing crosses the Toor river upstream of watercourse crossing 52. It is to be built as part of the previously consented CGEP. The small upland channel (FW1) had been historically straightened through a coniferous plantation (WD4) and improved pasture (GA1). The river was 1.5-2m wide and 0.1-0.4m deep with 1m bank heights. The profile was of deep glide and riffle with very localised pool. The bed comprised boulders, cobble, mixed gravels and sand. These were moderately silted with substrata being moderately bedded. Bank erosion, inclusive of livestock poaching, was widespread. The small river supported no macrophytes due to its high energy. However, instream sandstone boulders supported the moss species *Rhynchostegium riparioides*. The riparian areas were predominantly open pasture with pockets of species-poor wet grassland (GS4) and or bordered by semi-mature sitka spruce (*Picea sitchensis*) woodland (WD4).



Plate 9-4: Sample site for watercourse crossing location at the Toor River (upstream) (Triturus Environmental Ltd, 2025)

9.3.3 Unmapped watercourses

There are three watercourse crossings that are unmapped by EPA, however the site survey undertaken by Triturus Environmental Ltd. confirmed that these are small natural watercourses.

9.3.3.1.1 Watercourse Crossing 15 - Bunnaglanna Stream

This crossing location is a watercourse that is an upland eroding channel (FW1) flowed over a high gradient with a semi-natural, meandering from through mature sitka spruce plantations. The stream was 3-4m wide and 0.1-0.3m deep. The flow profile was of mixed cascading riffle, glide and pool sequences. The bed supported large rounded boulder and cobble with mixed gravels in interstitial spaces. The large stream was of too high energy to support macrophytes at this location. However, the liverwort species *Chiloscyphus polyanthos* was present locally on stable boulders. The riparian areas supported mature grey willow, bramble and gorse that formed a dense layer for c. 10m either side of the channel. The site was bordered by coniferous afforestation (WD4).



Plate 9-5: Sample site for watercourse crossing location at Bunnaglanna Stream (Triturus Environmental Ltd, 2025)



9.3.3.1.2 Watercourse Crossing 43 - Field Chimney Stream

This watercourse crossing was located on the upper reaches of the Field Chimney Stream, a tributary of the Inchinanagh River. The sinuous upland channel (FW1) was of very high energy, flowing over a moderate gradient with exposed sandstone boulder cascades. The stream was 2-3m wide and 0.1-0.3m deep with steep banks that graded into the adjoining V-shaped valley. The stream had a profile of shallow cascading riffle and glide with localised plunge pools. The bed comprised of rounded boulder, cobble, mixed gravels and sand. The substrata had light to moderate siltation with the substrata being moderately bedded. The site did not support macrophytes given high energies and shading. However, instream boulders supported the liverwort *Chiloscyphus polyanthos* in shaded pockets with more frequent *Rhynchostegium riparioides* on exposed boulder tops. The riparian areas supported frequent grey willow that bordered mature Sitka spruce (*Picea sitchensis*) from the adjoining plantations (WD4).



Plate 9-6: Sample site for watercourse crossing location at the Field Chimney Stream (Triturus Environmental Ltd, 2025)



9.3.3.1.3 Watercourse Crossing 49 - Red Bog Stream

This site was located on the Red Bog Stream (18R48). The small Coom River tributary had been historically deepened and straightened through coniferous afforestation (WD4) and improved pasture (GA1). The small upland stream (FW1) was 0.5-1m wide and <0.2m deep with 1.5m bank heights. The profile comprised very shallow riffle and glide. The channel evidently suffered from low dry weather flows. The substrata were dominated by boulder and cobble with heavily mixed gravels. These were heavily silted and bedded with high cover of flocculant iron-oxidising bacterial films. The site did not support macrophytes due to heavy shading. The riparian zones supported frequent grey willow, gorse and bramble scrub (WS1). The site was bordered by improved pasture (GA1) and mature scrub buffers with coniferous afforestation upstream (WD4).



Plate 9-7: Sample site for watercourse crossing location at the Red Bog Stream (Triturus Environmental Ltd, 2025)

The EPA mapped and unmapped watercourses were assessed individually as being locally important, at both higher and lower value levels. However, given the connectivity to the River Bride and the location within the catchment, which forms part of the Blackwater River (Cork/Waterford) SAC, the cumulative value of the watercourses is considered to be of international importance. **Therefore, watercourses have been considered under Aquatic habitats as a Key Ecological Receptor.**



9.3.4 Habitats and Flora

Desktop study

Based on a review of aerial imagery and online mapping tools, the wider environs of the Proposed Development are characterised predominantly by conifer plantation forestry and agricultural grasslands. According to the CORINE Land Cover Map, the site and surrounding area are classified as grassland, forest, woodland, and scrub. A review of the NPWS Map Viewer of Article 17 Habitats (2019) indicates the presence of Annex I Old Oak Woodland (91A0) along the banks of the River Bride, downstream of the Proposed Development.

No habitats evaluated as being of international, national or county importance, including habitats listed in Annex I of the EU Habitats Directive were recorded within the previously consented CGEP boundary, refer to Figure 2.1 in Chapter 2 - Development Description.

Field survey

Habitats within the study area are shown on the habitat map presented in Figure 9.1 of Volume 4 of this EIAR and described below. Aquatic habitats have been described in Section 9.3.2 and 9.3.3 and habitat value in regard to aquatic fauna is described in Section 9.3.5.1.6.

The Proposed Development is predominately within forestry and alongside the existing road. The construction footprint utilizes these existing roads and forestry tracks where possible, with the aim to retain as much natural habitat as possible. The habitats within the land take of the Proposed Development and are described below.

BC3 - Tilled land

This habitat had previously been agricultural land that has recently been cleared and reseeded with grass. Tilled land is of Local Importance (Lower Value).

BL2 - Earth banks

The most common type of field and roadside boundary within the study area are vegetated earth banks. This linear habitat occurred along public roads and was dominated by scaly male-fern (*Dryopteris affinis*), bramble (*Rubus fruticosus*), common bent (*Agrostis capillaris*), heather (*Calluna vulgaris*) and bilberry (*Vaccinium myrtillus*). The vegetation on these banks often merges with a narrow strip of dry-humid grassland (GS2) habitat along the roadsides and access tracks. Earth banks are of Local Importance (Lower Value).

ED2 - Spoil and bare ground

Areas of spoil and bare ground were present across the site along tracks with heavy traffic. Spoil and bare ground is of Local Importance (Lower Value).

ED3 - Recolonising bare ground

Recolonising bare ground habitat occurs on disturbed areas or gravel tracks where a range of ruderal species have begun to germinate. This habitat was dominated by annual meadow-grass (*Poa annua*) and perennial rye-grass (*Lolium perenne*), with water mint (*Mentha aquatica*), Yorkshire-fog (*Holcus lanatus*), soft-rush (*Juncus effusus*) and bramble. Recolonising bare ground is of Local Importance (Lower Value).



GA1 - Improved agricultural grassland

Along with conifer plantation, this habitat was the most widely recorded across the study area. The sward was dominated by perennial rye-grass and Yorkshire-fog, with additional grasses including common bent. The habitat was generally species-poor and managed, though occasional herbs and ruderal species were present, including sheep's sorrel (*Rumex acetosella*), soft-rush and willowherb species (*Epilobium sp.*). The habitat reflects improved pasture typical of lowland agricultural landscapes. Improved agricultural grassland is an artificial and intensively managed habitat type with limited biodiversity value and is classified as Local Importance (Lower Value).

GA2 - Amenity grassland (improved)

Improved amenity grassland was recorded in areas of managed lawns and roadside verges. It provides low ecological value due to low sward height and limited species diversity. Amenity grassland is of Local Importance (Lower Value).

GS3 - Dry-humid acid grassland

This habitat was characterised by a mixed sward of grasses and herbs on acidic soils. Grasses such as false oat-grass (*Arrhenatherum elatius*), cock's-foot (*Dactylis glomerata*), sweet vernal-grass (*Anthoxanthum odoratum*) and common bent are frequent, with soft-rush occurring in damper patches. The herb layer includes typical acid grassland species such as tormentil (*Potentilla erecta*), trailing tormentil (*Potentilla anglica*), silverweed (*Potentilla anserina*), marsh thistle (*Cirsium palustre*), wild angelica (*Angelica sylvestris*), meadow vetchling (*Lathyrus pratensis*), foxglove (*Digitalis purpurea*), common ragwort (*Senecio jacobaea*), common sorrel (*Rumex acetosa*) and common nettle (*Urtica dioica*). Scrub species including bramble occur locally. Dry-humid acid grassland is classified as being of Local Importance (Lower Value).

GS3 - Dry meadows and grassy verges

Note: This habitat shares the same Fossitt code as above but represents different floral communities. This habitat was found along small areas of roadside or access tracks. Species recorded included false oat-grass, Yorkshire-fog, and cock's-foot, alongside bramble, bush vetch (*Vicia sepium*) and nettle. Dry meadows and grassy verges are of Local Importance (Lower Value).

GS4 - Wet grassland

The wet grassland habitat on site was dominated by soft-rush and sharp-flowered rush (*Juncus acutiflorus*) alongside Yorkshire-fog, common bent, tufted hair-grass (*Deschampsia cespitosa*) and sheep's-fescue (*Festuca vivipara*). The herb layer included species such as creeping buttercup (*Ranunculus repens*), lesser spearwort (*Ranunculus flammula*), marsh bedstraw (*Galium palustre*), tormentil, greater bird's-foot-trefoil (*Lotus pedunculatus*), marsh cinquefoil (*Comarum palustre*) and marsh thistle, with meadow thistle (*Cirsium dissectum*) also recorded. Other species included bramble, gorse (*Ulex europaeus*) and rosebay willowherb (*Chamerion angustifolium*). Wet grassland is of Local Importance (Higher Value).

HD1 - Dense bracken

This habitat type is dominated by dense swards of bracken (*Pteridium aquilinum*). Dense bracken is of Local Importance (Lower Value).



HH3 - Wet heath

Two occurrences of wet heath were recorded, both dominated by purple moor-grass (*Molinia caerulea*). Heather was present but not abundant, alongside bilberry. The species composition was a mosaic of wet grassland and heath-associated species, including common sedge (*Carex nigra*), common yellow-sedge (*Carex demissa*), soft-rush, sharp-flowered rush, velvet bent (*Agrostis canina*), sweet vernal-grass, crested dog's-tail (*Cynosurus cristatus*) and sheep's-fescue (*Festuca ovina*). Flowering herbs included meadow buttercup (*Ranunculus acris*), tormentil, greater bird's-foot-trefoil, selfheal (*Prunella vulgaris*), ribwort plantain (*Plantago lanceolata*) and sheep's sorrel. Scrub species included bramble, rosebay willowherb and scattered grey willow (*Salix cinerea*), with modification likely due to adjacent farming and forestry. Wet heath is of Local Importance (Higher Value).

WD1 - (Mixed) broadleaved woodland

The canopy is dominated by beech (*Fagus sylvatica*), with additional species including grey willow and alder (*Alnus glutinosa*). Occasional planted species such as European larch (*Larix decidua*) are present. The understorey is generally sparse but includes gorse. The habitat is transitional and lacks connectivity to larger unmanaged woodlands. Mixed broadleaved woodland is of Local Importance (Higher Value).

WD4 - Conifer plantation

This habitat is dominated by commercial species, principally Sitka spruce (*Picea sitchensis*) and Norway spruce (*Picea abies*). Scattered broadleaved trees occur throughout, including grey willow, alder, sessile oak (*Quercus petraea*), beech, sycamore (*Acer pseudoplatanus*), hazel (*Corylus avellana*) and holly (*Ilex aquifolium*). The shrub layer comprises bramble, gorse, honeysuckle (*Lonicera periclymenum*) and ivy (*Hedera helix*). Ground flora includes heather, purple moor-grass, tufted hair-grass, great wood-rush (*Luzula sylvatica*), soft-rush and rosebay willowherb. Fern species include hard-fern (*Blechnum spicant*), broad buckler-fern (*Dryopteris dilatata*), scaly male-fern and bracken, with occasional opposite-leaved golden-saxifrage (*Chrysosplenium oppositifolium*). Conifer plantation is of Local Importance (Lower Value).

WS1 - Scrub

This habitat was a mix of woody scrub and tall herb vegetation. Grey willow dominates most occurrences, especially within riparian zones. Other woody species include hawthorn (*Crataegus monogyna*), hazel, gorse and bramble, with occasional Sitka spruce and rare records of apple (*Malus pumila*). The ground layer comprises tufted hair-grass, wild angelica and willowherb species. This habitat provided diversity along the edges of the conifer plantation. Scrub is of Local Importance (Higher Value).

