Ecological Impact Assessment

Proposed Residential Development at
Cornamaddy, Athlone, Co. Westmeath

Compiled by: Veon Ecology,
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Prepared for: Westmeath County Council

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Twenty years' experience conducting research and working in the field of ecology, with extensive stakeholder engagement and survey skills. Amy has obtained funding and lead independent research on three mammal related projects through her PhD and subsequent post docs. She has disseminated her research through several mediums including 40 publications in peer reviewed journals, presenting at international conferences, stakeholder workshops, teaching and through the popular press.

Since joining Veon, she has been involved in a number of large projects, collecting data for ecological assessment as well as for specific bird and mammal surveys. These have informed subsequent reports such as Natura Impact Statements (NIS), Environmental Impact Statements (EcIA), Biodiversity Management Plans (BMP), Winter Bird and Breeding Bird Survey Reports and Non-Volant Mammal Reports, which Amy has produced.

We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists. The information provided is accurate as of the issue date of this report and has been prepared in accordance with the CIEEM Code of Professional Conduct ('the Code').

Section 1: INTRODUCTION

Veon Ltd. (Veon Ecology) has been appointed by Westmeath County Council to undertake an Ecological Impact Assessment (EcIA) to support a planning application for a proposed residential development on 6.496 hectares of land, approximately 2.3 km northeast of the Athlone town centre, hereafter referred to as the "proposed development site". The location of the proposed works is approximately centred at 606069, 742590 (ITM) (**Figure 1.1 and 1.2)** and is within a residential zoned area.

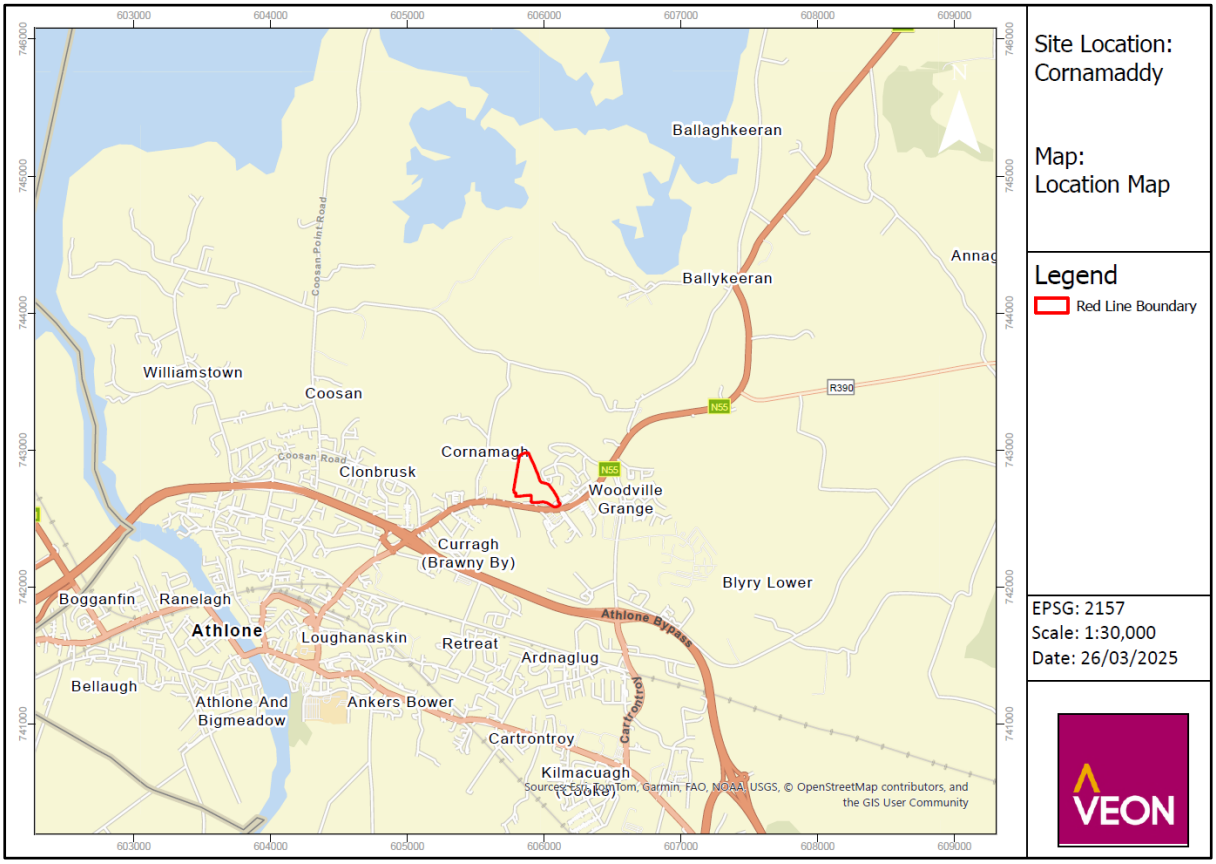

Figure 1.1: The location of the proposed development northeast of Athlone town.

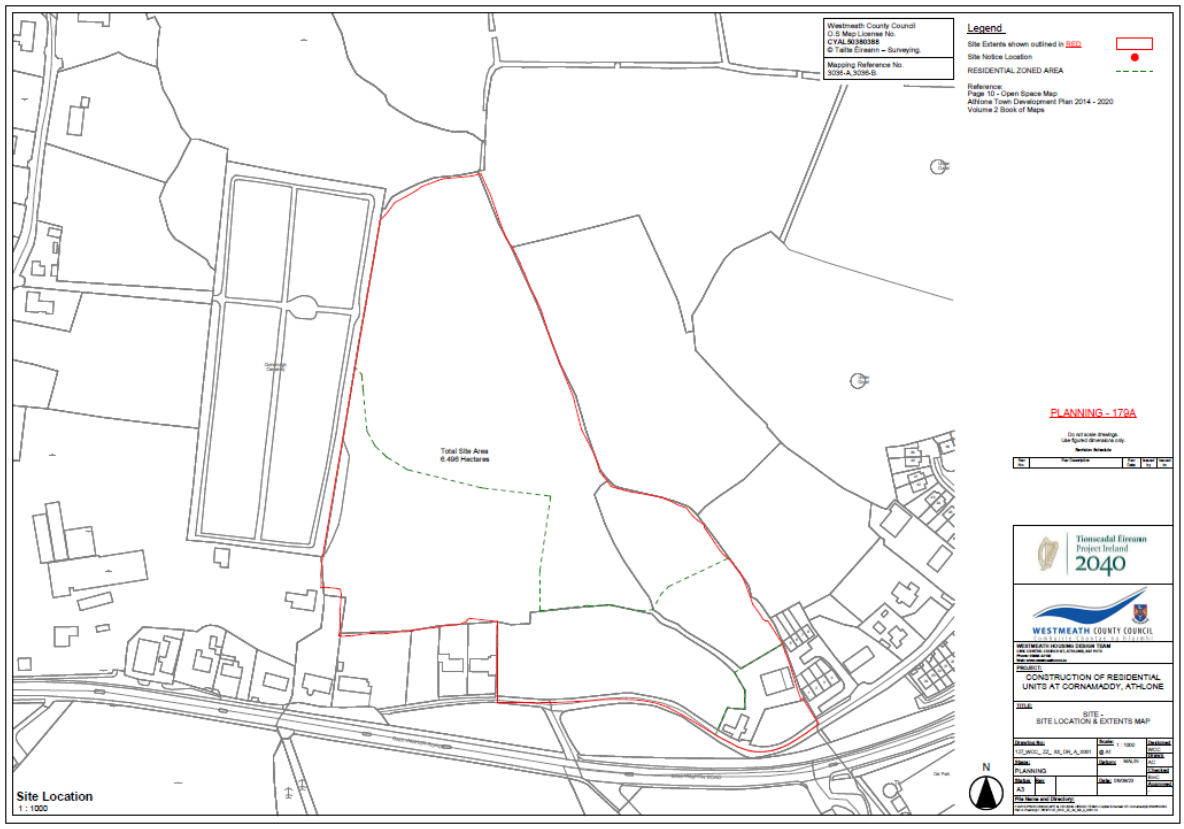

Figure 1.2: The red line boundary of the proposed development.

1.1 Ecological Impact Assessment

With respect to the proposed development, the criteria set out in the Schedule 7 to the Planning and Development Regulations 2001 (as amended) was consulted to determine whether a EIA was required. The proposed development is a sub threshold development within a residential zone and significant effects as a result of the development are not envisioned nor is there a realistic doubt in regard to the likelihood of significant effects on the environment. Therefore, it was deemed that an EIA was not required and that an EcIA would capture all potential impacts as a result of the proposed development (See accompanying EIA screening report).

EcIA is the process of identifying, quantifying, and evaluating the potential effects of a proposed development on ecological features, based on an objective assessment of the best available scientific evidence and information (CIEEM, 2018). An ecological feature is defined as a habitat, species, and/or ecosystem that has the potential to be affected by a proposed project.

The aim of the EcIA is to describe the existing ecological environment within and surrounding the proposed development; to identify potential ecological features; to identify the potential impacts associated with the proposed development during construction and operation, and decommissioning

phases as appropriate; to evaluate the likely significance of effects on the ecological features; to apply the mitigation hierarchy to avoid, mitigate, and compensate for ecological impacts; and to highlight potential opportunities for ecological enhancement where appropriate (CIEEM 2018).

This EcIA provides an assessment of the baseline ecological conditions in the area likely to be impacted by the proposed development, and of the nature, magnitude and significance of those impacts. This EcIA also proposes appropriate mitigation measures to eliminate those impacts or, where this has not been possible, to minimise their effects so as to no longer be considered significant.

The EcIA has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3* (CIEEM 2018).

The contents of this EcIA report, prepared by Veon Ecology, are true and have been prepared and submitted in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct[1].

The aims and objectives of this EcIA include the following:

- Conduct a desktop review of available ecological data for the study area (i.e., the proposed development site and surrounding area).
- Establish baseline ecological data for the proposed development site.
- Determine and assess the ecological value of the identified features within the study area.
- Identify, describe, and assess the potential impacts of the proposed development on biodiversity and existing ecology, including any likely significant effects (if present).
- Consider environmental control measures to mitigate potential adverse effects on existing ecology, including sensitive habitats and species in the surrounding area, resulting from the proposed development.
- Propose effective mitigation measures to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on biodiversity.
- Identify any potential residual effects that may arise after the implementation of mitigation measures.