WS2 - Immature woodland

This habitat consisted of a small area of mixed conifer and broadleaf saplings (less than 5 m in height) located across from the conifer plantation. Immature woodland is of Local Importance (Lower Value).

WL1 - Hedgerows

Hedgerows on site were composed of common species such as ivy, hawthorn and hazel. Hedgerows are classified as being of Local Importance (Higher Value).

WL2 - Treelines

Treelines along the edges of the conifer plantation were comprised of lodgepole pine (*Pinus contorta*). Planting treelines along field boundaries comprised Italian alder (*Alnus cordata*) and rowan (*Sorbus aucuparia*). Treelines are of Local Importance (Lower Value).



Terrestrial habitats of Local Importance (Higher value) namely, GS4 - Wet grassland, HH3 - Wet heath, WS1 - Scrub, WD1 - (Mixed) broadleaved woodland, and WL1 Hedgerows, have been included as KER Terrestrial habitats.

9.3.4.1.1 Protected and Rare Flora

Desktop study results

The desktop study returned results for the following species listed on the Flora Protection Order (2022) in hectads W69, W79 and W89, Starved wood-sedge (*Carex depauperata*), Divided sedge (*Carex divisa*), Narrow-leaved bitter-cress (*Cardamine impatiens*), Narrow-leaved helleborine (*Cephalanthera longifolia*), Lesser centaury (*Centaureum pulchellum*), Meadow saxifrage (*Saxifraga granulata*), Chickweed willowherb (*Epilobium alsinifolium*), and Fringed sandwort (*Arenaria ciliata*).

No Flora Protection Order (FPO) species were found during the 2018 surveys within the CGEP study area.

Field survey results

No rare or protected flora species protected under the Flora (Protection) Order; S.I. No. 235 of 2022 (FPO), listed in Annex II and IV of the EU Habitats Directive (92/43/ECC), or listed in the Irish Red Data were recorded during the surveys.

While not rare, devil's bit scabious (*Succisa pratensis*), an important species for Marsh Fritillary butterfly, was present in edge habitat along the forestry tracks within the Proposed Development.

9.3.4.1.2 Invasive species

Desktop study results

The desktop study returned five species listed on Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) namely, Japanese knotweed (*Reynoutria japonica*), Himalayan balsam (*Impatiens glandulifera*), Rhododendron (*Rhododendron ponticum*), American skunk-cabbage (*Lysichiton americanus*), and Giant-rhubarb (*Gunnera tinctoria*).

During the 2018 surveys of the CGEP study area, Rhododendron, Japanese knotweed and Himalayan knotweed were recorded. Butterfly bush (*Buddleja davidii*) and Pheasant berry (*Leycesteria formosa*) were also recorded however these species are not listed on the Third Schedule subject to restrictions under Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (as amended) is listed as a 'Medium impact' non-native invasive species (Kelly et al., 2013a, O' Flynn et al., 2014). Montbretia (*Crocsmia x crocsmiflora*), which is also considered an invasive species in Ireland was also recorded at one location.

Field survey results

Two Third Schedule invasive species were identified during the habitat survey in separate locations within the construction footprint. Himalayan knotweed (*Persicaria wallichii*) was recorded along the 33 kV CNR between Coom (Middleton) and Knockaunlour at the edge of the WD4 - Conifer, by Watercourse Crossing 49 (Plate 9-8). Himalayan Balsam was recorded near Farran South within the 110 kV GCR footprint, alongside the L1517 near the watercourse crossing of the Shanowen Trib 1 Stream (Watercourse Crossing 2). in Volume 4 of this EIAR displays these areas in the context of the Proposed Development.



Plate 9-8: Himalayan knotweed infestation at drainage ditch crossing along 33 kV at Watercourse Crossing 49

Cherry Laurel (*Prunus laurocerasus*), Montbretia (*Crococsmia × crocosmiiflora*), Fuchsia (*Fuchsia magellanica*) and Old Man's Beard (*Clematis vitalba*) were also recorded within the construction footprint. While these species are considered invasive in Ireland, they are not listed as Third Schedule invasive species.

Invasive species have been identified as a Key Ecological Receptor.

9.3.5 Fauna

9.3.5.1 *Avifauna*

Desktop study results

The desktop study returned a list of avifauna species that had been recorded in the wider area in the last two decades. The majority of which are common and widespread, however 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 in Table 9-4 below.



Table 9-4 Avifauna desk study results.

Common Name	Species Name	Status
Barn Owl	<i>Tyto alba</i>	Red BOCCI
Common Sandpiper	<i>Actitis hypoleucos</i>	Amber BOCCI
Coot	<i>Fulica atra</i>	Annex II BD, Amber BOCCI
Cormorant	<i>Phalacrocorax carbo</i>	Amber BOCCI
Curlew	<i>Numenius arquata</i>	Annex II BD, Red BOCCI
Goldcrest	<i>Regulus regulus</i>	Amber BOCCI
Golden Plover	<i>Pluvialis apricaria</i>	Annex I BD, Annex II BD, Red BOCCI
Greenfinch	<i>Chloris chloris</i>	Amber BOCCI
Grey Partridge	<i>Perdix perdix</i>	Annex II BD, Red BOCCI
Grey Wagtail	<i>Motacilla cinerea</i>	Red BOCCI
Hen Harrier	<i>Circus cyaneus</i>	Annex I BD, Amber BOCCI
Herring Gull	<i>Larus argentatus</i>	Amber BOCCI
House Martin	<i>Delichon urbicum</i>	Amber BOCCI
House Sparrow	<i>Passer domesticus</i>	Amber BOCCI
Jack Snipe	<i>Lymnocyptes minimus</i>	Annex II BD
Kestrel	<i>Falco tinnunculus</i>	Red BOCCI
Kingfisher	<i>Alcedo atthis</i>	Annex I BD, Amber BOCCI
Lapwing	<i>Vanellus vanellus</i>	Annex II BD, Red BOCCI
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber BOCCI
Linnet	<i>Linaria cannabina</i>	Amber BOCCI
Little Egret	<i>Egretta garzetta</i>	Annex I BD
Mallard	<i>Anas platyrhynchos</i>	Annex II BD, Amber BOCCI
Meadow Pipit	<i>Anthus pratensis</i>	Red BOCCI
Mute Swan	<i>Cygnus olor</i>	Amber BOCCI
Peregrine	<i>Falco peregrinus</i>	Annex I BD
Pheasant	<i>Phasianus colchicus</i>	Annex II BD
Redwing	<i>Turdus iliacus</i>	Red BOCCI
Rock Dove	<i>Columba livia</i>	Annex II BD
Sand Martin	<i>Riparia riparia</i>	Amber BOCCI
Skylark	<i>Alauda arvensis</i>	Amber BOCCI
Snipe	<i>Gallinago gallinago</i>	Annex II BD, Red BOCCI
Snowy Owl	<i>Bubo scandiacus</i>	Red BOCCI
Spotted Flycatcher	<i>Muscicapa striata</i>	Amber BOCCI



Common Name	Species Name	Status
Starling	<i>Sturnus vulgaris</i>	Amber BOCCI
Stock Dove	<i>Columba oenas</i>	Red BOCCI
Swallow	<i>Hirundo rustica</i>	Amber BOCCI
Swift	<i>Apus apus</i>	Red BOCCI
Teal	<i>Anas crecca</i>	Annex II BD, Amber BOCCI
Tufted Duck	<i>Aythya fuligula</i>	Annex II BD, Amber BOCCI
Wheatear	<i>Oenanthe oenanthe</i>	Amber BOCCI
Whooper Swan	<i>Cygnus cygnus</i>	Annex I BD, Amber BOCCI
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber BOCCI
Woodcock	<i>Scolopax rusticola</i>	Annex II BD, Red BOCCI
Yellowhammer	<i>Emberiza citrinella</i>	Red BOCCI
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Amber BOCCI
Brambling	<i>Fringilla montifringilla</i>	Amber BOCCI
Goshawk	<i>Accipiter gentilis</i>	Amber BOCCI
Merlin	<i>Falco columbarius</i>	Amber BOCCI
Shag	<i>Gulosus aristotelis</i>	Amber BOCCI
White-tailed Eagle	<i>Haliaeetus albicilla</i>	Red BOCCI

A total of 21 species listed on the desktop study were also found across the suite of field surveys. These include Annex I species Golden Plover, (Red list BoCCI), Hen Harrier, (Amber list BoCCI) and Peregrine. listed. In addition, the following red listed species were also identified, Barn owl, Grey Wagtail, Kestrel, Meadow Pipit, Redwing, Snipe, Stock Dove and Woodcock. Amber listed species observed included Goldcrest, House Martin, House Sparrow, Linnet, Mallard, Starling, Swallow and Willow Warbler, and Green listed species Jack Snipe, and Pheasant were also present.

Field survey results

In line with Best Practice (SNH, 2014,2017) recommendations, no impact pathways pertaining to collision mortality are to be expected from an underground grid connection, therefore, VP coverage was focussed on those areas which could be subject to possible usage by hen harrier i.e. suitable hen harrier habitat, in particular during the wintering season as possible roosting sites (where disturbance pathways become relevant). Survey areas were chosen based on aerial imagery information followed up by ground truthing.

Breeding birds

Three breeding bird surveys were undertaken in June and July 2025 and a full list of species recorded on site is listed in Table 9-5, Table 9-6 and Table 9-7.



Red listed species recorded included Grey Wagtail, Kestrel and Meadow Pipit. One Grey Wagtail was observed along Transect 2 on 28 June. Kestrel were recorded twice, an unsexed individual mobbing a Buzzard along Transect 7 (28 June), and a female perched along Transect 5 (30 June 2025). Meadow pipit were recorded 13 times with three observations of foraging, three of adults carrying faecal sack or food to young and one record of birds being flushed. The remaining records were along Transect 1 (5) , Transect 4 (2), Transect 5 (1), Transect 6 (2) and Transect 7 (3).

Amber listed species included Goldcrest, House Martin, House Sparrow, Linnet, Swallow and Willow Warbler.

- Goldcrest: 4 records across Transects 1, 3, and 4; three calling, one juvenile foraging.
- House Martin: 6 records; three birds observed in suitable nesting habitat (Transect 2 and Transect 6), two entering or leaving nests (Transect 6), and one foraging group (Transect 7). Probable nesting was noted at a garage on Transect 6 (52.0925236, -8.3997731).
- House Sparrow: 2 records along Transect 6 (28th June).
- Linnet: 4 records, three on Transect 1 (foraging adult female, foraging juvenile, one with no behaviour noted), and one on Transect 6 (heard only).
- Swallow: 15 records across Transects 1, 2, 5, 6, and 7; 12 foraging, one perched, one mobbing a Sparrowhawk, one with no behaviour noted.
- Willow Warbler: 19 records across Transects 1, 4, 5, 6, and 7; 13 singing in suitable habitat, four calling, two with behaviours not noted.

No Annex I birds were noted during breeding bird surveys.

Confirmed breeding was indicated by observations of Meadow Pipit and Dunnock carrying food or faecal sacs. Dunnock was recorded at 52.0703125, -8.5144759 (Transect 1, 28 June), and Meadow Pipit at 52.1060229, -8.3560256 (Transect 7, 28 June), 52.0945742, -8.4642604 (Transect 4, 30 June), and 52.0952420, -8.4625795 (Transect 4, 1 July). Two adults and two recently fledged Wren were observed at 52.0943799, -8.4639329 (Transect 4, 1 July).

Potential nesting of House Martin was indicated at a garage along Transect 6 at approximately 52.0925236, -8.3997731.

The hedgerows, treelines and wooded habitats on site are of value to passerine species for breeding, roosting and foraging. Raptors may also hunt over the agricultural grassland, though this habitat is generally considered to be of low value.