[1] CIEEM's Code of Professional Conduct. Available at: https://cieem.net.

1.2 Proposed Development Site

The proposed development site consists of a number of agricultural fields and is bordered by the same along the north of the site. To the east, the lands are currently being developed for residential developments. The Cornamagh Cemetery is to the west of the proposed development and the N55 borders the south of the site, as well as some single residences. The rest of the surrounding areas are characterised as residential developments, industrial premises and farmland.

The fields are bounded by a mixture of mature trees and a stone wall between the graveyard and the proposed development. A drainage ditch runs along the northeast of the proposed development between the site and the current residential development (**Appendix 1, Figure 9.1 and 9.2**).

The bedrock is Waulsortian mudbank, pale grey limestone. The predominant soil composition consists of alluvium and renzinas and lithosols (**Appendix 1, Figure 9.4**). The quaternary sediment is a combination of gravels derived from limestone and lacustrine sediments.

The proposed development site is mapped by the EPA (EPA, 2025) as being within the Upper Shannon Water Framework Directive (WFD) Catchment (ID: 26E), specifically within the Shannon (upper)_SC_090 Sub-Catchment, (Sub-catchment ID: 26E_6).

There are no watercourses within the proposed development site. The closest hydrological features to the proposed development is the Kippinstown Stream (EPA code: 26K74) north of the proposed development which flows north into the Garrynafela River (EPA code: 26G51) and into Lough Ree SAC (000440) and SPA (004064) at Balaghkeeran Bay, approximately 1.6 km from the proposed development site. The Kippinstown Stream is connected to the proposed development site via the drainage ditch northeast of the site (**Appendix 1, Figure 9.2**). The proposed development site is located within the Athlone gravels (IE-SH-G-246) groundwater body, which has a WFD status of 'Good' and is currently classified as '*Not at Risk'* (EPA, 2025). This groundwater body is shared with the Lough Ree SAC and SPA.

The proposed development footprint is not located within any Special Areas of Conservation (SACs) or Special Protection Areas (SPAs), (**Appendix 1, Figure 9.3)**. The closest European designated site to the proposed development site is the Lough Ree SPA (004065) and SAC (000440), situated c. 1.3km north of the proposed development site.

Baseline information on habitats and the species they support was obtained from multidisciplinary ecological surveys. The proposed development site lies primarily within the 10km^2 'N04' and 2km 'N04R' grid square of the National Biodiversity Data Centre (NBDC).

1.3 Proposed Development Description

The proposed development is comprised of a series of 8no. apartment blocks and 86 houses on a mostly level, sheltered site, enclosed by existing boundaries of trees hedges and a stone wall (**Figure 1.3**). The proposal retains a large percentage of the existing trees and hedgerows; specific attention will be given to retaining/ protecting and enhancing the existing approximately 2m high stone wall boundary shared with the Cornamagh Cemetery.

Additionally, there are 3no. isolated very large fully mature trees randomly located within the site which have now been incorporated into the design, 2no. have become focal points within apartment courtyards and the third in the green open space retained to enhance views from the housing development.

The development will consist of a residential development and public open space of the following:

Construction of 94 no. residential units comprising of the following:

- 55 no. 2 bed (4 person) terraced houses (c.86m2 each),
- 14 no. 3 bed terraced houses (c. 100 m2 each)
- 2 no. 4 bed 2 story semi-detached houses (c. 120m2 each)
- 15 no. 4 bed 3 story semi-detached houses (c. 148m2 each) all with associated private gardens.
- 4no. 1 Bed Ground floor Apartments, 2 Person UD / Age Friendly (c. 51.5m2)
- 4no. 1 Bed first floor apartments, 2 Person (c. 51.5m2) with private amenity spaces on ground floor terraces or first floor balconies.

• Vehicular access to the east though the neighbouring residential development.

• Connection to wastewater infrastructure as part of ongoing coordination with Uisce Éireann and Glenveagh Developments along the northern boundary of the proposed site (ABP 318510).

- All associated infrastructure works including amenity spaces, landscaping, open space, boundary treatments, vehicular parking, bicycle parking, utilities, internal roads, footpaths and shared surfaces, site clearance and temporary construction development.

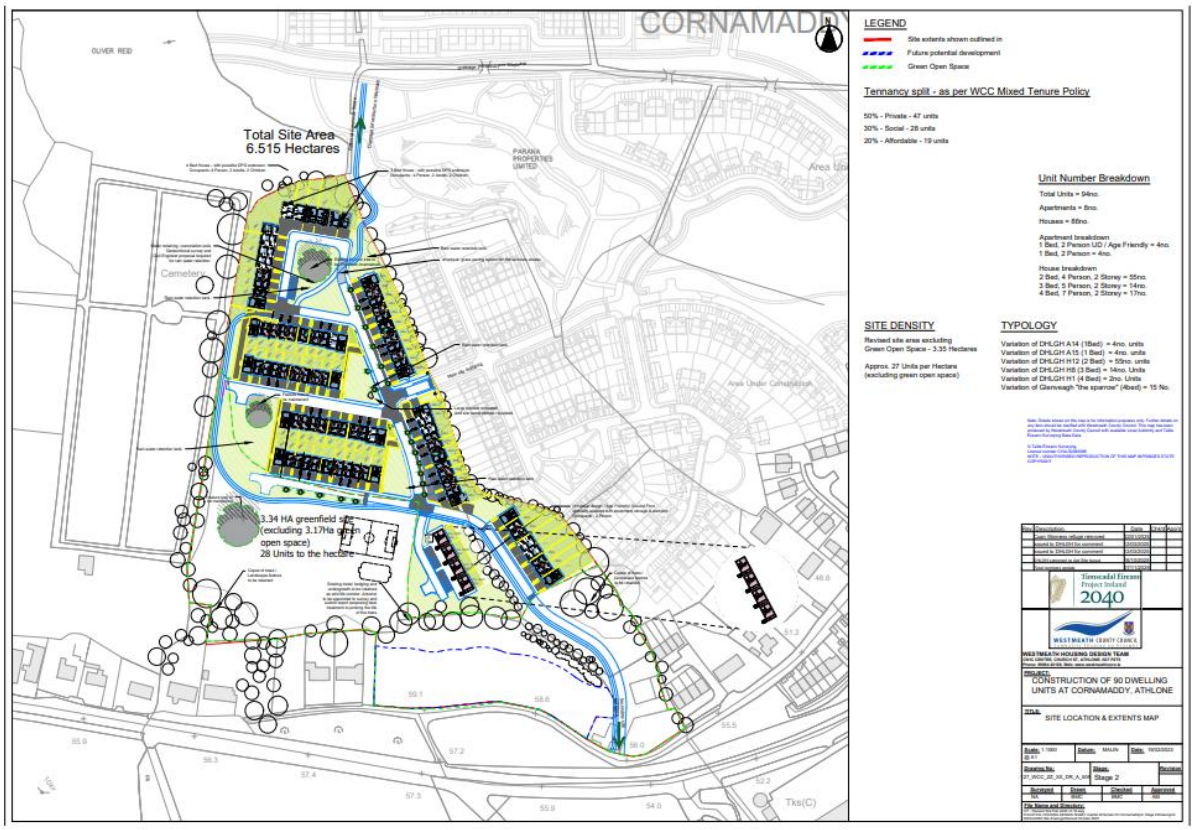

Figure 1.3: Proposed layout of the residential development at Cornamaddy.

1.4 Report Structure

The layout and structure of this EcIA follow the most recent guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM), as outlined in the document *Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine* (Version 1.3) (CIEEM, 2018).

This guidance states that an EcIA can be applied to projects of widely varying scales. The EcIA principles and processes outlined are relevant to all developments that may impact ecological features, this term is used throughout to cover habitats, species and ecosystems. However, the level of detail required in an EcIA will inevitably be proportionate to the scale of the development and the complexity of its potential impacts. In addition, as stated in these guidelines, the emphasis in EcIA is on 'significant effects' rather than all ecological effects. The relevant legislation, regulations, plans and policies have been considered within this assessment to ensure that the EcIA takes account of all relevant ecological features within the scoping process for this report.

1.5 Requirement for Ecological Impact Assessment (EcIA)

With respect to the proposed development, the criteria set out in the Schedule 7 to the Planning and Development Regulations 2001 (as amended) was consulted to determine whether a EIA was

required. The proposed development is a sub threshold development within a residential zone and significant effects as a result of the development are not envisioned nor is there a realistic doubt in regard to the likelihood of significant effects on the environment. Therefore, it was deemed that an EIA was not required and that an EcIA would capture all potential impacts as a result of the proposed development (See accompanying EIA screening report).

When carried out as part of an Environmental Impact Assessment (EIA), EcIA is subject to the relevant EIA Regulations. However, unlike an EIA, EcIA on its own is not a statutory requirement. Instead, it is an evaluative process used to support a variety of assessments.

Ireland's 4th National Biodiversity Action Plan (NBAP)[2], covering the period 2023–2030, outlines the national agenda for biodiversity conservation and aims to deliver the transformative changes required to the ways in which we value and protect nature. The plan was developed with input and guidance from the interdepartmental Biodiversity Working Group and the independent Biodiversity Forum. Insights and recommendations were also gathered through Ireland's second National Biodiversity Conference and a public consultation process to ensure broad engagement with the plan. The 4th NBAP strives for a "whole of government, whole of society" approach to biodiversity governance and conservation. The aim is to ensure that every citizen, community, business, local authority, semi-state and state agency has an awareness of biodiversity and its importance, and of the implications of its loss, while also understanding how they can act to address the biodiversity emergency as part of a renewed national effort to "act for nature". The National Biodiversity Action Plan 2023-2030 builds on the achievements of the previous plan and continues to implement actions within the framework of five strategic objectives while addressing new and emerging issues. The NBAP works on the principle that existing regulations associated with EU Directives relating to the protection of biodiversity will be implemented. These include Article 6 of the Habitats Directive (92/43/EEC), which requires member states to undertake an 'appropriate assessment' (AA) for any plan or project which may have a likely significant effect on any Natura 2000 site, and the Environmental Impact Assessment Directive (2011/92/EU), as amended by Directive (2014/52/EU), which covers environmental assessment which can be undertaken for individual projects.

The Wildlife Act (1976) and Wildlife Amendment Act (2000) are the principal mechanism for the legislative protection of wildlife in Ireland and outline strict protection for species that have significant conservation value. In summary, the Wildlife Acts protect species from injury, disturbance and damage to breeding and resting sites. All species listed in the Wildlife Acts must, therefore, be a material consideration in the planning process.

[2] Ireland's 4th National Biodiversity Action Plan (NBAP). Available for download at: https://www.npws.ie.

The Flora (Protection) Order, 2022 is an important piece of national legislation for the protection of wild flora, i.e. vascular plants, mosses, liverworts, lichens, and stoneworts, which makes it illegal to cut, uproot or damage a listed species in any way or to alter, damage or interfere in any way with their habitats. This protection applies wherever the species listed in the Schedules of the Order are found.

S.I. No. 477 of 2011 transposes into Irish law the European Communities (Birds and Natural Habitats) Regulations 2011, Directive 2009/147/EC (the Birds Directive), and Council Directive 92/43/EEC (the Habitats Directive), which list priority habitats and species of international (European Union) conservation importance and that require protection. This protection is afforded in part through the designation of areas that represent significant populations of listed species within a European context, i.e. Natura 2000 sites. An area designated for bird species is classed as a Special Protection Area (SPA), and an area designated for other protected species and habitats is classed as a Special Area of Conservation (SAC). Birds listed on Annex I of the Birds Directive in SPAs and habitats and species listed on Annexes I and II, respectively, of the Habitats Directive in SACs in which they are designated features have full European protection. Species listed on Annex IV of the Habitats Directive are strictly protected wherever they occur, whether inside or outside the Natura 2000 network. Annex I habitats and Annex II species outside SACs are still considered of national and international importance and the Irish state is obliged to maintain the national resource of all such species and habitats. Under Article 27 (4)(b) of the European Communities (Birds and Natural Habitats) Regulations 2011, public authorities have a duty to strive to avoid the pollution or deterioration of Annex I habitats and habitats integral to the functioning of SPAs.

Under Article 42 (1) of the European Communities (Birds and Natural Habitats) Regulations 2011, a public authority must screen a plan or project for which an application for consent is received to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on a Natura 2000 site. Where the screening process cannot exclude the possibility that a plan or project, could have a significant effect on a Natura 2000 site, there is a requirement under Article 42 (9) of these Regulations for the preparation of a Natura Impact Statement (NIS) to inform the Appropriate Assessment (AA) process. A separate Natura Impact Statement (NIS) for the proposed development was prepared by CAAS Ltd (October 2024) to provide the public authorities with the relevant information necessary to inform the decision-making process, while ensuring full compliance with the relevant EU legislation referenced above.

Sites of national importance for nature conservation are afforded protection under planning policy and the Wildlife Acts. Natural Heritage Areas (NHAs) are sites that are designated under statute for the protection of flora, fauna, habitats and geological interest. In addition, proposed NHAs (pNHAs)

are published sites identified as of similar conservation interest but have not been designated under statute.

The Red List of Threatened Species is an objective methodology to assess the conservation status of different taxonomic groups. Guidelines for regional Red Lists, developed by the International Union for Conservation of Nature and Natural Resources (IUCN), are adopted in Ireland. Red Lists are prepared for the island of Ireland under the guidance of the National Parks and Wildlife Service (NPWS) in the Republic and the Northern Ireland Environment Agency (NIEA) in Northern Ireland and are available for download from the NPWS website (Red Lists). BirdWatch Ireland and the RSPB NI have also produced a list of Birds of Conservation Concern (BoCCI) in Ireland.

Features of ecological significance that occur or are likely to occur within the zone of influence of the proposed development include areas designated for nature conservation, as well as habitats and species protected under the provisions of Council Directive 92/43/EEC (the Habitats Directive), Directive 79/409/EEC (the Birds Directive), the Wildlife Acts, 1976 (as amended), the Flora Protection Order 2022, species subject to restrictions as listed on the Third Schedule of the EC (Birds & Natural Habitats) Regulations 2011 (Invasive Alien Species (IAS)), and any other features deemed to be of ecological importance based on recent declines or rarity.

A feature of ecological significance can be defined as any site, habitat, ecological feature, vegetative assemblage, community, species or individual:

- Occurring within the zone of influence of the proposed development.
- Considered likely to be impacted upon by the proposed development; and,
- Requiring further surveys in order to more accurately predict the nature, magnitude and significance of those impacts.

This EcIA quantifies the potential impacts on features of ecological significance and identifies the mitigation measures required to avoid and reduce any likely significant effects.

1.6 Relevant Legislation, Policy and Context

1.6.1 European Legislation

EU Habitats Directive 92/43/EEC

The EU Habitats Directive sets out the framework for the designation and protection of sites for nature conservation for species and habitats listed in Annex II, IV and V. The directive was adopted in 1992 as a response to the Bern Convention.

"The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance"

The protection of species outlined in the Habitats Directive is transposed into national legislation principally by 'EC (Natural Habitats) Regulations 1997 (amended)'[3].

The Birds Directive 2009/147/EC

European Union members meet their obligations for bird species under the Bern Convention and Bonn Convention, and more generally through the EU Birds Directive.

The Birds Directive sets out the criteria for Special Protection Areas, including a list of species requiring protection in Annex 1 of the Directive, and mechanisms for protecting wild birds naturally occurring in Europe. This Directive is transposed into national legislation principally by the 'EC (Birds and Natural Habitats) Regulations 2011'[4].

The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State.

Bern Convention

The Bern Convention came into force in 1982, with the principal aims of ensuring the conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), increasing cooperation between contracting parties, and regulating the exploitation of those species (including migratory species) listed in Appendix III.

Bonn Convention

The Bonn Convention came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and undertaking cooperative research activities.

1.6.2 National Legislation

[3] Office of the Attorney General (1997), European Communities (Natural Habitats) Regulations 1997 (amended 1998, 2005), available at www.irishstatutebook.ie.

[4] Office of the Attorney General (2011), European Communities (Birds and Natural Habitats) Regulations 2011, available at www.irishstatutebook.ie.

The principal national legislation governing the protection of wildlife and natural resources in Ireland are as follows:

- The Wildlife Act 1976 (amended 2000)[5] - this is the principal legislation for the protection of wildlife in Ireland and outlines strict protection for species that have significant conservation value. The Act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The amendment in 2000 broadens the scope of the Wildlife Acts to include most species, including the majority of fish and aquatic invertebrate species, which were excluded from the 1976 Act.
- EC (Birds and Natural Habitats) Regulations 2011 (amended 2015) - transposes the EU directives into law. It protects species and priority habitats considered to be of European interest.
- Flora Protection Order 2022 - this Order makes it illegal to cut, uproot or damage a listed species in any way. It is illegal to alter, damage, or interfere in any way with their habitats. This protection applies wherever the plants are found.
- The EC (Water Policy) Regulations, 2003 – transposes the Water Framework Directive into national law.
- National Biodiversity Plan (2023 -2030)[6] - sets out actions through which a range of government, civil, and private sectors will undertake to achieve Ireland's 'Vision for Biodiversity' and follows on from the work of the first and second National Biodiversity Action Plans.

1.6.3 Local Planning Policy

Westmeath County Council Development Plan 2021-2027

The County Development Plan is the key strategy document that structures the planning and sustainable development of land-use across County Westmeath.

Chapter 12 of the plan, 'Natural Heritage and Green infrastructure', aims to 'continue to protect and enhance the County's natural heritage and biodiversity and ensure that networks of green infrastructure are identified, created, protected and enhanced to provide a wide range of environmental, social and economic benefits to communities'. It contains a number of key policies to achieve this. They include:

Regional Policy Objective 7.26: Support the development of guidance for assessment of proposed land zonings in order to achieve appropriate riparian setback distances that support the attainment

[5] Office of the Attorney General (1976) Wildlife Act 1976 (amended 2000), available at www.irishstatutebook.ie.
[6] Available at National Biodiversity Action Plan | National Parks & Wildlife Service.

of high ecological status for waterbodies, the conservation of biodiversity and good ecosystem health, and buffer zones from flood plains.

CPO 12.1: Contribute as appropriate towards the protection of designated sites in compliance with relevant EU Directives and applicable national legislation.

CPO 12.2: Support the implementation of any relevant recommendations contained in the National Biodiversity Plan, the All Ireland Pollinator Plan and the National Peatlands Strategy.

CPO 12.3: Support the implementation of the Westmeath Biodiversity Action Plan 2014-2020 and any revisions made thereto.

CPO 12.4: Protect and conserve Special Areas of Conservation, candidate Special Areas of Conservation, Special Protection Areas and candidate Special Protection Areas, designated under the EU Birds and Habitats Directives respectively.

CPO 12.5: Ensure that no plans, programmes, etc. or projects giving rise to significant cumulative, direct, indirect or secondary impacts on European Sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, or decommissioning from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects). Footnote: Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place.

CPO 12.6: Ensure that any plan or project that could have a significant adverse impact (either by themselves or in combination with other plans and projects) upon the conservation objectives of any Natura 2000 Site or would result in the deterioration of any habitat or any species reliant on that habitat will not be permitted. Footnote: Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be a) no alternative solution available, b) imperative reasons of overriding public interest for the project to proceed; and c) Adequate compensatory measures in place.

CPO 12.7: Assess any plan or project in accordance with Article 6 of the Habitats Directive to determine whether the plan or project is likely to have a significant effect on the site either individually or cumulatively upon the integrity, conservation objectives and qualifying interest of any Natura 2000 Site.

CPO 12.8: Require an ecological appraisal for development not directly connected with or necessary to the management of Natura Sites, or a proposed Natura Site and which are likely to have significant effects on that site either individually or cumulatively.

CPO 12.9: Identify and provide appropriate buffer zones between Designated Sites and local biodiversity features and areas zoned for development.

CPO 12.10: Prepare Strategic Habitat Management Plans for Natura 2000 Sites in Council ownership in consultation with the National Parks and Wildlife Service and relevant stakeholders.

CPO 12.11: Promote the maintenance and as appropriate, achievement of favourable conservation status of habitats and species and to improve the ecological coherence of the Natura 2000 network, by maintaining and where appropriate, developing features in the landscape which are of major importance for wild fauna and flora.