Table 9-5: Transects undertaken on 28 June 2025

Transect 1	Transect 2	Transect 3	Transect 5	Transect 6	Transect 7
Blackbird x2 (2)	Blackbird x2 (3)	Chaffinch x1 (1)	Blackbird x1 (1)	Blackbird x1 (2)	Blackbird x1 (1)
Blackcap x2 (2)	Blackcap x1 (1)	Chiffchaff x1 (1)	Blackcap x2 (2)	Blackcap x1 (1)	Buzzard (Buteo buteo) x1 (1)
Chaffinch x2 (2)	Chaffinch x2 (2)	Goldcrest x1 (1)	Chiffchaff x3 (3)	Chaffinch x1 (1)	Chiffchaff x1 (1)
Common Crossbill x1 (4)	Chiffchaff x1 (1)	Wood pigeon x2 (2)	Robin x2 (2)	Dunnock x1 (1)	Hooded crow x1 (1)



Transect 1	Transect 2	Transect 3	Transect 5	Transect 6	Transect 7
Coal tit x1 (1)	Coal tit x3 (6)	Wren x4 (5)	Swallow x1 (1)	Goldfinch x1 (1)	House martin x1 (4)
Dunnock x1 (1)	Goldfinch x1 (1)		Willow Warbler x2 (2)	Great tit x1 (1)	Kestrel x1 (1)
Goldcrest x1 (1)	Great tit x1 (2)		Wood pigeon x3 (4)	House martin x2 (3)	Lesser redpoll x4 (6)
Great Spotted Woodpecker x1 (1)	Grey wagtail x1 (1)		Wren x3 (3)	House sparrow x2 (2)	Meadow pipit x2 (2)
Hooded Crow x2 (2)	Hooded Crow x1 (1)			Lesser redpoll x1 (1)	Rook x1 (1)
Linnet x1 (1)	House Martin x1 (2)		Magpie x1 (1)	Swallow x2 (8)	
Meadow pipit x2 (3)	Jackdaw x1 (1)		Meadow pipit x2 (3)	Whitethroat x1 (1)	
Mistle Thrush x1 (1)	Jay x1 (1)		Mistle Thrush x1 (2)	Willow warbler x1 (1)	
Pheasant x1 (1)	Long-tailed tit x1 (6)		Pied wagtail x1 (1)	Woodpigeon x1 (1)	
Song Thrush x2 (2)	Magpie x1 (1)		Robin x1 (2)	Wren x4 (4)	
Swallow x2 (14)	Raven x1 (1)		Rook x1 (50)		
Willow Warbler x3 (3)	Robin x1 (2)				
Wood pigeon x5 (15)	Rook x1		Stonechat x1 (1)		
Wren x11 (12)	Swallow x1 (1)		Swallow x2 (11)		
	Wood pigeon x4 (5)		Willow warbler x1 (1)		
	Wren x4 (7)		Woodpigeon x2 (2)		
			Wren x3 (3)		

Note: the number of observations of each species along each route is the first number, with the number of individuals recorded noted in brackets.



Table 9-6: Transect undertaken on 30 June 2025

Transect 1	Transect 2	Transect 3	Transect 4	Transect 5	Transect 6	Transect 7
Blackbird x1 (1)	Blackbird x2 (2)	Blackbird x1 (1)	Blackcap x1 (1)	Blackcap x2 (2)	Blackbird x1 (1)	Blackbird x1 (1)
Blackcap x1 (1)	Blackcap x1 (1)	Blackcap x1 (1)	Chaffinch x1 (1)	Blue tit (Cyanistes caeruleus) x1 (1)	Chaffinch x1 (1)	Goldfinch x2 (3)
Bullfinch (Pyrrhula pyrrhula) x1 (2)	Chaffinch x1 (1)	Chaffinch x1 (1)	Chiffchaff x4 (4)	Jay x1 (1)	Dunnock x2 (2)	Hooded crow x2 (2)
Chaffinch x3 (4)	Chiffchaff x2 (2)	Chiffchaff x1 (1)	Coal tit x1 (1)	Kestrel x1 (1)	Goldfinch x1 (2)	Lesser redpoll x1 (1)
Chiffchaff x1 (1)	Coal tit x1 (1)	Goldcrest x1 (1)	Dunnock x1 (1)	Meadow pipit x1 (1)	Great tit x1 (1)	Meadow pipit x1 (1)
Common Crossbill x1 (1)	Goldfinch x2 (3)	Robin x1 (1)	Meadow pipit x1 (1)	Pheasant x1 (1)	House martin x2 (4)	Robin x1 (1)
Coal tit x1 (10)	Hooded Crow x2 (3)	Rook x1 (1)	Mistle Thrush x1 (1)	Song Thrush x2 (2)	Lesser redpoll x1 (2)	Swallow x2 (9)
Goldfinch x1 (1)	Rook x1 (1)	Siskin (Carduelis spinus) x1 (1)	Raven x1 (1)	Willow Warbler x3 (3)	Linnet x1 (1)	Woodpigeon x2 (3)
Hooded Crow x4 (7)	Song Thrush x1 (1)	Wood pigeon x2 (2)	Song Thrush x3 (3)	Wood pigeon x3 (3)	Magpie x1 (1)	Willow Warbler x1 (1)
Lesser Redpoll x1 (1)	Swallow x2 (2)	Wren x1 (1)	Willow Warbler x1 (1)	Wren x2 (2)	Rook x1 (1)	
Linnet x2 (2)	Wood pigeon x1 (1)		Wood pigeon x1 (1)		Song thrush x1 (1)	
Magpie x1 (1)	Wren x2 (2)		Wren x3 (4)		Sparrowhawk (Accipiter nisus) x1 (1)	
Meadow pipit x3 (3)				Swallow x2 (2)		
Robin x1 (1)					Woodpigeon x7 (10)	
Stonechat x1 (1)						Wren x1 (1)



Transect 1	Transect 2	Transect 3	Transect 4	Transect 5	Transect 6	Transect 7
Swallow x1 (10)						
Willow warbler x4 (5)						
Wood pigeon x2 (2)						
Wren x6 (7)						

Note: the number of observations of each species along each route is the first number, with the number of individuals recorded noted in brackets.

Table 9-7: Transect 4 survey undertaken on 1 July 2025

Species	Number of observations	Number of individuals
Blackbird	2	2
Blackcap	1	1
Chaffinch	5	5
Chiffchaff	2	2
Goldcrest	1	1
Hooded crow	1	1
Jay	1	1
Meadow pipit	1	1
Robin	1	1
Siskin	1	1
Song thrush	1	1
Willow warbler	3	3
Woodpigeon	4	4
Wren	10	15

Hen Harrier

Hen Harrier Roost watches were carried out across eight VPs between December 2024 and March 2025. Figure 9.3 and Figure 9.4 (in Volume 4 of this EIAR) shows the location of the Hen Harrier VPs and the Hen Harrier flight lines recorded during the surveys. Only watches carried out at Hen Harrier VP2 returned observations of Hen Harrier during the surveys.

The first record was on 19 December 2024 and was an individual male travelling southwest for 60 seconds within the 0-10m height band, from the VP area between two areas of conifer woodland where it briefly perched in a tree and went out of view.



The second observation was recorded on 6 February 2025 and involved a male soaring and circling over mature conifers for 135 seconds within the 25-100m height band, moving in a north westerly direction.

Three records were of immature males, with the two records on 20 February 2025 involving the same individual, flying south over pasture close to the road before heading west over a copse of mature conifers to the west before disappearing from sight briefly and reappearing low over young conifers, with the flight lasting 180 seconds, and the second record lasting 30 seconds. The final observation took place on 25 of February 2025 and was of a juvenile male, flying east over the road near the VP while being mobbed by Hooded crows, crossing over agricultural fields to conifer forestry, then flying south over mature conifers.

While the remaining roost watches did not return any observations, areas were assessed for their suitability as Hen Harrier roosts.

At VP4 it was noted that there was a lot of conifer forestry north of the VP, but the area close to the VP was near a busy public road (L2956 and L1501) and a large corvid roost was present in the vicinity.

VP6 and VP7 were among mature conifer plantations, with young conifer and scrub present, suitable for Hen Harrier roosts.

No observations were made on VP5 and VP8.

Apart from Hen Harrier, two other Annex I listed species were identified as non-target species during Hen Harrier roost watches. Golden Plover was observed on three occasions, once on 23 January 2025 from VP7, and twice on 6 February 2025 from VP2. The observation from VP 7 involved approximately 600 individuals circling approximately 2 km southeast of the VP. Observations from VP2 included a group of 65 individuals 2 km south of the VP going east, with a second group of 25 individuals 1 km south of the VP also travelling east. One individual Peregrine was recorded once from VP4 on 6 March 2025.

Meadow Pipit, a prey species for Hen Harrier were recorded frequently at VP2 with seven of the eight records showing 20-50 individuals. Meadow Pipit counts of 20-30 were also recorded at VP 5 and 7.

In addition to Golden Plover and Meadow Pipit, six other red-listed species were recorded as non-target species: Grey Wagtail, Kestrel, Redwing, Stock Dove, Snipe, and Woodcock.

- Grey Wagtail: Observed at VP2 on 6 February and VP5 on 20 March 2025 (1 individual each).
- Kestrel: Sightings occurred across January–March 2025. VP6 (17 January), VP2 (20 February), and in March—VP2 (5, 25; two individuals on 5), VP6 (24), and VP8 (10). All others were single birds.
- Redwing: Observed five times between December 2024 and March 2025. VP2 (6 & 20 February, 19 March) and VP6 (19 December, 17 January). February VP2 counts were high (150 and 100 birds); other counts ranged 7–18 individuals.
- Snipe: Six records, mostly around dusk. VP2 (3 records), VP5, VP6 (pair on 17 January), VP8—all other records single birds.
- Stock Dove: Seven individuals recorded at VP7 on 23 January 2025.
- Woodcock: Five records: VP6 (17 January), VP2 (5, 11, 25 March), VP4 (6 March). The 5 March record noted an individual roding.



Four amber-listed species were also noted: Goldcrest, Linnet, Mallard, and Starling. Remaining species were green-listed.

- Goldcrest: Two records—VP7 (23 January, 2 individuals) and VP6 (24 March, 1 individual).
- Linnet: One record at VP2 on 25 March (2 individuals).
- Mallard: Observed eight times in February–March across VP2 (2 in February, 3 in March) and VPs 5, 6, and 8. Maximum group size was 3 on 11 March at VP2.
- Starling: Eleven records between February–March, mostly from VP2 (8), and one each from VP4, 7, and 8. Counts ranged from 24 to 1,000 birds, with seven records exceeding 100 birds.

Table 9-8: Additional species observed during Hen Harrier roost watches

Species Name	BoCCI	Annex I	Number of instances	VPs
Blackbird	Green	No	14	2, 4, 6, 7, 8
Bullfinch	Green	No	3	2
Blue Tit	Green	No	1	2
Buzzard	Green	No	10	2, 4, 5, 6, 8
Chiffchaff	Green	No	2	2, 6
Chaffinch	Green	No	15	2, 4, 5, 6, 7, 8
Common Crossbill	Green	No	3	2, 6, 7
Coal Tit	Green	No	5	2, 4, 6, 8
Dunnock	Green	No	5	2, 4, 6, 7, 8
Fieldfare	Green	No	12	2, 4, 6, 7, 8
Feral Pigeon	Green	No	6	2
Goldcrest	Amber	No	2	6, 7
Grey Wagtail	Red	No	2	2, 5
Goldfinch	Green	No	2	2
Golden Plover	Red	Yes	3	2, 7



Species Name	BoCCI	Annex I	Number of instances	VPs
Great Spotted Woodpecker	Green	No	3	2, 6
Great Tit	Green	No	4	2, 4, 8
Grey Heron	Green	No	3	2, 6
Hooded Crow	Green	No	15	2, 4, 6, 7, 8
Jay	Green	No	1	6
Jackdaw	Green	No	8	2, 4, 6
Jack Snipe	Green	No	1	2
Kestrel	Red	No	6	2, 6, 8
Linnet	Amber	No	1	2
Lesser Redpoll	Green	No	4	5, 6, 7, 8
Mistle Thrush	Green	No	10	2, 6, 7, 8
Mallard	Amber	No	8	2, 5, 6, 8
Magpie	Green	No	10	2, 4, 5, 6, 8
Meadow Pipit	Red	No	13	2, 5, 6, 7, 8
Owl spp.	unrecorded	unrecorded	1	6
Peregrine	Green	Yes	1	4
Pheasant	Green	No	10	2, 6, 8
Pied/White Wagtail	Green	No	5	2, 5



Species Name	BoCCI	Annex I	Number of instances	VPs
Robin	Green	No	12	2, 4, 5, 6, 7, 8
Reed Bunting	Green	No	1	8
Redwing	Red	No	5	2, 6
Raven	Green	No	7	2, 4, 6
Rook	Green	No	10	2, 4, 6
Stonechat	Green	No	2	5, 6
Stock Dove	Red	No	1	7
Starling	Amber	No	11	2, 4, 7, 8
Sparrowhawk	Green	No	4	2
Siskin	Green	No	5	2, 5, 8
Snipe	Red	No	6	2, 5, 6, 8
Song Thrush	Green	No	12	2, 4, 5, 6, 7, 8
Woodcock	Red	No	5	2, 4, 6
Woodpigeon	Green	No	14	2, 4, 5, 6, 7, 8
Wren	Green	No	8	2, 4, 5, 6, 7, 8

Kingfisher habitat suitability

Toor River (1)

This was noted to be a small upland channel with historical straightening noted through the coniferous plantation and improved pastures which the watercourse flows through. It was noted to have no suitability for kingfisher breeding or foraging due to the absence of steep sandy banks, pools and perches.