CPO 12.12: Require that new development proposals affecting designated sites have regard to the sensitivities identified in the SEA Environmental Report prepared in respect of this plan.

CPO 12.13: Protect, manage and enhance the natural heritage, biodiversity, landscape and environment of County Westmeath, in recognition of its importance as both a non-renewable resource and a natural asset.

CPO 12.14: Require all new developments in the early pre-planning stage of the planning process to identify, protect and enhance ecological features by making provision for local biodiversity (e.g. through provision of swift boxes, bat roost sites, green roofs, etc.) and provide links to the wider Green Infrastructure network as an essential part of the design process.

CPO 12.15: Support the protection of all native woodlands listed in the National Survey of Native Woodlands 2003 to 2008.

CPO 12.16: Apply the precautionary principle in relation to development proposals in areas identified as being of national nature conservation interest, by requiring a Scientific/ Ecological Risk Assessment to ensure that the development will not impact on the integrity and habitat value of the site.

CPO 12.17: Support and cooperate with Statutory Authorities and other relevant bodies in support of measures taken to manage designated nature conservation sites, in order to achieve their conservation objectives. Specific regard shall be had to Conservation Management Plans and their conservation objectives/ management practices, where they exist.

CPO 12.18: Consult with the National Parks and Wildlife Service (NPWS) in regard to any developments (those requiring permission and those not requiring planning permission) which the Council proposes to carry out within pNHAs, NHAs, SACs, SPAs, and other important ecological sites.

CPO 12.19: Maintain the conservation value of Council owned land within NHAs and pNHAs and promote the conservation value of Council owned lands adjoining NHAs.

CPO 12.20: Protect and conserve NHAs and pNHAs including NHAs that become designated and notified to the Local Authority during the lifetime of the Plan and seek to develop linkages between designated sites, where feasible and as resources permit.

CPO 12.21: Lighting fixtures should provide only the amount of light necessary for personal safety and should be designed so as to avoid creating glare or emitting light above a horizontal plane. Lighting

fixtures should have minimum environmental impact and Dark Sky lighting should be considered in the interest of reducing the impact of lighting on wildlife as part of any future planning application, thereby contributing towards the protection of amenity and the protection of light sensitive species such as bats. EUROBATS guidelines should be applied in informing proposed development(s), where relevant.

CPO 12.22: Require, in special circumstances where protected species/habitats are identified in association with a development proposal, that an 'Ecological Impact Assessment (EcIA)' prepared by a suitably qualified and indemnified person be undertaken for a proposed development which may potentially have a significant impact on rare and threatened species.

CPO 12.23: Seek to create and enhance ecological linkages and buffer zones from development.

CPO 12.24: Protect and where possible enhance biodiversity and ecological connectivity, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, geological and geo-morphological systems, other landscape features, natural lighting conditions, and associated wildlife where these form part of the ecological network and/or may be considered as ecological corridors or stepping stones in the context of Article 10 of the Habitats Directive. Appropriate mitigation and/or compensation to conserve biodiversity, landscape character and green infrastructure networks will be required where habitats are at risk or lost as part of a development.

CPO 12.25: Recognise that nature conservation is not just confined to designated sites and acknowledge the need to protect non-designated habitats and landscapes and to conserve the biological diversity.

CPO 12.26: Investigate a protocol in relation to the application of an ecosystem services scoring approach to inform the assessment of planning applications.

CPO 12.27: Prevent the spread of invasive species within the plan area, including requiring landowners and developers to adhere to best practice guidance in relation to the control of invasive species.

CPO 12.28: Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicant will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).

CPO 12.29: Support, as appropriate, the National Parks and Wildlife Service's efforts to seek to control and manage the spread of non-native invasive species on land and water. Where the presence of non-native invasive species is identified at the site of any proposed development or where the proposed

activity has an elevated risk of resulting in the presence of these species, details of how these species will be managed and controlled will be required.

Westmeath Biodiversity Action Plan 2014-2024 and 2024-2030 (in progress)

As outlined in policy **CPO 12.2 and 12.3 2** of the county development plan, the objectives of the Westmeath Biodiversity Action Plan must be implemented.

The Westmeath Biodiversity Action Plan aims to implement the actions set out in the National Biodiversity Action Plan 2023 – 2030 and the EU Biodiversity Strategy for 2030. Policies are proposed within the plan to meet the following objectives of the National Biodiversity Action Plan:

- Objective 1 - Adopt a Whole of Government, Whole of Society Approach to Biodiversity
- Objective 2 - Meet Urgent Conservation and Restoration Needs
- Objective 3 - Secure Nature's Contribution to People
- Objective 4 - Enhance the Evidence Base for Action on Biodiversity
- Objective 5 - Strengthen Ireland's Contribution to International Biodiversity Initiatives

In summary, the species and habitats afforded National and International protection under the relevant legislative and policy documents have been considered in this report.

Section 2: METHODOLOGY

This EcIA was conducted through a combination of detailed desktop reviews and baseline field assessments which are described below in the following sections.

An NIS has been prepared for the proposed development by CAAS Ltd (October 2024) to determine the potential for effects on European sites (i.e., Natura 2000 sites which are comprised of SACs and SPAs). Screening for Appropriate Assessment concluded that, in the absence of mitigation, the proposed development could potentially lead to adverse impacts on the relevant Natura 2000 site(s). Therefore, a Stage 2 Appropriate Assessment was required. The NIS concludes that, subject to specified mitigation measures being implemented, there will be no significant effects on the integrity of any Natura 2000 site(s) within the proposed development's likely Zone of Influence (ZoI).

2.1 Assessment Guidance Methodology

This EcIA has been prepared with regard to the following legislation, policy documents and guidelines where applicable:

- CIEEM (2017) Guidelines for Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.
- DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage, and Local Government.
- European Communities (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.
- EC (2021) Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Revised Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.
- EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.
- EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC - Clarification of the concepts of alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission.

- EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.
- EPA (2017) Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency.
- EPA (2003) Advice Notes on current practice in the preparation of Environmental Impact Statements. Environmental Protection Agency.
- Fossitt, J., (2000). A Guide to Habitats in Ireland. The Heritage Council, Kilkenny.
- National Parks and Wildlife Service (NPWS) (2019) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
- NRA (2009) Guidelines for the Assessment of Ecological Impacts of National Road Schemes Rev. 2. National Roads Authority.
- NRA (2009) Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes. National Roads Authority.

Studies were carried out in accordance with the following legislation:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive (79/409/EEC as amended (Birds Directive)) transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011.
- European Communities (Environmental Impact Assessment) Regulations, 1989 to 2006 and subsequent Amendments. Available at: https://www.irishstatutebook.ie.
- European Communities (Environmental Liability) Regulations, 2008 (S.I. No. 547/2008) and subsequent Amendments.
- European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293/1988).
- Flora Protection Order, (2022) (S.I. No. 235/2022).
- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722/2003).
- Water Framework Directive (2000/60/EC).
- Planning and Development Act, 2000 (as amended).
- Wildlife Act 1976 (as amended).

2.2 Desk Study

A desk study was undertaken to review all available published data on European and Nationally designated sites for nature conservation, other ecologically sensitive sites, and habitats and species

of interest within the likely ZoI. Published data describing ecological conditions were then cross-referenced with publicly available maps and aerial orthophotography from Ordnance Survey Ireland (OSI), the NPWS, and the EPA to identify important ecological features. The baseline information obtained from the desk study was the first stage in defining the potential zone of influence of the proposed development.

Sources of information used to inform the assessment are as follows:

- Identification of Natura 2000 sites within the likely ZoI of the proposed development area through the identification of potential pathways/links from the development area and Natura 2000 sites and/or supporting habitats.
- Data on Natura 2000 sites, NHAs, and pNHAs held by the NPWS. Available at https://www.npws.ie/protected-sites and https://www.npws.ie/maps-and-data.
- Review of the NPWS site synopsis, Natura 2000 data forms, and Conservation Objectives for Natura 2000 sites identified through potential pathways from the proposed development site.
- Records of rare and protected species for the 10km and/or 2km grid square(s), held by the NBDC. These records are available at http://www.biodiversityireland.ie or through the NPWS.
- Data on water bodies, including information on rivers, lakes, groundwater, and water quality, from the EPA web map service. Available at https://gis.epa.ie.
- Spatial information relevant to the planning process, including land zoning and planning applications from the Department of Housing, Local Government and Heritage (DHLGH) web map portal. Available at https://myplan.ie.
- OSI mapping and aerial photography, sourced from the National Geospatial Data Hub. Available at https://www.geohive.ie.
- Details on the location, design, and nature of the proposed development were provided by the applicant.
- Images from Google Earth Pro were analysed using the “Show historical imagery” function, allowing for the review of satellite images of the subject site over various time periods. This facilitated a visual comparison of land use changes over time.
- Westmeath County Development Plan 2021-2027. Available at: https://www.westmeathcoco.ie
- Other relevant datasets were consulted, as appropriate. These include:
    - Information on Irish wetland sites from the online database produced by Wetland Surveys Ireland and Foss Environmental Consulting. Available at https://wetland.maps.arcgis.com.

- Online information regarding catchments. Available at https://catchments.ie.
- Irish Wetland Bird Survey (I-WeBS) data from Bird Watch Ireland (BWI). Available at https://birdwatchireland.ie.
- Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013).
- Birds of Conservation Concern in Ireland (BoCCI) 2020-2026 & 2014-2019 (Gilbert, Stanbury & Lewis, 2021; Colhoun & Cummins, 2013).
- Bat Conservation Ireland (BCI). Available at https://www.batconservationireland.

2.3 Field Surveys

A baseline field survey was undertaken on 22nd May 2025 during suitable weather conditions and with reference to standard ecology survey methodologies. These included adhering to *Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes* (NRA, 2009b) and *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al.*, 2011) to gather information regarding habitat composition, species presence, and ecological conditions.

The following surveys were conducted at the proposed development site:

- Habitats were identified and mapped within the proposed development site.
- The proposed development site was systematically surveyed for the presence of invasive alien species (IAS), with particular focus on those listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).
- A general assessment for mammals was undertaken to investigate habitat suitability and the presence of signs such as dwellings, prints, droppings and feeding signs.
- A general assessment for bats was undertaken to identify potential roost spots and optimum foraging routes.
- All birds seen and heard during the site visit were recorded and the suitability of the site was accessed.
- A general assessment for reptiles and amphibians was conducted during the habitat survey, recording any incidental observations or suitable habitat features.

Habitats and species were identified using the following methodologies and identification keys:

Habitat identification follows:

- Fossitt, J. A. 2000. A Guide to Habitats in Ireland. The Heritage Council, Kilkenny.

Plant species identification follows:

- Webb, D. A., Parnell, J. and Doogue, D.1996. An Irish Flora. Dundalgan Press, Dundalk.
- Hubbard, C. E. 1992. Grasses: A Guide to their Structure, Identification, Uses and Distribution in the British Isles. Penguin Books, Middlesex.
- Smith, A. J. E. 2004. The Moss Flora of Britain & Ireland. 2nd Ed. Cambridge.
- Jermy, A. C., Chater, A. O. & R. W. David. 1982. Sedges of the British Isles: BSBI Handbook No. 1. BSBI, London.
- Flora Protection Order 2022, S.I. No. 235 of 2022.

Nomenclature follows:

- Stace, C. 2010. New Flora of the British Isles. Cambridge University Press.

Invasive species:

Invasive alien plant species listed on the Third Schedule of the EC (Birds & Natural Habitats) Regulations 2011 were also surveyed for using:

- Stokes, K., O'Neill, K. & McDonald, R.A. (2004) Invasive species in Ireland. Unpublished report to Environment & Heritage Service and National Parks & Wildlife Service. Quercus, Queens University Belfast, Belfast.
- Torsney, A, Cole E, Finch D, O'Brien M, O'Flynn C, Reidy D and Smith N (2023) Identification Guide to Irelands Regulated Invasive Alien Plant Species, National Biodiversity Data Centre.

Mammals:

- Hayden, T. Harrington, R. 2000. Exploring Irish Mammals. Town House & Country House Ltd. Dublin.

Avifauna:

- Cleave, A. 1995. Birds of Britain & Europe. Chancellor Press, Hong Kong.

Habitats and species occurring within and adjacent to the footprint of the proposed development were evaluated in terms of their ecological significance, based on their occurrence on lists for protection (EU Habitats Directive; EU Birds Directive; Wildlife Act) or lists of rarity or concern, in particular the Irish Red lists (Byrne *et al*., 2009, Kelly-Quinn and Regan, 2012, King *et al*., 2011, Marnell *et al*., 2019, Nelson *et al*., 2011, Regan *et al*., 2010) and the Birds of Conservation Concern in Ireland (BoCCI) red or amber lists.

2.3.1 Flora and Habitats

Prior to the field surveys, a desktop review of available botanical data for the study area was undertaken. The NBDC, Botanical Society of Britain and Ireland (BSBI) online databases[7], NPWS Flora (Protection) Order 2022 Map Viewer[8] and FPO Bryophytes viewer[9] were consulted to identify any rare or protected botanical species within the relevant 10km^2 and/or 2km^2 grid squares surrounding the proposed development site. The site habitats and flora assessment were carried out with regard to best practice guidance (Smith *et al*., 2011).

An ecological field survey was undertaken on 22nd May 2025. The survey was conducted during the optimum period for habitat and botanical assessments (i.e., April to September). The survey included a walkover of the proposed development site, during which habitats were classified to Level 3 using the methodology outlined in *A Guide to Habitats in Ireland* (Fossitt, 2000). The extent of each habitat was mapped, accompanied by observations on species present and descriptions of their relative abundance.

An evaluation of the habitats recorded within and adjoining the proposed development site, in terms of their ecological value, was undertaken using the ecological valuation scheme (NRA, 2009a). Habitats were assessed for field signs and/or usage by fauna, such as tracks, scat, spraint and droppings, as well as for places of shelter and features or areas likely to be of particular value as foraging resources.

The site was also searched for evidence of Annex I habitats and Annex II species listed on the EU Habitats Directive (92/43/EEC). The conservation status of habitats and botanical species within the proposed development site was also considered. This conservation status within Ireland and Europe is indicated by inclusion in one or more of the following: Irish Red Data Book for Vascular Plants (Wyse Jackson *et al*., 2016), Flora (Protection) Order 2022, and the EU Habitats Directive (92/43/EEC).

The botanical survey was conducted in-parallel with the habitats survey, during which botanical species were identified and recorded according to the dominant habitat type. Any other records of interest (e.g. invasive plant species or veteran trees) were also noted on field maps, with their locations recorded as applicable. Any invasive species listed on the Third Schedule of the Birds and Natural Habitats Regulations 2011 (as amended) were also recorded.

2.3.2 Mammals (non-volant)

An initial desktop review of available data on non-volant mammal species (i.e., land-based mammals that cannot fly) for the proposed development site was conducted by consulting online databases to identify species of conservation interest (e.g. rare or protected species). For the study, a review of the 10km (N04) national grid square from the NBDC online database was completed.

[7] BSBI Mapping the flora of Britain and Ireland. Available at: https://bsbi.org/maps-and-data.
[8] NPWS Flora (Protection) Order 2022 Map Viewer. Available at: https://heritagedata.maps.arcgis.com.
[9] FPO Bryophytes viewer. Available at: https://dahg.maps.arcgis.com.

Field surveys were undertaken to collect detailed information on the distribution and activity of non-volant mammals within and around the proposed development site, to predict the potential effects of the proposed development on these species. Surveys for non-volant mammals targeted protected species under the Wildlife Acts, Annex II, Annex IV and Annex V of the EU Habitats Directive, as well as Irish Red Listed species (Marnell *et al.,* 2019).

Field surveys were undertaken in accordance with the following guidance:

- Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes. National Roads Authority (2006a).
- Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes. National Roads Authority (2008a).
- NRA (2009): Guidelines Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes.
- Bang & Dahlstrom 2004: Animal tracks and signs.

An ecological field survey was undertaken on 22nd May 2025 between 12-15:00 by Amy Haigh of Veon Ecology. The weather was sunny with no cloud cover, a wind force of 1 and a temperature of 18 ^{o}C.

The field component of the assessment involved a walkover of the proposed development site, during which direct and/or indirect observations (e.g. breeding sites, droppings, prints) were recorded in accordance with standard guidelines.

The presence/absence of terrestrial fauna species was determined through the detection of field signs such as tracks, markings, feeding signs, and droppings, as well as direct observations. The habitats within the proposed development site were assessed for signs of usage by protected/red-listed fauna species, as well as their potential to support these species. The survey area and its immediate surroundings were checked for the presence of badger setts, otter holts and other mammal signs where applicable. The survey included a search for all mammal signs, such as spraints, scat, prints, slides, trails, couches, holts, setts, latrines, snuffle holes, etc. Particular attention was given to streams, drainage channels and field network boundaries adjoining the survey area.

During the site walkover(s), any badger setts and associated signs were recorded. The suitability of the habitats for other protected mammals, such as pygmy shrew, hedgehog, Irish stoat, pine marten and red squirrel, was also assessed. Additionally, available records on the distribution of these species were reviewed. Evidence of the presence of these and other protected mammal species was checked based on the signs and ecological information outlined by Marnell *et al*., (2019) *Ireland Red List No.*

12: Terrestrial Mammals, Lysaght and Marnell (2016) *Atlas of Mammals in Ireland 2010-2015*, and Lawrence and Browne (1974) *Mammals of Britain. Their tracks, trails and signs*.

2.3.3 Bats

A desktop review was conducted to gather available data on bat occurrences in proximity to the study site by consulting online databases. Records of bats previously observed within the national grid squares overlapping the study site were collated. The NBDC online database also provides the Model of Bat Landscapes for Ireland, which assesses the relative importance of landscape and habitat associations for bat species across Ireland (Lundy *et al*., 2011). This model also evaluates the landscape resource value for bats within the corresponding national grid square(s) overlapping the study site. Additionally, aerial photographs of the proposed development site were reviewed to identify existing habitats, buildings, and structures that may be favourable for bat use within the proposed development site.

A daytime bat survey was carried out within the proposed development site in conjunction with the site walkover to evaluate potential bat foraging habitats, potential bat commuting routes and potential bat roosting habitats. During this survey, semi-mature/maturing trees as well as structures/buildings located within/adjoining the footprint of the proposed development site were investigated for evidence of the presence/absence of active and/or historic bat roosts. Potential bat corridors in the study area were also assessed.

Habitats and linear features of potential value to bats, such as hedgerows and treelines, within the study area were described in terms of plant species composition, overall condition and structure, and their connectivity within the wider landscape, to evaluate their potential suitability for foraging and commuting bats. Bat habitats and commuting routes identified were considered in relation to the wider landscape to determine landscape connectivity for local bat populations through the examination of aerial photographs. All areas were surveyed on foot, mainly along grasslands, hedgerows/treelines, built land and river corridor. A preliminary roost assessment (PRA) was undertaken at the proposed development site and included a detailed inspection of the exterior and interior of any buildings/structures and semi-mature/maturing trees located within/adjoining the footprint of the proposed development site for any potential roosting features (PRFs), entry/exit to roosting sites, and for evidence of the presence/absence of active and/or historic bat roosts.

Evidence of roosting bats includes droppings, urine stains, staining from fur-oils, scratch marks, wear marks, feeding remains, dead bats, odour, squeaking and chattering, and, in some cases, the absence of cobwebs on access points or roost features. Bat droppings can prove beyond doubt that bats have

used a building and can help to identify roosting locations, as droppings often accumulate beneath ingress/egress points to roosting sites.

Trees that may provide roosting spaces for bats are classified using the Bat Tree Habitat Key (BTHK, 2023)[10] and the classification system from Collins (2023), (**Table 2.1)**. The potential roost features (PRFs) listed in these guides are used to determine the potential bat roost (PBR) value of the tree(s). PRFs that may be used by bats include: rot holes, hollows, or cavities, horizontal or vertical cracks or splits (e.g., frost cracks) in stems or branches, lifting bark, knotholes from naturally shed branches, gaps between overlapping stems or branches, and partially detached ivy with stem diameters exceeding c. 50mm.

Table 2.1: Tree Bat Roost Category Classification System (adapted from Collins, 2023).

Tree Bat Roost Classification System:	
Tree Category	Description
1 (High)	Trees with multiple, highly suitable features (PRFs) capable of supporting larger roosts.
2 (Moderate)	Trees with definite bat potential but supporting features (PRFs) suitable for use by individual bats.
3 (Low)	Trees have no obvious potential although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features (PRFs) which may have limited potential to support bats.
4 (Negligible)	Trees have no potential.