Toor River (2)

Similarly to the above this watercourse was also a small upland channel, however while historically deepened, has retained a sinuous flow path with a profile of deep glides and riffles, with localised shallow pools on meandering sections. This watercourse also did not have suitability for kingfisher breeding or foraging due to the absence of steep sandy banks and deep pools.

River Bride

The River Bride was described as a natural upland watercourse, flowing over exposed bedrock, with deep pools between bedrock cascades. This watercourse did not show suitability for kingfisher breeding due to the absence of steep sandy banks, however the downstream pools may provide potential foraging habitat. While no high-quality perches were observed at the survey location, suitable perches are likely to exist along the riparian trees on the west bank of the river.

Farran North River

The Farran North River was noted to be a heavily modified lowland channel. This river section also showed no suitability for kingfisher due to the absence of steep sandy banks, but similarly to the River Bride, did show some potential as foraging habitat. No perches were observed at the survey location, however some limited perching bays exist in riparian trees.

Riverine habitat suitability

Dipper were observed at the bridge over the River Bride during the Bat Potential Roost Feature assessment on the 8 September 2025 with one individual flushed from under bridge on arrival. A potential nest was observed in large stonework gap under the bridge arch.

During the bat emergence survey on 23 September 2025, one to two Dippers were observed actively using the bridge area, foraging and perching within gaps in the bridge arch and in adjacent riparian willows.

Incidental bird sightings

The following birds were observed during surveys on the 8 September 2025:

- An adult and juvenile Grey Wagtail were observed foraging at 52.0626676, -8.4610788 but were flushed from the bankside of the River Bride on the surveyor's arrival.
- An adult male Hen Harrier was seen at 52.062193247, -8.472822611, flushed from agricultural grassland; it flew up, circled, and then departed.
- An adult Barn owl was observed at 52.1014432, -8.4346225, roosting in conifers, it was briefly flushed but remained perched.
- A juvenile Buzzard was recorded at 52.10746288, -8.33913980.

On 17 September 2025, a perched adult Kestrel was observed at 52.0939712, -8.3954276 before being flushed.

Avifauna has been included as a Key Ecological Receptor.



9.3.5.2 Bats

Desktop study results

The desktop study returned five species of bats that have been recorded in the last two decades, namely, Common Pipistrelle (*Pipistrellus pipistrellus*), Daubenton's Bat (*Myotis daubentonii*), Leisler's Bat (*Nyctalus leisleri*), Soprano Pipistrelle (*Pipistrellus pygmaeus*) and Natterer's Bat (*Myotis nattereri*). Daubentons bat has been recorded (2020) within the study area over the River Bride as part of the National Bat Database of Ireland.

The surveys undertaken for the CGEP identified three Natterer's bat roosts (maternity and hibernation roosts), while small numbers of brown-long-eared, common pipistrelle and soprano pipistrelles were also recorded. All roosts were located outside the zone of impact of the Proposed Development.

Field survey results

During the bat suitability survey, potential features were recorded within the study area, this is detailed in Table 9-9. Of the three features, only the works in the bridge over the River Bride is within the construction footprint.

Table 9-9: Potential bat roosting features identified during the GLTA.

Feature	Suitability (Collins, 2023)	Notes
Derelict cottage	PRF-M	Derelict cottage and cabin with access to the roof through rotted fascia. 20 m from Proposed Development.
Tree	PRF-I	Old hazard beam on underside of branch 6 m high. Partly open at top but mostly sheltered. There is good connectivity to woodland nearby. 5 m from Proposed Development.
Bridge	Negligible roosting potential within the arch PRF-M in the parapet and wing walls.	Gaps in the left abutment in the stonework and in the stonework under the bridge. Underside has been shotcreted, however there is deep crack going through the middle northeast wall has approximately 6 suitable grooves above 2m with other suitable grooves below 2m. Within construction area.

An inspection of the bridge façade with a torch on the 8 September 2025 and an emergence survey was undertaken on the 25 September. During winter, two hibernation inspections on the 6 and 23 February 2026 were conducted. No bats were identified during any of the GLTA inspections. The bridge arch is covered by a concrete cast, and the stone sidewalls were damp, indicating a low potential for roosting bats, refer to Plate 9-9 and Plate 9-10. Cracks and crevices in the sidewalls were inspected using a torch; no evidence of bats was observed.



Plate 9-9: Concrete cast of bridge arch.

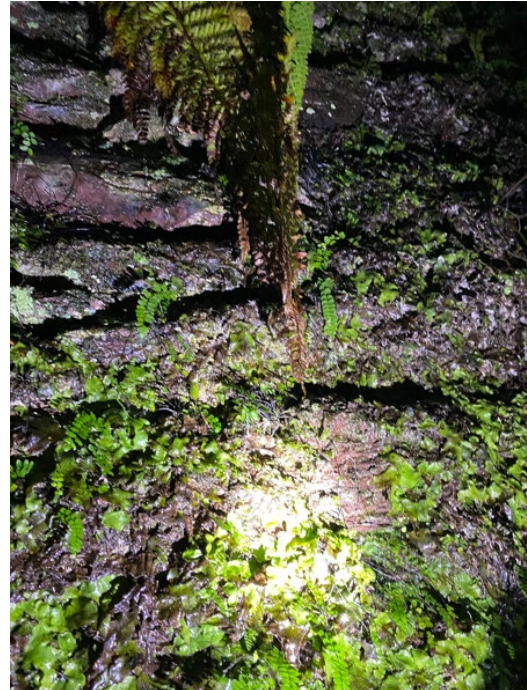


Plate 9-10: Damp stone sidewalls of the bridge.

The works to the bridge over the River Bride will be undertaken during winter to avoid sensitive maternity and activity time for bats. The two features identified in Table 9 9, the derelict cottage and a tree with a hazard beam will not be removed or felled as the cables in this area will be installed within the public road, however both are within a noise and vibration disturbance zone of the Proposed Development. Therefore, **Bats may be disturbed during the construction of the Proposed Development and have been included as a Key Ecological Receptor.**

9.3.5.3 Amphibians

The desk study returned results of Common frog (*Rana temporaria*) and Smooth newt (*Lissotriton vulgaris*). During surveys for CGEP in 2016, 2018 and 2019 as well as during the surveys for the Proposed Development in 2025, smooth newt was not recorded.

During the survey, while suitable habitat, namely drainage ditches and wet grassland occur within the Proposed Development, no evidence of frog or newt was recorded. Therefore, amphibians have not been brought forwards as a KER.

9.3.5.4 Marsh Fritillary

The desktop study returned results of Marsh Fritillary (*Euphydryas aurinia*) in the study area.

While there was wet grassland with devil's-bit scabious recorded during the surveys, habitat quality was sub-optimal and there was no Marsh Fritillary larvae, larval food webs or adult butterflies recorded during the 2025 survey. Therefore, Marsh Fritillary have not been brought forwards as a KER.



9.3.5.5 Non volant mammals

Desktop study results

There are records of protected terrestrial mammal species within the wider environment from the last two decades. These are listed in Table 9-10 below.

Annex II otter (*Lutra lutra*) records were widespread throughout the respective grid squares (W69, W68, W79 and W89). Records were available for the River Bride, including at Bride Bridge (NPWS & Triturus Environmental Ltd. data). A record was also available for the Inchinanagh River, a tributary of the River Bride, within the wider survey area (Triturus Environmental Ltd. data). Otter is a QI species of the Blackwater River (Cork/Waterford) SAC.

Results from the CGEP surveys in 2018 did not identify any resting or breeding sites for otter or badger within the study area.

Table 9-10: Terrestrial mammal records within the study area from the last decade (NBDC, 2025)

Common Name	Species Name	Status
Badger	<i>Meles meles</i>	WA
Hedgehog	<i>Erinaceus europaeus</i>	WA
Irish Hare	<i>Lepus timidus</i>	WA
Irish Stoat	<i>Mustela erminea</i>	WA
Otter	<i>Lutra lutra</i>	Annex II, IV HD, WA
Pine Marten	<i>Martes martes</i>	Annex V HD, WA
Pygmy Shrew	<i>Sorex minutus</i>	WA
Red Squirrel	<i>Sciurus vulgaris</i>	WA

Field survey results

Badger

No setts were identified during the survey. Evidence of foraging/commuting badger was identified along the Proposed Development in the forestry block between Coom (Middleton) and Knockaunlour. Mammal trails through rank grass and adjacent forestry were identified as well as a latrine. As these signs indicate that badger likely use the study area for commuting and foraging, badger may be impacted by disturbance and injury/mortality during construction, therefore **badger have been included as a KER.**

Red Squirrel

Feeding signs of red squirrel were identified within the small forestry block adjacent to the River Toor near Coom and in the larger forestry block near Glennasack and Knockdoorty.

Red squirrel rely on conifer plantations where there is less occurrence of grey squirrel and therefore less competition for resources (NPWS, 2008). While no dreys were identified during the survey, feedings signs of red squirrel were recorded and thus this species may be impacted by habitat loss, disturbance and injury/mortality during construction. Therefore, **red squirrel have been included as a KER.**



Otter

Despite suitability at many survey sites in terms of prey resources (e.g. salmonids), otter signs (spraint sites or latrines) were only recorded at 2 no. sites during the 2025 survey (Triturus Environmental Ltd., 2025). Both were on the River Bride, where previous otter records exist (Triturus Environmental Ltd, 2025). No breeding (holts) or resting (couch) areas were identified within 150 m of the crossing survey sites in April 2025.

Otter occurrence is negatively associated with elevation (Triturus Environmental Ltd. data; Hong et al., 2020) with smaller, upland, higher-gradient watercourses often providing more restricted, stochastic prey resources and reduced foraging opportunities for otter compared with lower-gradient, larger watercourses (Sittenthaler et al., 2019; Scorpio et al., 2016; Remonti et al., 2009). This likely explains the paucity of signs recorded during the current survey and is supported by previous surveys in the upper River Bride catchment.

While no resting places or otter signs were recorded within the study area, Otter are known to use the River Bride and evidence of commuting otter was recorded during the survey. **Otter may be impacted by disturbance, injury/mortality and habitat fragmentation; therefore Otter have been included as a KER.**

Other

During the survey, deer droppings were recorded, as well as a sighting of Fallow deer (*Dama dama*). There was also evidence of small mammals such as fox (*Vulpes vulpes*), hare (*Lepus timidus*) or rabbit (*Oryctolagus cuniculus*) with small tracks through rank grass.

9.3.5.6 Fisheries habitat suitability

Desktop study results

As detailed in the Aquatic Survey Report (Appendix 9.1 of Volume 3 of this EIAR) the River (Waterford) Bride, the major watercourse within the survey area, is known to support Atlantic salmon (*Salmo salar*), brown/sea trout (*Salmo trutta*), lamprey (*Lampetra sp.*), European eel (*Anguilla anguilla*) and stone loach (*Barbatula barbatula*) (Triturus Environmental Ltd. data; Matson et al., 2019; Kelly et al., 2013).

Numerous sea lamprey (*Petromyzon marinus*) records were available for the Munster Blackwater catchment (e.g. River Blackwater, Clyda River) but no records overlapped with the survey area. River lamprey (*Lampetra fluviatilis*) records were available for the River Blackwater and the lower River Bride at Rathcormack Bridge (not within survey area) (Triturus Environmental Ltd., 2025).

Results of the Toor River (COOM_010) survey (IFI, 2018) had records of Brown trout, European eel and Salmon.

Field survey results

During the survey, watercourse crossing locations (described in Section 9.3.2 and Section 9.3.3) were assessed by Triturus Environmental Ltd. (2025) based on suitable habitat for salmonid species, eels and lamprey (Appendix 9.1). The sections below describe the results based on habitat suitability and presence.