The relevant buildings/structures and trees on-site were assessed according to the following factors that influence the likelihood of bats roosting:

- Surrounding habitat: whether there are potential flight-lines and foraging areas for bats nearby.
- Structure condition: whether disrepair has provided potential bat-access points.
- Potential bat-access points: whether there is flight and crawl access.
- Potential roosting locations: whether there is bat-accessible voids, cracks, and crevices.

The relevant buildings/structures and trees were then inspected for evidence of bats. Visual, systematic examinations were made for evidence of bats, both internally and externally, as appropriate, of the following:

- The structure(s).
- Cracks, crevices, hollows or cavities, and sheltered voids.
- External structural features such as bricks and blocks, horizontal or vertical cracks or splits and lifting bark.

[10] BTHK (2023) Bat Roosts in Trees – A Guide to Identification and Assessment for Tree-Care and Ecology Professionals.

- Searching for bat droppings, urine stains and feeding signs on the floor.

It should be noted that in many situations it may not be feasible to inspect all possible locations where bats could be present. Therefore, in such cases, the absence of bat evidence does not necessarily indicate the absence of bats themselves. Furthermore, it should be noted that while every effort has been made to describe the features onsite in the context of their suitability for roosting bats, this does not provide a complete characterisation of the overall site.

The bat surveys undertaken at the proposed development were completed in accordance with the following guidelines:

- Collins, J. (ed.) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th ed.). The Bat Conservation Trust, London; and
- Marnell, F., Kelleher, C. & Mullen, E. (2022). Bat mitigation guidelines for Ireland v2. *Irish Wildlife Manuals*, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.
- National Roads Authority (2006) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes. National Roads Authority, Dublin.
- National Roads Authority (2005) Guidelines for the Treatment of Bats during the Construction of National Roads Schemes. National Roads Authority, Dublin.
- McAney, K. (2006) A conservation plan for Irish vesper bats, Irish Wildlife Manual No. 20 National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

2.3.4 Birds

An initial desktop review of available data for bird species was completed by consulting relevant online databases to identify species of conservation interest (e.g. rare or protected species), that have been previously recorded in the national grid square(s) overlapping the proposed development.

Available ornithological information and data were reviewed, including:

- OSI aerial photography and mapping, along with other sources of online aerial imagery.
- Review of online web-mappers: NPWS and NBDC.
- Review of Bird Atlas (Balmer *et al.,* 2013).
- Review of BoCCI 2020-2026 (Gilbert *et al.,* 2021).
- Review of BirdWatch Ireland I-WeBS site information.

- General ornithological information available from BirdWatch Ireland (https://birdwatchireland.ie).

The presence of avifauna on site were recorded during the site walkover survey in May 2025, in addition to the site's suitability to support breeding and over-wintering avifauna. The proposed development site was surveyed with all birds seen or heard recorded. Numbers of key species observed were noted, particularly in the case of species of high conservation value. For the BoCCI list, Red-listed species are species considered of high conservation concern in Ireland, Amber-listed species are considered of medium conservation concern, while Green-listed species are not of elevated conservation concern in Ireland at present. Bird species listed on Annex I of the EU Birds Directive are considered of high conservation concern across Europe.

The objectives of the bird survey were to:

- Record any priority species (Annex I, Red, or Amber listed) and assess their status within the proposed development site.
- Identify any areas of habitat with particular significance for avian biodiversity.

2.3.5 Other Taxa

An initial review of available data for other taxa (e.g. amphibians, reptiles, and invertebrates) was conducted by consulting online databases to identify other species of conservation interest (e.g. rare or protected species) previously recorded within the national grid square(s) overlapping the study site. Other taxa encountered during the walkover survey conducted in May 2025 were also recorded. The habitat requirements of the common frog (*Rana temporaria*), as described by Savage (1962), were considered, and frogspawn was checked during field surveys where appropriate. Butterflies were identified by sight, and the habitat requirements of Red Listed invertebrates, as described by Byrne *et al*., (2009), Nelson *et al*., (2011), and Regan *et al*., (2010), were also assessed.

A general reptiles and amphibians suitability assessment was conducted as part of the walkover survey in May 2025. The lands were visually assessed for their suitability for reptiles and amphibians. The common lizard (*Zootoca vivipara*), Ireland's only native reptile species, requires a range of basking, foraging, and sheltering areas and can be found in a variety of habitats[11]. Ireland's amphibians are typically associated with wetlands and pond edges, but also forage in terrestrial habitats (King *et al.,* 2011).

[11] The Herpetological Society of Ireland - Common Lizard. Available online at https://thehsi.org.

The conservation status of other taxa recorded during the field surveys was assessed with reference to the following: the Irish Wildlife Acts 1976 (as amended), the EU Habitats Directive (92/43/EEC), the Irish Red List for Butterflies (Regan *et al*., 2010), the Irish Red List for Damselflies & Dragonflies (Nelson *et al*., 2011), the Irish Red List for Amphibians, Reptiles & Freshwater Fish (King *et al*., 2011), and the Regional Red List of Irish Bees (Fitzpatrick *et al*., 2006).

2.3.6 Survey Constraints and Limitations

No significant survey constraints were encountered while undertaking the above surveys. The walkover survey was conducted during the optimal survey period and under suitable weather conditions.

2.3.7 Zone of Influence

The ZoI refers to the area where ecological features could be subject to significant effects as a result of the proposed development and its associated activities. This zone is likely to extend beyond the proposed development site boundaries where ecological or hydrological connections to the wider landscape exist. The study area is defined by the likely ZoI of the proposed development in relation to the ecological receptors that could potentially be significantly affected. The ZoI will vary for different ecological features, depending on their sensitivity to environmental changes (CIEEM, 2018).

The likely ZoI, or buffer distance within which potentially significant effects may occur, will differ depending on the potential impact pathway(s) and the sensitivity of the ecological receptors. There is no fixed or arbitrary distance for the ZoI of a project. The subject site and a distance of 15km is recommended as a potential zone of influence (Scott Wilson *et al*., 2006)[12]. However, National Parks and Wildlife Service guidance[13] advises that the zone of influence be assessed on a case-by-case basis, with consideration of the nature, size, and location of the project, the sensitivities of the ecological receptors, and the potential for cumulative effects. Criteria for determining the ZoI include:

- The nature, size, and location of the project.
- Identification of potential effect pathways to key ecological receptors.
- The sensitivities of the relevant key ecological receptors.
- Identification of suitable habitats for high conservation value species.
- Ecological connectivity between the project and the wider landscape.
- The potential for cumulative effects.

[12] DoEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government. Dublin.

[13] Scott Wilson and Levett-Therivel, (2006). Appropriate Assessment of plans. Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants.

Based on the guidance outlined by the NRA (2009a), the proposed development has been evaluated based on an identified likely ZoI with regard to the potential impact pathways to ecological features (habitats, flora, and fauna). Determining the project's likely ZoI involved assessing all elements of the proposed development against the ecological features within the project footprint, as well as any ecological receptors that could be connected to and subsequently impacted by the proposed development through relevant impact pathways.

Using the source-pathway-receptor (S-P-R) model, an examination of the potential effects of the proposed development (both alone and in-combination with other plans and projects) was undertaken to identify which Natura 2000 sites and their qualifying features were potentially at risk. This examination was used to determine the likely ZoI for the proposed development. It is essential that an assessment of potential pathways be conducted to evaluate potential impact links between the receptor (e.g. Natura 2000 sites) and source (proposed development) to establish the risk of any likely significant effects. Additional designated sites, including NHAs and pNHAs, were also reviewed.

The likely ZoI for habitat loss impacts will be confined to the proposed development boundary. Regarding potential habitat degradation effects associated with the release of sediment and other pollutants to surface water, the ZoI is considered to include receiving water bodies adjacent to or downstream of the proposed development site. The distance downstream is linked to the current biological condition of the receiving water body and its capacity to accept and assimilate sediment and other pollutants. This distance also depends on the sensitivity of the ecological receptors that are hydrologically connected to the proposed development site. The ZoI during the construction, operation, and decommissioning phases, as appropriate, is taken as being the site of the proposed development and downstream aquatic habitats. Potential water quality impacts are primarily associated with the release of sediment and other pollutants during the construction phase. Since site-specific conditions determine the potential for pollutant generation, downstream transport, and any resultant effects, there is no fixed distance applied for the downstream ZoI. While the aquatic zone of potentially highest impact includes receiving waterbodies adjacent to and downstream of the site, extending up to c. 5km, the potential impacts on protected habitats and species throughout the entire downstream sections of any adjoining watercourses were also considered.

The proposed works during the construction phase are anticipated to generate relatively low levels of noise, and only during permitted construction hours. In general, machinery will be designed to ensure that the maximum noise level 10m outside the proposed development site boundary does not exceed an equivalent continuous sound level beyond what is recommended in the BSI British Standards (BS5228-1:2009+A1:2014). For general disturbance effects, the potential ZoI is considered to be in the local vicinity (within c. 300m) of the proposed development site during the construction phase. This

distance is based on typical construction noise and disturbance criteria, including guidance from BS5228 and established industry standards for assessing the extent of disturbance from construction activities. For mammal species, disturbance effects are not expected to extend beyond 250m[14]. For birds, disturbance effects are not expected to extend beyond a distance of c. 300m[15], as noise levels associated with general construction activities would attenuate to near background levels at that distance.

Given the temporary nature and scale of the works, it is unlikely that the proposed construction activities within this 300m zone will affect the use of potential ex-situ sites by bird species listed as SCIs of the relevant Natura 2000 sites.

The ZoI for likely significant effects on most breeding bird species is generally confined to habitat loss within the development footprint, as well as disturbance and displacement during construction works. Noise during operation may also disrupt territorial singing but is unlikely to result in significant displacement.

During the operational phase, noise levels are expected to be lower than during the construction phase, with any operational noise sources confined to normal operational activities. Given the nature of the proposed development, operational noise is not anticipated to significantly disturb local wildlife, which is likely habituated to the surrounding area including residential, agricultural, and industrial/commercial uses.

The unmitigated ZoI for air quality effects is generally confined to the immediate vicinity of the proposed development site, extending up to c. 50m from the proposed development site boundary under normal environmental conditions, and potentially reaching up to c. 250m during the construction phase in accordance with the Institute of Air Quality Management (IAQM) (2014)[16] *Guidance on the assessment of dust from demolition and construction*.

Where the proposed development is unlikely to impact qualifying Annex II species of the EU Habitats Directive or Annex I species of the EU Birds Directive of a Natura 2000 site, or where the terrestrial qualifying habitats of these sites are sufficiently distanced (i.e., adequately buffered) from the proposed development site, these Natura 2000 sites are not considered to fall within the likely ZoI of the proposed development.

[14] This aligns with Transport Infrastructure Ireland (TII) guidance (Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes and Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes) documents. This is a precautionary distance, and likely to be moderated by the screening effect provided by surrounding vegetation and buildings, with the actual ZoI of construction related disturbance likely to be much less in reality.

[15] Current understanding of construction related noise disturbance to wintering waterbirds is based on research by Cutts *et al.,* (2009) and Wright *et al.,* (2010). Noise levels below 50dB are not expected to result in any response from foraging or roosting birds. Noise levels between 50dB and 70dB may cause a moderate effect/level of response from birds, i.e. birds becoming alert and some behavioural changes (e.g. reduced feeding activity), though birds would be expected to habituate to noise levels within this range. Noise levels above 70dB would likely result in birds moving out of the affected zone or leave the site altogether. At c. 300m, typical construction noise levels (BS 5228) are generally below 60dB or, in most cases, are approaching the 50dB threshold.

[16] Institute of Air Quality Management (IAQM), Guidance on the assessment of dust from demolition and construction, 2014.

Given the location, nature, and scale of the proposed development, the ZoI is considered likely to be limited to the immediate vicinity of the project (≤300m). Taking this specific case into account (i.e. the proposed residential development, along with associated site works and services), and in accordance with the requirements for a comprehensive and precautionary assessment, potential direct and indirect impacts on the relevant Natura 2000 sites have been considered within a likely ZoI of 15km to screen all likely significant effects that might impact these Natura 2000 sites. The establishment of the likely ZoI is in line with EC (2021)[17].

2.3.8 Ecological Evaluation Criteria

Ecological receptors within the proposed development's likely ZoI were evaluated using criteria from the NRA guidelines (2009a), which assign value based on geographic importance. The ecological value of each feature was assessed using a geographic reference framework (**Table 2.2**) and informed by professional judgement, considering guidance, historical data, and the feature's distribution and status. The assessment also applied the S-P-R model.

[17] EC (2021) Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Revised Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission.

Table 2.2: Site Evaluation Scheme (based on NRA, 2009a).

Ecological Value	Qualifying Criteria
International Importance:	• 'European Sites' including Special Area of Conservation (SAC), & Special Protection Areas (SPA). • Sites that satisfy the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. • Sites containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: – Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or – Species of animals and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Sites (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Sites (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Major salmon river fisheries. • Major salmonid (salmon, trout or char) lake fisheries.
National Importance:	• Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Parks. • Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA); Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Act; and/or a National Park. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: – Species protected under Wildlife Acts; and/or – Species listed on the relevant Red Data list. • Sites containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive. • Major trout river fisheries. • Water bodies with major amenity fishery value. • Commercially important coarse fisheries.
County Importance:	• Area of Special Amenity. • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level)10 of the following: – Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; – Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; – Species protected under the Wildlife Acts; and/or – Species listed on the relevant Red Data list. • Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. • County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value):	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared. • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: – Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; – Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; – Species protected under the Wildlife Acts; and/or – Species listed on the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value. • Any water body with unpolluted water (Q-value rating 4-5).
Local Importance (lower value):	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. • Sites or features containing non-native species that are of some importance in maintaining habitat links. • Water bodies with no current fisheries value and no significant potential fisheries value.

2.3.9 Impact Assessment Criteria

After determining the value of the ecological receptors (features and resources), the potential effects or impacts of the proposed development on the key features of ecological significance were assessed. When describing ecological impacts and effects, reference is made to the following characteristics as required: positive or negative, extent, magnitude, duration, frequency and timing, and reversibility. The cumulative impact of the proposed development is also assessed. The ecological significance of the effects of the proposed development is determined following the precautionary principle and in accordance with the guidelines produced by the CIEEM (CIEEM 2018).

For the purpose of EcIA, a 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site), broad (e.g. national/local nature conservation policy), or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales, from international to local (CIEEM, 2018). The EPA *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2022) and the *Guidelines for Assessment of Ecological Impacts of National Roads Schemes* (NRA, 2009a) were also considered when determining significance. The terminology used in the determination of significance follows the suggested language set out in the EPA Guidelines (2022), as shown in **Table 2.3** below.

Table 2.3: Criteria for Assessment of Effects, based on (EPA, 2022) guidelines.

Quality of Effects	Definition
Positive Effect	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral Effect	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/Adverse Effect	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance of Effects	**Definition**
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound Effects	An effect which obliterates sensitive characteristics.
Probability of Effects	**Definition**
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency of Effects	**Definition**
Momentary Effects	Effects lasting from seconds to minutes.
Brief Effects	Effects lasting less than a day.
Temporary Effects	Effects lasting less than a year.
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years
Long-term Effects	Effects lasting fifteen to sixty years.
Permanent Effects	Effects lasting over sixty years.
Reversible Effects	Effects that can be undone, for example through remediation or restoration.
Frequency of Effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually).

The methodology for the assessment of impacts is derived from the *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018). Potential changes and impacts on ecosystem and receptor structure and function make reference to the parameters discussed below in **Table 2.4**.

Table 2.4: Characteristics used in Describing Impacts on Ecosystem Structure and Function.

Characteristics	Definition of Impact Characteristics[18]
Positive or negative	Positive and negative impacts/effects should be determined according to whether the change is in accordance with nature conservation objectives and policy: Positive impact - a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. Positive impacts may also include halting or slowing an existing decline in the quality of the environment. Negative impact - a change which reduces the quality of the environment e.g. destruction of habitat, removal of species foraging habitat, habitat fragmentation, pollution.
Extent	The extent is the spatial or geographical area over which the impact/effect may occur.
Magnitude	Magnitude refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
Duration	Duration should be defined in relation to ecological characteristics (such as a species' lifecycle) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species. The duration of an activity may differ from the duration of the resulting effect caused by the activity. For example, if short-term construction activities cause disturbance to birds during their breeding period, there may be long-term implications from failure to reproduce that season. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years.
Frequency and timing	The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock- on effects on their ability to survive. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.
Reversibility	An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible effects. For example, placement of a temporary access through ancient wood could cause the loss of food and shelter for common woodland birds that may be reversible, but the compaction of fragile woodland soils and damage to ancient woodland ground flora along the access route is effectively irreversible.

[18] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester. Available at: https://cieem.net.

Characteristics	Definition of Impact Characteristics[18]
Cumulative impacts and effects	Cumulative effects are particularly important in EcIA as ecological features may be already exposed to background levels of threat or pressure and may be close to critical thresholds where further impact could cause irreversible decline. Cumulative effects can also make habitats and species more vulnerable or sensitive to change Different types of actions can cause cumulative impacts and effects: Additive/incremental - multiple activities/projects (each with potentially insignificant effects) added together to give rise to a significant effect due to their proximity in time and space. The effect may be additive (1+1 = 2) or synergistic (1+1 = 3). Associated/connected - a development activity enables another development activity e.g. phased development as part of separate planning applications. Associated developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the project as a whole and not ignore impacts that fall under a separate consent process.
Residual Impacts	After assessing the impacts of the proposal, all attempts should be made to avoid and mitigate ecological impacts. Once measures to avoid and mitigate ecological impacts have been finalised, assessment of the residual impacts should be undertaken to determine the significance of their effects on ecological features.

Section 3: EXISTING ENVIRONMENT

3.1 Baseline Ecology

The study area has been mapped in detail following field surveys and cross referenced with *A Guide to Habitats in Ireland* (Fossitt, 2000). The findings of the habitat surveys are outlined below, while habitat mapping and photographs showing the extent of habitats within the proposed development site are presented in **Appendix 1, Figure 9.1, Appendix 2.**

3.2 Terrestrial Ecology

A site walkover was undertaken at the proposed development site on 22nd May 2025. The aim of the investigation was to evaluate the proposed development site's conservation status, habitat types, and general composition, as well as to identify any Annex I habitats, Annex species or protected / notable species. It also considered the potential absence or difficulty in observing some Annex species during the surveys. Where suitable habitat was identified, the precautionary principle was applied to assume the potential presence of these species on-site. Additionally, Annex I habitats may be characterised by indicator species, which might not always be present during survey periods.

The proposed development site was categorised into distinct habitat types, and observations of species and surrounding land uses were recorded. Supplementary information from the NBDC was reviewed and incorporated throughout the report, where applicable (**Further Appendices**).

3.2.1 Habitats and Flora

The proposed development site consists of a mixture of dry meadow and grassy verge (GS2), wet grassland (GS4) and areas of buildings and artificial surfaces (BL3). The latter mainly consists of concrete foundations from a previous building, and tracks. A remnant boreen is located towards the south of the site which is bordered by earth banks (BL2). A drainage ditch (FW4) bisects a portion of the proposed development from the northeast. The whole site is bordered by a mature treeline (WL2). There are also three single mature sessile oaks (*Quercus petraea*) located in the largest of the fields and a stand of oaks in a smaller field. The site is elevated with a steep graduation between the south and north of the site.

Buildings and artificial surfaces (BL3)

At the southern entrance of the proposed development is a large area of concrete foundations (**Appendix 2, Photograph 9.1**). From this, a gravel track leads down into one of the three fields that makes up the majority of the proposed development. Vegetation consisted of bramble (*Rubus fruticosus)*, creeping buttercup (*Ranunculus repens)*, spear thistle (*Cirsium vulgare)*, docks (*Rumex*

obtusifolius) and nettles (*Urtica dioica)*. Due to its artificial nature, this habitat type is considered to be of *Local importance* (*lower value*).