9.3.5.6.1.1 Salmonids

Overall, the crossing locations as surveyed by Triturus Environmental Ltd. supported salmonid populations, with habitat quality influenced by channel gradient, siltation and substrate availability at each location. Farran North (Watercourse Crossing 4) was of good value for salmonids, with a mixed cohort observed in deeper pools during the survey, despite spawning and nursery habitat being compromised by siltation. The Toor River (upstream) (Watercourse Crossing 54) provided good quality nursery habitat, supported by mixed boulder, cobble and gravel substrates and broken riffle–glide flow patterns, with a small population of mixed cohort brown trout captured during kick sampling. Further downstream of the Toor River (Watercourse Crossing 52), supported a small mixed cohort of brown trout, including 0+, with localised pools providing important adult holding areas. The Field Chimney stream (Watercourse Crossing 43) had moderate-quality salmonid nursery, with mixed cohort brown trout observed and Atlantic salmon known from previous sampling efforts (Triturus Environmental Ltd. 2020 data); nursery conditions improved upstream due to well-oxygenated riffle–glide sequences, while pockets of lower-gradient glide provided localised spawning habitat. The presence of a broadleaved riparian buffer (grey willow) at this site contributed positively to habitat quality. The Bunnaglanna stream (Watercourse Crossing 15) supported low numbers of mixed cohort brown trout in deeper holding pools, with spawning habitat limited by high bed mobility but good quality nursery habitat present throughout. The River Bride (bridge) (Watercourse Crossing 46) was high value for salmonids, with a large pool immediately downstream of the bridge providing excellent adult holding habitat enhanced by riparian shading; spawning and nursery habitat was locally good and improved significantly downstream of the Coom River confluence where well-developed riffle and glide sequences occurred. Both Atlantic salmon and brown trout are known from this site (Triturus Environmental Ltd. 2020).

9.3.5.6.1.2 European eel

European eel habitat suitability across the study area was moderate and dependent on the availability of depth and instream refugia. The Farran North stream (Watercourse Crossing 4) provided suitable eel refugia within deeper pools and had areas of overhanging vegetation. The Toor River (Watercourse Crossing 52 and 54), Field Chimney Stream (Watercourse Crossing 43) and Bunnaglanna (Watercourse Crossing 15) offered moderate eel suitability with abundant rocky refugia and depth, although these sites were located within higher-gradient reaches of the sub-catchment, which may limit upstream access. The River Bride (bridge) (Watercourse Crossing 46) also supported moderate eel habitat, with deeper pools present; however, the availability of instream refugia was limited, reducing overall habitat quality for the species.

9.3.5.6.1.3 Lamprey

Lamprey habitat suitability was limited across the watercourse crossing locations due to high energy flow and substrate quality. Farran North (Watercourse Crossing 4) was the exception, where silt deposits provided good quality lamprey ammocoete (nursery) habitat. Lamprey have previously been recorded from this site (Triturus Environmental Ltd. 2020 data).

Fisheries are vulnerable to habitat degradation from water quality and habitat fragmentation and have therefore been included as a Key Ecological Receptor.



9.3.5.7 Freshwater Invertebrates

Desktop study

Numerous records for Annex II Freshwater Pearl Mussel (*Margaritifera margaritifera*) were available for the W69, W79 and W89 grid squares but are from the River Blackwater [Munster] catchment which is within the Freshwater Pearl Mussel catchment (NPWS, 2012) and outside of the Zone of Influence of the Proposed Development.

Similarly, Annex II white-clawed crayfish (*Austropotamobius pallipes*) records were available for the River Blackwater and the Ballyclogh Stream (upper tributary upstream of Mallow, W59) but no records overlapped with the survey area.

During the 2017, 2018 and 2020 surveys for the CGEP no live records or empty shells of Freshwater Pearl Mussel at any of the survey sites. The instream habitat was assessed as unsuitable or sub-optimal for Freshwater Pearl Mussel. Additionally, the surveys for CGEP did not record white-clawed crayfish from any of the 25 survey locations riverine survey sites. Furthermore, no crayfish remains were identified in mustelid spraint, where encountered, in the vicinity of the survey sites

Field survey

No white-clawed crayfish were recorded via hand-searching or sweep netting of instream refugia at any of the aquatic survey sites in April 2025. Only the Farran North River exhibited habitat suitability (i.e. rocky refugia and deeper water). Furthermore, inspection of mustelid spraint at 2 no. sites on the River Bride did not reveal the presence of crayfish remains (Triturus Environmental Ltd., 2025). The results are in keeping with the absence of records for the species in the survey area (nearest record is the River Blackwater at Fermoy) and this is largely reflective of unsuitable water chemistry and habitats in the survey area (Demers et al., 2005; Lucy & McGarrigle, 1987).

No Freshwater Pearl Mussel or suitable habitat was observed within the Proposed Development during the surveys.

Freshwater invertebrates have not been considered as a separate KER given the absence within the study area and lack of suitable habitat, however they are captured under KER 1 - Aquatic habitats, as water quality impacts can have downstream impacts on freshwater invertebrates.

9.3.6 Key Ecological Receptors

Table 9-11 identifies the ecological receptors within the study area determined the results of the field surveys and desk study. Each receptor is assigned to a level of ecological importance in accordance with the Guidelines for Assessment of Ecological Impacts of National Road Schemes. This table also provides the rationale for this determination and identifies the habitats and species that are Key Ecological Receptors (KERs). The potential effects of the Proposed Development on these ecological receptors are considered in the impact section of this report and mitigation/ measures will be incorporated into the proposed scheme where required, to avoid/reduce potential significant effects on these receptors.



Table 9-11 Key Ecological Receptors

Key Ecological Receptor	Description	Importance/Ecological Valuation (TII, 2009)
KER 1 Terrestrial habitats	The Proposed Development will require habitat loss of a range of habitat types that are considered to be locally high biodiversity value within the landscape.	Local Importance (Higher Value) as these semi natural habitats have high biodiversity in the local environment.
KER 2 Aquatic habitats	The Proposed Development will require watercourse crossings in tributaries that are upstream of the Blackwater River (Cork/Waterford) SAC. Water quality impacts from the construction of the Proposed Development can reduce habitat quality thereby impacting sensitive aquatic receptors downstream.	International Importance as this KER includes the River Bride which forms part of the Blackwater River (Cork/Waterford) SAC. Water quality impacts can impact sensitive QI species downstream.
KER 3 Badger	Badger signs were identified during the field survey indicating that badger are active in the study area. Badgers are vulnerable to disturbance, mortality and habitat loss during construction	Local Importance (Lower Value) as this species is protected under the Wildlife Acts and is present within the study area, but no resting or breeding sites were recorded.
KER 4 Otter	Otters are known to use the River Bride and are QI species for the Blackwater River SAC. There were no resting or breeding sites identified within the study area. Otter could be impacted by disturbance, habitat loss and mortality during construction.	International Importance as this species is a QI for adjacent SAC. Otter activity downstream in the SAC has been recorded but no resting or breeding sites within the study area.
KER 5 Avifauna	The habitats within the study area support a range of avifauna. The construction of the Proposed Development could result in disturbance and habitat loss.	Local Importance (Higher Value) due to breeding activity from Red and Amber (BoCCI) species. While Annex I species were recorded during the surveys, no breeding or roosting evidence was observed.
KER 6 Bats	Bat potential was identified within the study area. The construction of the Proposed Development could result in disturbance, habitat loss and mortality.	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 study area.
KER 7 Fisheries	Salmonids and suitable habitat were recorded within the study area. The Proposed Development could result in habitat degradation from water quality impacts or habitat fragmentation.	International Importance as QI species of the SAC were identified in the watercourses affected by the Proposed Development, which are hydrologically connected to the SAC.



Key Ecological Receptor	Description	Importance/Ecological Valuation (TII, 2009)
KER 8 Red Squirrel	Red squirrel signs were recorded in the study area. While no dreys were recorded, construction could result in habitat loss and disturbance.	Local Importance (Higher Value), as this species is protected under the Wildlife Acts and is of conservation concern in Ireland, with suitable habitat present within the study area.
KER 9 Invasive species	Third Schedule Invasive species were identified within the study area. These species can negatively impact local biodiversity.	Local Importance (Higher Value), given the presence of a Third Schedule invasive along a drainage channel with hydrological connectivity to WFD watercourses.



9.4 Assessment of Effects on Biodiversity

9.4.1 Do Nothing Scenario

In the absence of the Proposed Development, the existing biodiversity baseline would likely remain unchanged in the short - medium term. The proposed 17.8 ha of forestry felling would not be required (10.2 ha of this is already accounted for within the felling area in the consented CGEP), however, clear felling forms part of the standard commercial cycle and in the absence of the Proposed Development, it is likely this felling would occur at some stage of routine forestry practise.

9.4.2 Effects on Designated Sites

In relation to European sites, an Appropriate Assessment Screening Report and Natura Impact Statement (NIS) have been prepared to provide the competent authority with the information necessary to complete an Appropriate Assessment for the Proposed Development in compliance with Article 6(3) of the Habitats Directive. As per the guidance (1), “a biodiversity section of an EIAR, should not repeat the detailed assessment of potential effects on European Sites contained in a Natura Impact Statement” but should “incorporate their key findings as available and appropriate”.

The Screening for Appropriate Assessment concluded that it cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the European sites, that the Proposed Development, individually or in combination with other plans and projects, would be likely to have a significant effect on European sites, namely the Blackwater River (Cork/Waterford) SAC (002170). A Natura Impact Statement was therefore prepared which examined the potential pathways for adverse effect on European Sites and prescribed mitigation to ensure the pathway by which such effects may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures. The measures ensure that the construction and operation of the Proposed Development do not adversely affect the integrity of any European sites. Therefore, it can be objectively concluded that the Proposed Development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

The Bride/Bunaglanna Valley pNHA is located within the zone of influence and overlaps with the Blackwater River Bride (Cork/Waterford) SAC. While this site has no site synopsis available, the mitigation prescribed in the NIS for the Blackwater River Bride (Cork/Waterford) SAC will be effective to ensure no significant effects on the pNHA.

The Key Ecological Receptors (KERs) aquatic habitats, fisheries and otter in this EIAR address potential impact pathways including hydrological connectivity, water quality protection and species disturbance. As these receptors correspond to the QIs of the overlapping SAC, the mitigation set out appropriately protects the integrity of the European sites. The key findings of the NIS are therefore reflected and reinforced by the biodiversity mitigation strategy set out in this EIAR.

9.4.3 Potential Effects During Construction

This section describes the potential effects on Key Ecological Receptors identified in Section 9.3.6 during construction in the absence of mitigation. The construction sequence of the Proposed Development is described in the CEMP (Appendix 2.2 of Chapter 2 Volume 3). The potential impacts on biodiversity during the construction stage are discussed in this section. It is estimated that the construction of the Proposed Development will take 12 months to complete. This will be carried out during the wider CGEP development construction programme which will be carried out over 18 - 24 months.



9.4.3.1.1 KER 1 - Terrestrial habitats

The majority of the Proposed Development is a linear footprint, consisting of 13.9 km of the 110kV GCR and 15.8 km of the 33 kV CNR. The footprint of the substation has been previously assessed as part of the permitted CGEP. The Proposed Development will utilise access tracks, public roads and forestry roads where possible to minimise habitat loss. The 110 kV GCR will largely follow the existing road (Cappagh Cross - Forest Glen) with approximately 1.5 km along a forestry track between the substation and the public road. The 33 kV CNR will similarly utilize existing tracks and roads where possible. Watercourse crossings have been designed to avoid riparian woodland/scrub habitat through the use of Horizontal Directional Drilling (HDD). As a result, higher value terrestrial habitats within the study area have been largely avoided.

Between Mill Road and Knocknacaheragh Road, the 33 kV CNR crosses agricultural land, following farm tracks and field boundaries. There is approximately 73 m of hedgerow removal required within this area to facilitate construction. The loss of hedgerows is permanent but imperceptible at the local level given its limited removal and the retention of connectivity within the wider landscape.

Within this same area, the Proposed Development also crosses the edge of a WD4 - Conifer plantation block. Construction will require the removal of a linear strip of scrub that forms a transitional zone between the forestry and an area of modified HH3 Wet Heath. Approximately 260 m of this habitat will be temporarily affected during construction. Given the proximity to the modified wet heath and that there is a minor watercourse crossing (Watercourse Crossing 49) there is potential for indirect impacts on this ground water dependent habitat as the construction may alter local hydrology and increase the risk of sediment mobilisation. As this habitat drains into a tributary of the Toor River any hydrological changes or sediment release could result in downstream effects. In the absence of appropriate mitigation this would be a slight negative, short term impact at the local level.

9.4.3.1.2 KER 2- Aquatic habitats

The Proposed Development crosses watercourses and drainage ditches which presents a risk to water quality impacts and downstream effects. During in channel works and works adjacent to watercourses, there is potential for concrete, grout, hydrocarbons to enter the watercourses via spills or run-off. Cementitious materials are highly alkaline and can significantly alter water pH, while hydrocarbons can disrupt nutrient balance, reduce dissolved oxygen levels and alter microbial communities. In addition, in-channel works may result in sediment mobilisation which can smother benthic habitats. Given the hydrological connectivity of the watercourses to the River Bride which is a significant tributary of the River Blackwater (Munster Blackwater) SAC, any pollution or sedimentation event during the construction of the Proposed Development, has the potential to be transported downstream. Such impacts could result in significant impacts on QI species, this would likely have a short term impact at a local level, on an ecological features evaluated at international importance due to their association with the SAC.

There are three methodologies for the 67 watercourse crossings for the Proposed Development.

- To cross the River Bride the proposed 33kV CNR cable ducts will be placed in the existing stone arched bridge. This crossing traverses the associated Blackwater River (Cork/Waterford) SAC but the method avoids in-stream works within the watercourses or SAC. This is considered imperceptible.
- Four watercourse crossings (Watercourse Crossings 2, 15, 43, 52) will be crossed using horizontal directional drilling (HDD). This method avoids direct instream works and minimises disturbance to the channel bed. As a result, impacts on aquatic habitats and hydromorphology are considered not significant.



- One box culvert will be installed at the Toor River - Watercourse Crossing 54 within the previously consented CGEP. For the remaining minor watercourse crossings, open trenching with either an undercrossing or an overcrossing, depending on the depth of the culvert. One stone clapper culvert is proposed to be replaced with a twin wall piped culvert. This will require in-channel works which presents a risk of water quality impacts such as sediment realisation, pollution and habitat removal. Given the heavily modified nature of these minor watercourses, the limited flow, and existing culverting, the impact of the proposed crossings is considered slight, short-term, based on potential temporary sediment mobilisation and minor water quality effects during construction that could influence downstream WFD watercourses.

9.4.3.1.3 KER 3 - Badger

Badger activity was recorded at two locations within the study area, however no resting or breeding sites were identified. Potential construction impacts include temporary disturbance from machinery and felling, minor loss of foraging habitat and a low risk of injury/mortality from construction traffic and movement.

Noise and vibration from construction activities are expected to cause temporary disturbance to badgers. The majority of the site is within an active forestry plantation, and badger using the Proposed Development are likely to be acclimatised to regular disturbance from machinery and felling operations. Construction activities will be restricted to daytime hours (08:00 and 19:00) which avoids peak badger activity time as they are nocturnal. Therefore, disturbance during construction is considered temporary and not significant.

The felling of forestry for the Proposed Development will result in negligible habitat loss, given the availability of suitable foraging and commuting habitat in the surrounding environment. This is considered permanent and imperceptible.

While no setts were recorded, there is a risk of injury/mortality from construction traffic and machinery. This is considered a slight, negative, temporary effect at the local level.

9.4.3.1.4 KER 4 - Otter

Otter are known to be active along the River Bride and are a QI of the SAC. No resting or breeding sites for otter were recorded within the study area. Evidence of otter activity was limited to a single spraint observed downstream of the bridge over the River Bride. In-channel works and works adjacent to watercourses have the potential to disturb or displace otter that use the watercourses for commuting or foraging, while vegetation clearance can result in a loss of habitat and works adjacent to watercourses can result in indirect impacts through the deterioration of water quality.

For the Proposed Development, the River Bride crossing will not require instream works as the cable will be installed within the existing bridge. The Toor River (Watercourse Crossing 52), the Field Chimney stream (Watercourse Crossing 43) and the Bunnaglanna stream (Watercourse Crossing 15) will be crossed using horizontal directional drilling (HDD), avoiding disturbance to the channel bed and reducing riparian vegetation removal. For the previously consented watercourse crossing in the Toor River (Watercourse Crossing 54) as part of the CGEP, a culvert will be installed and designed to allow mammal passage. This requires ledges to be at least 500mm wide and constructed above the 1 in 5 year flood event and allow at least 600mm headroom (TII/NRA, 2006) as otters are disinclined to use water-filled culverts without dry pathways (TII/NRA, 2006). Given these watercourse crossings, the timing of construction works (daylight hours) and the limited evidence of otter activity and absence of resting sites, no habitat loss or disturbance is expected.



However, while these methodologies avoid instream works, construction adjacent to watercourses still present potential risks. Improper management around watercourses, potentially resulting in pollution or sediment loading, could degrade otter habitat further downstream in the River Bride which is an important tributary of the River Blackwater SAC. Any significant deterioration in water quality affecting otter habitat would constitute a . short term, slight impact at a local level, on an ecological feature evaluated as international importance due to its association with the SAC.

Additionally, while no resting sites were recorded, there is a direct risk of injury/mortality of commuting otter from entrapment during trenching works. This impact is considered a slight negative, temporary impact at the local level on an ecological feature evaluated as international importance due to its association with the SAC.

9.4.3.1.5 KER 5 - Avifauna

Overall, the Proposed Development supports a typical assemblage of breeding birds, including several red and amber listed (BoCCI) species. The surveys confirmed breeding activity for Meadow Pipit, Dunnock, Wren and House Martin, while the wintering Hen Harrier survey found limited activity and no roost site. As the cables are underground, the Proposed Development will not present any collision risks to avifauna. However, the Proposed Development will require vegetation clearance along existing tracks to facilitate the installation of the underground cables. Approximately 17.8 ha of forestry will be felled within the managed WD4 - conifer plantation. While this habitat type does not represent high value habitat and the Proposed Development will not result in significant habitat loss it may provide valuable roosting and nesting habitat. Therefore, breeding birds may be impacted directly through mortality/injury or disturbance as a result of the Proposed Development if vegetation clearance is undertaken during the bird breeding season (March to August). This could result in a slight negative, short-term impact at the local level.

No suitable kingfisher habitat was recorded on site, however the River Bride had potential for dipper, with a potential nest identified within a large stonework gap under the bridge arch. Therefore, if works are within the breeding season for dipper, this could result in a slight negative, short-term impact at the local level.

9.4.3.1.6 KER 6 - Bats

Bat activity was observed along the Bride River during emergence surveys, and previous surveys for the CGEP have confirmed bat activity within the wider environment. As a full summer survey could not be undertaken of the bridge, the bridge was inspected during winter as a potential hibernation roost, and no activity or signs were recorded. Therefore, precautionarily construction of the bridge crossing to include the installation of the cables will be undertaken in winter, which avoids maternity and peak activity season. The Proposed Development will not result in a reduction or fragmentation of habitat as the Proposed Development uses existing forestry tracks and public roads and will only require felling to widen existing tracks that are already considered edge habitat for commuting bats.

During the GLTA, two other features were identified as potential roosting features. While there are no works proposed to either the cottage or the tree, the works to the public road to install the cable may lead to noise and vibration levels higher than the existing baseline (road traffic) which could create disturbance for bats, which would result in a slight, negative, temporary impact at the local level.

9.4.3.1.7 KER 7 - Fisheries

During the surveys, suitable salmonoids habitat and nursery habitat was observed at the EPA mapped and unmapped watercourse crossing locations. Lamprey habitat was present at Farran North (Watercourse Crossing 4). In-channel works and works adjacent to watercourses can indirectly impact fisheries by a reduction of water quality, or directly through habitat fragmentation and habitat loss or injury and mortality.



Four watercourse crossings (Watercourse crossing 2, 15, 43 and 52) will be undertaken using a horizontal drill which will avoid instream works. One crossing over the River Bride (Watercourse Crossing 46) will avoid instream works by installation the cable into the existing structure. Both methodologies ensure the stream bed and channel remain unaffected, resulting in no habitat loss for fisheries.

The culvert at the River Toor crossing contains suitable salmonoid nursery habitat and if not designed to allow fish passage or replace channel substrate, this could result in habitat fragmentation and nursery habitat loss. This is considered a negative, moderate, permanent impact at the local level.

In-channel works and works adjacent to watercourses could result in a deduction in water quality, from a sedimentation or pollution event, which may temporarily degrade habitat for fisheries. This is considered short-term, slight impact at the international level, given salmon is a QI of the SAC.

During any instream works, there is a risk of injury/mortality to fish through accidental contact with machinery. While most watercourse crossings avoid instream works, culverts and works on minor channels could result in fish harm. This is considered a slight negative, short-term effect at the local level.

9.4.3.1.8 KER 8 - Red squirrel

During the survey, red squirrel feeding signs were recorded within a small forestry block near Knockaunalour and within the larger forestry block near Glensack, confirming that the species is active within the study area in a foraging capacity. Therefore, the Proposed Development has the potential to impact red squirrel through habitat loss, disturbance, and injury or mortality.

Noise and vibration disturbance during the construction phase is expected to result in a temporary disturbance to red squirrel. Given that this habitat is actively managed forestry and subject to ongoing machinery movement and felling, red squirrel present are likely habituated to existing disturbance levels. The felling for the Proposed Development is not expected to increase the baseline disturbance levels, and any impacts will be temporary and not significant to the local level.

The Proposed Development will require 17.8 ha of felling of WD4 - Conifer plantation, which provides suitable foraging and commuting habitat for red squirrel. With the exception of the previously consented vegetation removal for the substation, the felling is confined to linear clearance along existing forestry tracks to facilitate track widening. As this clearance is along established edge habitat it will not result in additional habitat fragmentation, only a slight reduction of habitat for red squirrel. Given the widespread availability of similar conifer plantation in the surrounding area the overall extent of habitat loss for the species is considered not significant, long term impact on red squirrel at the local scale.

Although there were no dreys recorded during the surveys, there is a potential risk of injury/mortality if a drey is constructed within the footprint prior to the works. Without appropriate mitigation, accidental felling of an occupied drey could result in localised injury/mortality. This is considered a slight and short-term impact at local level given the mobility of the species and availability in the wider habitat.

9.4.3.1.9 KER 9 - Invasive species

Himalayan balsam and Himalayan knotweed were recorded within the study area. Both species are listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). Vegetation clearance, excavation and machinery movement have the potential to spread these species to other areas of site as well as downstream of the Proposed Development.



While the Proposed Development will avoid excavation and works within these areas of infestation, one area of Himalayan Balsam was recorded along the drainage ditch Watercourse Crossing 49 (Plate 9-8). The Proposed Development directly crosses this infestation. Given that this infestation is along a drainage ditch, the spread of this species downstream is already likely, however, without mitigation the excavation and movement of soil can rapidly increase the spread of this species downstream. This is considered a moderate, long-term impact at the local level.

9.4.4 Potential Impacts During Operation

The 110kV onsite substation at Lackendarragh is surrounded by WD4 forestry that provides low habitat value. Operational noise from the substation will dissipate with distance and is predicted to be around 22 dB at 600 m from the source, below background levels (Table 8-14 Chapter 8). The noise is low-intensity, and the equipment will be selected to avoid tonal characteristics, making it unlikely to affect animal behaviour or ecological processes. Overall, operational noise is considered negligible and long term at the local level.

Lighting at the substation will be provided in accordance with EirGrid standards to ensure safety standards are met, with controlled lighting levels and minimal light spill. Any non-security lighting has been designed in accordance with Bat Conservation Trust (BCT) and Institution of Lighting Professionals (ILP) Guidance Note 08/23: Bats and Artificial Lighting at Night (ILP/BCT, 2023). Therefore, there is no potential for significant impacts on fauna during operation.

9.4.5 Potential Impacts During Decommissioning

The 110 kV GCR will form part of the national grid and will be left in situ, whilst the 33 kV CNR will be removed from the cable ducting. This will involve pulling cabling from the cable duct using a mechanical winch and excavating the accessing track with an excavator at each cable pulling pit location. These works would be temporary in nature with similar impacts on biodiversity as those during construction but at a far lesser scale and magnitude. The same mitigation to prevent significant impacts on the KERs will be applicable to the decommissioning phase.

9.4.6 Cumulative Impacts

A review of permitted and proposed developments within 20 km was undertaken in order to assess the potential for cumulative impacts, the full list of developments is provided in Appendix 1.3, Chapter 1, Volume 3. Projects with potential cumulative impacts for biodiversity were brought forward based on potential cumulative impacts on the identified KERs in Section 9.3.6 which included hydrological connectivity to the River Bride, or projects that may result in negative effects on fauna such as bats, badger, otter, red squirrel and birds. The results are summarised in Table 9-12.



Table 9-12: Projects with potential cumulative effects on biodiversity

Project	Distance	Description	Potential for cumulative effects
Amarenco Solar Rathcormac PL04.248278	0.8 km	Construction of a 5MW solar farm with approx. 22,200 photovoltaic panels on mounted frames within area of 8.7 hectares, 2 inverter transformer stations, 1 delivery station, fencing and associated	The ecological impact assessment for this development concluded that there would be no impact to otter, red squirrel, badger or bats as a result of habitat loss. Additionally, it was concluded there were no hydrological links between the development site and the River Bride.
Ballybrowney Upper 244050	4.6 km	Construction of milking parlour with all associated site works	This development has hydrological connectivity to the Lisnagar Demesne Stream which discharges into the River Bride. The development was subject to its own AA process and therefore specific mitigation to manage surface water runoff has been prescribed.
Coom Green Energy Park ABP-308885-20	0	10-year permission for the construction of up to 22 wind turbines and all related site works and ancillary development. Location Townlands of Glashaboy North, Coom (Hudson), Tooreen South, Killeagh, Coom (Fitzgerald), Knuttery, Mullenaboree, Knockacullata, Knoppoge, Carrig, Glannasack, Knockdoorty, Lackendarragh North, Glashaboy South, Toorgarrif, Castleblagh, County Cork	There is overlap of the CGEP and the Proposed Development and construction will take place concurrently over a timeframe of 18-24 months with the Proposed Development expected to take 12 months. The CGEP assessed the grid connection as part of the initial assessment. Potential impacts on Key Ecological Receptors (KERs) have been identified, assessed, and subject to mitigation. All works will be undertaken in accordance with a Construction Environmental Management Plan (CEMP) and an associated Surface Water Management Plan
Coilte Forestry	0		The forestry surrounding some of the Proposed Development is subject to the requirements of the Forestry Act (2014). These processes include environmental assessment and mitigation measures to protect water quality and biodiversity. If forestry operations take place within the construction phase (felling) of the Proposed Development, there is potential for cumulative impacts on fauna, i.e. habitat loss and disturbance given the proximity of the two developments.



9.5 Mitigation Measures and Monitoring

Mitigation is prescribed in accordance with the Environmental Protection Agency guidance on EIAR (EPA,2022) which requires mitigation by avoidance as a first approach. Where this is not feasible, measures to prevent impacts from giving rise to significant effects should be adopted (e.g. design of bunded storage). Where impacts cannot be avoided e.g. generation of noise, mitigation by reduction of impact is required to limit the exposure of the receptor to an acceptable level (often achieved by interrupting the pathway between the source and receptor).

9.5.1 Mitigation During Construction

As part of the design evolution for the Proposed Development the Design Team and the Planning and Environmental Teams worked closely together to ensure that environmental constraints were considered from the outset, in order to formulate a development which would avoid, by design and at source, potential for significant effects. Embedded mitigation measures included the use the existing roads, forestry and farm tracks in order to minimise habitat disturbance and fragmentation. Submissions from consultees were included Additionally, HDD will be used to avoid instream works on EPA watercourses, therefore minimizing impacts to aquatic habitats reducing riparian habitat removal.

Where construction phase impacts could not be avoided the mitigation measures have been prescribed, having regard to the following guidelines:

- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008)
- Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016).
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (NRA, 2006b);
- Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. (Marnell et. al, 2022)
- Guidelines For the Treatment of Otters Prior to the Construction of National Road Schemes (NRA, 2009)
- Guidelines For the Treatment of Badgers Prior to the Construction of National Road Schemes (NRA, 2006)
- Guidelines for the Management of Noxious Weeds and Non- Native Invasive Plant Species on National Roads (NRA, 2010).
- Control of Water Pollution from Construction Sites (CIRIA C532) (CIRIA, 2010)
- Environmental Good Practice on Site Guide (CIRIA C741) (CIRIA, 2019)



9.5.1.1.1 General mitigation

- A Project Ecologist/Ecological Clerk of Works (ECoW) will be employed for the duration of the construction phase to ensure that all the ecological protection mitigation measures set out in the EIAR, NIS and any conditions of consent pertaining to biodiversity are employed. The Project Ecologist/ECoW will advise on environmental effects and communicate with the project owner and contractor to ensure the required actions to implement the mitigation are carried out. The Project Ecologist/ECoW will be awarded a level of authority permitting them to stop construction activity if there is potential for significant environmental effects.
- The CEMP in Appendix 2.2, Volume 3 of this EIAR outlines the implementation of the mitigation measures and environmental commitments of the Proposed Development, as well as the monitoring and supervision of these measures, and follow-up arrangements and management of any potential effects, will be managed through the CEMP. A Surface Water Management Plan (SWMP) is part of the CEMP and sets out the procedures and control measures required to protect surface water quality and associated aquatic ecological receptors during the construction phase.
- All tree felling will be undertaken in accordance with the conditions attached to the tree felling licence and in accordance with Forest Service Guidelines.
- Construction vehicles will not encroach onto habitats beyond the Proposed Development footprint.
- Construction activities will be restricted to between 0800 - 1900.

General aquatic protection

- Material stockpiles will be kept to a minimum size, covered and located at least 10m from the drainage system
- The main fuel stocks for, and chemical wastes arising from, construction activities will be stored in a designated location, away from main traffic activity, within the temporary site compounds.
- All fuel will be stored in bunded, locked storage containers. The designated storage location will be greater than 100m from a watercourse.
- Works will be avoided during prolonged periods of very heavy rainfall.
- Refuelling of machinery shall be carried out at designated areas on the site. Safe-guards such as drip-trays for refuelling of machinery, machine servicing, concrete mixing, etc. shall be utilised.
- The use of wet concrete and cement in or close to any watercourses and semi-natural habitats will be carefully controlled, particularly from shuttered structures or the washing of equipment. The cleaning and wash-out of chutes of concrete batching plant or ready-mix lorries should be carried out in a dedicated, contained area as far from sensitive habitats and watercourses as practical. This will be for the wash-out of the chutes only— after the pour. Concrete trucks will then exit the site and return to the supply plant to wash out the mixer itself.
- In-channel works will follow best practice guidance (IFI, EPA) to ensure reinstatement of channel morphology and replacement of habitats to pre works condition.



Lighting

Where artificial lighting is required during the construction and operation, bat-sensitive lighting measures will be implemented. The design for outdoor lighting will be reviewed and signed off by the ECoW. Lighting design will follow the principles set out in the Bat Conservation Trust (BCT) and Institution of Lighting Professionals (ILP) Guidance Note 08/23: Bats and Artificial Lighting at Night (ILP/BCT, 2023), as outlined below:

- Warm-white LED luminaires ($\leq 2700\text{K}$ and not exceeding 3000K) with low ultraviolet will be used.
- Lighting will be directional and fully shielded to prevent upward and horizontal light spill to reduce illumination beyond the target area.
- Illuminance levels will be as low as possible, with light levels at habitat features kept at or below recommended thresholds to maintain dark corridors.
- Controlled lighting will be used to minimize the duration and extent of illumination. Continuous overnight lighting will be avoided unless for safety.

9.5.1.1.2 KER 1 Terrestrial habitats

The HH3 Wet heath that is crossed by the Proposed Development will impact 260 m of this habitat type. In addition to the general mitigation measures relating to the protection of aquatic and groundwater dependent habitats, the following site-specific measure will be implemented:

- Low ground pressure wide-track machinery will be used. In areas of soft or waterlogged ground, bog mats will be used to prevent compaction.
- Excavated peat/soils will be stored (acrotelm and catotelm where present) and kept adjacent to the trench on geotextile or similar to prevent mixing and drying. Storage will be for the shortest possible duration.
- Turves of wet heath vegetation with their existing vegetation will be stripped and stored the right way up adjacent to the trench.
- Any dewatering will be localized and discharged to vegetated ground via silt control measures.
- After cable installation, the trench will be backfilled with the excavated peat/soil in the correct order and lightly compacted to restore pre-existing ground levels. Turves of wet heath vegetation will be replaced alongside excavated peat/soil.
- The trench will be inspected at the end of the construction phase to ensure habitat recovery and absence of drainage effects.



9.5.1.1.3 KER 2 Aquatic habitats

Construction phase mitigation for the protection of aquatic habitats are outlined in Chapter 11 –Hydrology and Water Quality, and the mitigation measures outlined will be adhered to in conjunction with those outlined in this chapter. Such measures will relate to the following:

- All works will similarly adhere to the Sediment Control Plan, forming part of the CEMP (Appendix 2.2, Volume 3 to this EIAR).
- All works within and adjacent to watercourses will be carried out in accordance with Inland Fisheries Ireland Biosecurity Protocol
- Works within and adjacent to watercourses will adhere the guidelines set out in the best practice documents as listed below for the control of water pollution:
 - CIRIA (2001). Control of water pollution from construction sites - Guidance for consultants and contractors (C532). Construction Industry Research and Information Association, London.
 - CIRIA (2006). Control of Pollution from Linear Construction Project; Technical Guidance (C648). Construction Industry Research and Information Association, London.
 - CIRIA (2015). Environmental Good Practice on Site (4th edition) (C741). Construction Industry Research and Information Association, London.
 - CIRIA (2019). Culvert, screen and outfall manual (C786). Construction Industry Research and Information Association, London.
 - Enterprise Ireland (unknown). Best Practice Guide (BPGCS005) Oil storage guidelines.
 - IFI (2016). Guidelines on Protection of Fisheries during Construction Works in and adjacent to waters. Inland Fisheries Ireland, Dublin.
 - Kilfeather, P.K. (2007). Maintenance and protection of the Inland Fisheries resource during road construction and improvement works. Requirements of the Southern Regional Fisheries Board. Southern Regional Fisheries Board, Clonmel, Co. Tipperary
 - Murphy, D.F. (2004). Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites. Eastern Regional Fisheries Board, Dublin.
 - NRA (2008). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. National Roads Authority.
- For all in-channel works and works immediately adjacent to the watercourses (e.g. culvert construction) the works will be carried out under dry works conditions i.e. the works area will be isolated from the stream/drain flow by means of temporarily overpumping or fluming the flow. Mitigation for the prevention of downstream pollution/ sedimentation of the watercourses is prescribed in Chapter 11 – Hydrology and Water Quality.
- Measures will be taken to reduce sedimentation caused by pumping e.g. creating of a gravel-lined sump. Direct dewatering into the watercourse will not be permitted as it will increase the risk of sedimentation. Instead dewatering will be via filter bag, sediment tank, filter mats or natural vegetation adjacent to the watercourse.
- Discharging of construction water (trade effluent) directly to surface waters is a licenced activity. No extracted or pumped or treated construction water from the isolated construction area will be discharged directly to a drain or watercourse (This is in accordance with Local Government (Water Pollution) Act, 1977 as amended).



- Overpumping: The over-pumping methodology will be in accordance with IFI (2016). This methodology requires the damming of the drain/watercourse upstream and downstream of the culvert location / instream works location to create a dry works area. Water will then be diverted from where it has been impounded upstream and discharged downstream of the works area via pumps. The pumps and generators required for overpumping will be kept back 10m from stream/drain and will mitigate noise generation, see Chapter 11. All pumps and generators shall be 110% bunded. Any external fuel lines shall also have drip trays placed underneath, with a capacity of 110%. Once the culverts have been constructed the works area will be rewetted by firstly slowly removing the downstream barrier to allow back watering of the works area, while upstream pumps and barrier remain in place (with pumps operating). Once backwatered, the upstream barrier will be slowly removed to allow partial downstream flow initially, pumps will remain on. The remainder of barrier will be removed and pumps turned off once flow is established through the culvert.
- Fluming: The flume pipe will be sized in accordance with expected flows to ensure optimal performance without reducing the watercourse's capacity or flow. Standby pumps will be available to assist in partial bypass situations. This approach guarantees effective water management while maintaining construction accessibility and environmental integrity.
- The ECoW will monitor the pH, temperature, DO, turbidity and conductivity of the watercourse upstream and downstream of the isolated works areas. The works will be immediately stopped and an investigation of cause carried out and mitigated in the event of the following:
 - any change in pH +/-0.5 detected between upstream and downstream monitoring locations
 - downstream turbidity exceed 28 NTU
 - DO drops below 80% saturation
- Where the isolated working area requires constant dewatering to maintain a dry works area, pumps will be turned off during the concrete pour and remain off until it can be ensured that the discharge will not result in a change in pH of +/-0.5 units in the watercourse. Alternatively, any dewatering from these areas during the concrete pour will be taken off site for disposal at a licensed waste facility for disposal. Once concrete has cured the pH of any water required to be dewatered will be checked and none of that water allowed to enter the environment unless it is back to within the normal baseline range of the local network.

9.5.1.1.4 KER 3 - Badger

A pre-construction survey for badger setts will be undertaken 2-3 weeks prior to construction as badgers could establish setts between the time of the initial survey and construction. Should any setts be identified be found, the protection of badger will follow The Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes (NRA 2005b).

Additionally, any excavations deeper than 1m will be either covered or have ramps fitted outside of working hours, which will allow badgers to escape should they get trapped when contractors are off site.

9.5.1.1.5 KER 4 - Otter

A pre-construction survey for otter holts will be undertaken 2-3 weeks prior to construction as otter could establish holts within 150 m of the watercourse crossings between the time of the initial survey and construction. Should any holts be identified, the protection of badger will follow The Guidelines for the Treatment of Otter prior to the Construction of National Road Schemes (NRA 2006).



Additionally, any excavations deeper than 1m will be either covered or have ramps fitted outside of working hours, which will allow otter to escape. And any temporarily exposed open pipe system will be capped to prevent species such as otter from gaining access when contractors are off site.

For the culvert crossing on the Toor river, a mammal ledge will be provided in accordance with TII (2008). The ledges will be at least 500 mm wide and at least 150 mm above the 1 in 5-year flood event and have at least 600 mm of headroom.

9.5.1.1.6 KER 5 - Avifauna

During the breeding bird season, site clearance is heavily restricted by law to protect nesting wild birds, their nests, and eggs. In Ireland, the primary legislation is the Wildlife Act 1976, as amended, which generally prohibits the cutting, burning, or destruction of vegetation on uncultivated land or in hedges/ditches between March 1st and August 31st annually. It remains an offence under Section 22 of the Wildlife Act to wilfully or recklessly destroy a nest or disturb a protected wild bird on or near a nest at any time of the year. Therefore, any site clearance or vegetation removal works should be scheduled outside of the nesting season to avoid harm. This applies to the works to the River Bride bridge as suitable nesting habitat for dipper has been identified beneath the bridge structure.

If works must proceed during this period (e.g., due to specific exemptions), a qualified ecologist with expertise in breeding bird surveys will firstly check for nests in the affected area no more than 48 hours in advance of works. An appropriate buffer zone will be established to protect the nest and prevent disturbance prior to any works taking place. The buffer zone around the nest will be appropriate to the sensitivity of the species affected. No works will take place within the buffer zone until all chicks have fledged and have left the nest, or it has been established that breeding has failed, and the breeding pair has vacated the area.

9.5.1.1.7 KER 6 - Bats

In addition to the lighting specifications as outlined in 9.5.2, no construction lighting will be used over the River Bride. Additionally, as specified in Section 9.2.4.1.8 the works on the Bride Bridge will take place during winter to avoid maternity roosts and peak activity times of bats.

9.5.1.1.8 KER 7 - Fisheries

In addition to the water quality controls set out in Section 9.5.1.1.3 The following must be adhered to,

- All works associated with overpumping and fluming will be supervised by the Ecological Clerk of Works.
- Any watercourses requiring a dry works area will require a fish salvage exercise which must firstly be Authorised under Section 14 of the Fisheries (Consolidation) Act 1959.
 - Fish salvage by electrofishing will not be carried out where water temperature exceeds 20°C.
 - Fish salvage operations can only be conducted by qualified ecologists under said licence.
 - A detailed method statement will be required as part of the licence application.
 - The work will have regard to the following general guidelines for electrical fishing include Guidelines for Electric Fishing Best Practice” (Beaumont et al, 2002) and Methods for the Water Framework Directive Electric Fishing in wadable reaches (Matson et al, 2018).
 - In the event of a dewatered area becoming flooded, then the above fish removal works will be repeated.



- The diversion of flow by overpumping / fluming will be into the same waterbody i.e. flows will not be diverted from one watercourse to another or from the streams / drains into coastal waters. The flume pipe and / or the pumps will be sized appropriate to watercourse flow and will have capacity to accommodate storm flows.
- Fluming is the preferred option for fishery watercourses and must be such that fish passage is maintained. Where overpumping is proposed, measures (such as screening) will be taken to ensure that fish do not become entrained in the pump.

9.5.1.1.9 KER 8 Red squirrel

A walkover survey will be undertaken immediately prior to commencement of felling to identify if any dreys are established between the time of surveys and the commencement of construction. If dreys have established, felling of forestry will be limited to periods outside of January to March when red squirrel are likely to have young in dreys.

9.5.1.1.10 KER 9 - Invasive species

Prevention of the spread of invasive species will be achieved by:

- The full implementation of the invasive species management plan (Section 9.5.1.1.10.1) in conjunction with a competent and experienced Invasive Species Specialist Contractor.
- Supervision of control measures and treatment works by an appropriately qualified ecologist or invasive species specialist.
- Raising awareness to site workers via toolbox talks given by a suitably qualified person as part of site inductions; informing workers what to look out for and what procedure to follow if they observe an invasive species.

Containment of invasive species will be achieved by:

- A pre-construction survey to reconfirm the findings of the EIAR during the growing season immediately prior to the construction phase by qualified ecologists. This will mark out the extent/likely extent of the invasive plant material to create a construction buffer zone.
- A licensed invasive species contractor shall be engaged to remove invasive plant species prior to development.
- New sightings of the invasive plant species identified at the proposed site shall be relayed to the contractor for invasive species control. These areas shall follow the same protocol as the current infected areas.
- All staff shall be made aware of nature of threat via toolbox talks as part of site inductions.

9.5.1.1.10.1 Invasive Species Management Plan

This Invasive Species Management sets out the procedures for the containment, excavation, handling and disposal of Himalayan knotweed within the proposed works area.

All works will be undertaken in accordance with best practice guidance and under the supervision of a suitably qualified ECoW with specialist knowledge in invasive species removal. A specialist contractor will be appointed with expertise in knotweed removal.



Prior to the commencement of any excavation works, a designated 'knotweed contamination zone' will be established.

- This will extend 50 m east and west of the crossing location and infestation.
- Within this zone, a 15 m buffer on either side of the infestation will be established as a controlled working and brush off area.
- The contamination zone will be fenced using Heras fencing, with clear signage stating 'Invasive Species Contamination Zone – No Unauthorised Entry’
- The 15 m will be lined with Terram liner, with a thin layer of clean gravel. This will be the designated brush off and contamination platform.

All handing and excavation will be undertaken with full supervision of the ECoW. ECoW will undertake the following:

- Confirm the extent of the infestation prior to excavation
- Confirm the depth and extent of the excavation
- Ensure the excavation extends an additional 300 mm beyond last visible rhizome
- Check the footwear and clothing of operatives working near invasive species for rhizomes, seeds, fruits, or other viable material before exiting the site. Such operatives will also use boot brushes prior to exiting the site.
- Examine all vehicles exiting the area of knotweed infestation to prevent the transport of seeds/rhizomes/plant material.

During the excavation of the infestation, measures to minimise disturbance and prevent cross contamination will include:

- A long reach excavator will operate from the western bank, and the dumper will operate from the eastern side. This will ensure there is no turning or tracking of contaminated machinery across clean ground and to prevent soil spill on to clean ground.
- The dumper will be fitted with heras fencing and terram wrap to prevent spillage of contaminated soils
- Excavator wheels/tracks will be fitted with heras fencing and terram wrap to prevent soil spillage from the bucket

Upon completion of the excavation, the following will be adhered to:

- All heras fencing and terram liner attached to machinery will be carefully removed and brushed down in the contamination zone
- The excavator bucket will be brushed down in the contamination zone
- Dumper wheels will be rotated through a full wheel cycle and brushed clean to ensure no remaining material is lodged
- A final inspection by ECoW before any machinery leave the zone.



The handling and disposal of excavated material in the dumper will be securely covered and transported off site by an appropriately licensed waste contractor and disposed of properly at a suitably licenced facility, in accordance with the (NRA, 2010) guidelines.

This removal will be undertaken during the dry work phase of the in-channel construction. During this,

- All equipment associated with the in-channel works (pumps, generator etc) will be treated as contaminated
- Equipment will be brushed down in the designated contamination zone prior to the removal from the contamination zone.
- The in-channel works will be carried out with ECoW supervision to ensure no rhizomes remain.

The smaller infestation adjacent to the drainage ditch will require fencing for the duration of the construction of the Proposed Development and be clearly marked as exclusion zones. The removal of the fencing will be undertaken with ECoW supervision to ensure no contaminated material stick to the fencing prior to the removal from site. Periodic re-surveying (as determined by the ECoW) for all invasive species will be required, to ensure that treatment measures were effective, and to trigger further treatment if necessary.

As part of the routine maintenance of the operation of the Proposed Development, control measures will be implemented along the drainage ditch to ensure there is no re-establishment. Due to the potential for significant negative effects on the aquatic environment from herbicides, spot treatment will be applied with herbicide approved by DAFM.

Ecological Enhancement

Landscaping

Hedgerow planting is proposed to be planted along the boundary of the substation, comprising approximately 440 m of native planting. Hazel (*Corylus avellana*) will be incorporated within the species mix to provide an additional food resource for red squirrel. Along this hedgerow, a 2m wide strip of wildflower planting from a local seed bank is proposed with low mowing (once a year) for local pollinators.

Bat

As an enhancement measure to support local bats, two bat boxes, such as the Schwegler 2E wall-mounted bat boxes or equivalent, will be installed on the bridge over the River Bride. These boxes are constructed from durable, weather-resistant materials. Boxes will be positioned at a height of 3–5 metres above the water and oriented to receive some sun while being sheltered from wind. No artificial light will be directed towards bat boxes.

Avifauna

The swift is a Red List Bird of Conservation Concern in Ireland (BoCCI) because its population has declined by over 40% in the last 15 years. Conservation actions across the country are helping to recover populations. Swifts are faithful to their nest sites. Two swift boxes will be installed in the bridge over the River Bride by an ecologist. Guidelines for the swift boxes should also follow guidelines published by Swift Conservation Ireland, and those published by Birdwatch Ireland entitled “Saving Swifts” (2009/2010).



9.6 Residual Impacts

Following the full implementation of the mitigation measures set out in Section 9.5, no residual impacts are predicted from the construction or operational of the Proposed Development.

9.6.1 Terrestrial habitats

Following the mitigation measures for the HH3 habitat, the residual impact on terrestrial habitats is considered to be not significant.

The planting of a 440 m length of native species along the substation is considered a positive impact at the local level.

9.6.2 Aquatic habitats

Following the mitigation measures to reduce siltation and pollution of water courses, the residual impact on this habitat is considered neutral.

9.6.3 Badger

Following the mitigation in Section 9.5.1.1.4, the residual impacts on badger are considered to be slight.

9.6.4 Otter

Following the mitigation in Section 9.5.1.1.5, the residual impacts on otter are considered to be slight.

9.6.5 Avifauna

Following the mitigation to avoid bird breeding season, the residual impact on avifauna is considered to be not significant.

The installation of two swift boxes under the River Bride is considered a permanent positive impact at the local level.

9.6.6 Bats

Following the mitigation in Section 9.5.1.1.5, the residual impacts on bats are considered to be not significant.

The installation of two bat boxes under the River Bride is considered a permanent positive impact at the local level.

9.6.7 Fisheries

Following the mitigation in Section 9.5.1.1.5, the residual impacts on fisheries are considered to be not significant.

9.6.8 Red squirrel

Following the mitigation in Section 9.5.1.1.5, the residual impacts on red squirrel are considered be slight.



9.6.9 Invasive species

The management and removal of invasive species within the Proposed Development is considered a positive impact at the local level.

9.7 Conclusion

Provided that the Proposed Development is constructed and operated in accordance with the design, best practice and mitigation measures proposed, significant residual effects on biodiversity are not likely on any Key Ecological Feature (KER). The application of mitigation and protection measures throughout the construction phase will ensure that no significant residual effects are likely to arise from the proposed scheme, either alone or in combination with other plans or projects.



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