Dry meadow and grassy verge (GS2)

The elevated field at the south of the proposed development, the small field to the east and the southern portion of the large field are dry meadow and grassy verge (**Appendix 2, Photograph 9.2, 9.3, 9.6, 9.8**). However, within the lower portion of these fields, there is a matrix of wetter areas where soft rush (*Juncus effusus*) is present (**Appendix 2, Photograph 9.2 and 9.3**). Vegetation consists of red clover (*Trifolium pratense*), daisy *(Bellis perennis)*, meadow buttercup (*Ranunculus acris)*, cow parsley (*Anthriscus sylvestris)*, orchard grass (*Dactylis glomerata)*, timothy grass (*Phleum pratense)* field speedwell (*Veronica persica)*, dandelion (*Taraxacum officinale*), marsh thistle *(Cirsium palustre)*, plantain (*Plantago major)*, hogweed (*Heracleum spp.)* and herb Robert (*Geranium robertianum)*. In the southern portion hawthorn (*Crataegus monogyna)* saplings were also present. These fields are currently grazed by cattle at low intensity and are less modified than improved agricultural grassland (GA1). Therefore, these fields are considered of *Local Importance* (*medium value*).

Wet grassland (GS4)

The northern half of the main field within the proposed development, is wet grassland (GS4), with the vegetation dominated by soft rush (*Juncus effusus*). This gradually transitioned into dry meadow and grassy verge (GS2) towards the south of the field (**Appendix 2, Photograph 9.4 and 9.5**). Other vegetation consists of marsh thistle (*Cirsium palustre)*, ladys smock (*Cardamine pratensis)* and herb Robert (*Geranium robertianum)*. A drainage dich borders this area to the east and the Cornamagh Cemetery to the west which is bordered by a stone wall. These habitats are declining throughout Europe due to drainage programmes but are species rich, often providing important refugia for plant diversity in farmed landscapes (Sullivan *et al.* 2010). Overall, these habitats on-site are considered of *Local importance* (*higher value*).

Drainage ditch (FW4)

A drainage ditch bisects a portion of the proposed development from the north. This is dominated by bramble (*Rubus fruticosus*). At the north this borders the current residential development and further down, the small field of dry meadow and grassy verge within the proposed development. At the time of the survey this drainage ditch was dry but it does connect to the Kippinstown Stream (EPA code: 26K74) approximately 189 metres northeast of the proposed development. This stream than flows north into the Garrynafela River (EPA code: 26G51) and into Lough Ree SAC and SPA at Balaghkeeran

Bay, approximately 1.6 km from the proposed development site. The drainage ditch on site provides an important corridor linking the site to the Kippinstown Stream. Badger fur on the barb wire bordering the ditch (**Appendix 2, Photograph 9.10**) and well-developed trails (**Appendix 2, Photograph 9.12**) indicated that the drainage ditches are used by badgers (*Meles meles*) to transverse the wider landscape. The survey of the site occurred following a long period of dry, warm weather. Therefore, it was unsurprising that the ditch was dry at the time of the survey. However, it has been recorded as supporting water. In the National Frog Survey of Ireland, densities of frogs were highest in drainage ditches (86% of all breeding frogs occurred in this habitat) which is felt to be in response to the loss of other habitat such as farm ponds. Overall, this habitat on-site are considered of *Local importance* (*higher value*).

Earth banks (BL2)

At the south of the proposed development between two of the small fields of dry meadow and grassy verge, is the remnants of an old boreen which is bordered on each side by earth banks (BL2). Here the vegetation consisted of woundwort (*Stachys sylvatica)*, bush vetch (*Vicia sepium)*, lords and ladies (*Arum maculatum)*, cleavers (*Galium aparine),* bramble (*Rubus fruticosus*) and sweet briar (*Rosa rubiginosa)*. This area supports a diversity of flora and provides valuable cover and food for a variety of species. Trails were evident leading into this area and at the time of the survey, the bramble held a high proportion of different bee species and butterflies such as speckled wood (*Pararge aegeria)* and small white *(Pieris rapae).* It is therefore consisted of high biodiversity value.

Treeline (WL2)

The remnant boreen, drainage ditch and the outer perimeter of the site were bordered by a mature treeline with the composition composed of a combination of ash (*Fraxinus excelsior)*, sycamore (*Acer pseudoplatanus)*, elder (*Sambucus nigra)*, hazel (*Corylus avellana)*, cherry (*Prunus avium)*, hawthorn (*Crataegus monogyna)*, beech (*Fagus sylvatica)* and sessile oak (*Quercus petraea)* (**Appendix 2, Photograph 9.3, 9.4, 9.6 and 9.8).** In the area bordering the Cornamagh Cemetary to the west, there was also a line of western red cedar (*Thuja plicata)*. Within the small field there is a stand of mature sessile oaks. There are also three single mature sessile oaks in the large field at the northwest of the proposed development (**Appendix 2, Photograph 9.9**). The diversity of species and flowering and fruiting components of for instance the hawthorn and elder would provide a valuable food source for a wide range of species. The hedgerow also had good connectivity with little gappiness making it a valuable movement corridor. It therefore has a high biodiversity value

3.2.1.1 Protected or Rare Flora

No rare or species protected under the Flora Protection Order (2022) and habitats listed in the EU Habitats Directive (92/43/ECC) were recorded during the survey. Records of protected species recorded in the 10 km grid square (N08) are listed in **Further Appendices, Table 9.4.**

Records of vulnerable plant species recorded within the 10km grid square (N04) include alder buckthorn, fragrant agromony, tubular water dropwort and Irish white beam. All of the remaining threatened species were within the moss and liverwort groups, but all were of least concern. No records for this site were recorded on the FPO bryophyte viewer. None of the threatened or vulnerable species were recorded during the site walkover.

3.2.1.2 Invasive Species

The surveys noted the presence of any plant species listed in Schedule 3 of the European Communities (Birds and Natural Habitats) Regulations 2011 or identified as High Risk in *Invasive Species Ireland's 2013 report risk analysis and prioritisation for invasive and non-native species in Ireland and Northern Ireland* within the proposed development. No invasive species were identified during the site visit. Records of invasive species recorded within the 10km grid square (N04) are listed in **Further Appendices, Table 9.3.**

3.2.2 Fauna

This section outlines the species historically recorded in the vicinity of the proposed development site, findings from field surveys, and an assessment of the proposed development site's potential to support protected species. Species records retrieved from the NBDC database were reviewed and referenced where relevant throughout the text.

3.2.2.1 Mammals (Non-Volant)

Badger

Badger (*Meles meles*) is legally protected under the Irish Wildlife Act 1976 (as amended). Badgers were recorded within the 10km grid square(s) in which the proposed development site is located, see **Further Appendices, Table 9.2**. Evidence of badger activity was observed across the proposed development site. This was mainly concentrated at the north and northeast of the proposed development where several well-developed trails were seen accessing the drainage ditches and into the current residential development at the east (**Appendix 1, Figure 9.5**) (**Appendix 2, Photograph 9.12**). This was confirmed as being used by badger by the fur left on barb wire in two locations (**Appendix 2, Photograph 9.10**). Well developed trails were also seen at the north of the site and in the agricultural fields bordering the proposed development. Within this field an unconfirmed badger sett and snuffle holes were also evident (**Appendix 1, Figure 9.5**). Snuffle holes were also evident

under the small stand of oaks at the southeast of the site (**Appendix 1, Figure 9.5**). Four badger setts have previously been recorded by Flynn and Furney consultants in lands northeast of the proposed development (Enviroguide, 2023). The study area provides suitable habitat for this species and given their presence both on-site and in the wider landscape, the proposed development site likely supports foraging and/or movement between habitats. Overall, the proposed development site is considered of *Local importance* (*higher value*) for badger.

Otter

Otter (*Lutra lutra*) is protected under the Irish Wildlife Act 1976 (as amended) and is listed on Annex II and Annex IV of the EU Habitats Directive. The Annex II listing requires Member States to designate SACs for the protection of the species. In Ireland, No. 44 SACs have been designated for otters, covering a range of habitats such as river channels, coastlines (including offshore islands), lakes, and blanket bog systems. Female otters have been found to have an exclusive range of 7.5 km ± 1.5 km (Standard deviation) (16.8 ha±7 ha aquatic area) depending on the width of the water course, while males have been observed to travel up to 19km (30.2 ± 9.5 ha aquatic area) (O'Neill et al. 2009).

Otters were recorded within the 10km grid square(s) on which the proposed development site is located, see **Further Appendices Table 9.2.** However, no evidence or signs of otter activity were identified within the proposed development site during the site walkover surveys or in previous surveys (Enviroguide, 2023, CAAS, 2024). While unlikely, due to their large range there is potential for the drainage ditch within the proposed development to be are utilised as movement corridors for this species. The same is true of mink (*Mustela vison*) who, despite not being detected during the ecological survey, have been recorded within 10km. However, overall, the proposed development site is considered of *Local importance* (*lower value*) for otter and mink.

Other non-volant mammals

Pine marten (*Martes martes*) have been recorded previously in proximity of the proposed development. No evidence of pine marten was found during the site walkover. However, the mature treeline and cover both within the site and the surrounding landscape would provide suitable habitat for this species so their presence cannot be ruled out. Overall, the proposed development site is considered of *Local importance* (*medium value*) for pine marten.

Hedgehog (*Erinaceus europaeus*) have previously been recorded within 10km of the site. No sign of hedgehogs were recorded during the site walkover. With no easily detectable signs, it is hard to determine the presence of hedgehogs at a site. However, the well-developed treeline, areas of cover and residential properties near the proposed development would provide suitable habitat for this

species. Overall, the proposed development site is considered of *Local importance* (*medium value*) for hedgehog.

Evidence of red fox (*Vulpes vulpes*) was seen at the northwest of the proposed development where fox fur was present on the barb wire bordering the site (**Appendix 2, Photograph 9.11**). Trails were also evident entering the brambles and into the old boreen at the south of the proposed development (**Appendix 1, Figure 9.5 and Appendix 2, Photograph 9.13**). Overall, the proposed development site is considered of *Local importance* (*higher value*) for fox.

No other signs of terrestrial non-volant mammal activity were observed within the proposed development site. However, the mature well-developed treeline and areas of cover within the proposed development and wider area a are considered potentially suitable for small mammal species, such as pygmy shrew (*Sorex minutus*), greater white toothed shrew (*Crocidura russula*), bank vole (*Myodes glareolus*) and wood mouse (*Apodemus sylvaticus*). Likewise, while no evidence of Irish hare (*Lepus timidus hibernicus)* were recorded during the site walkover, the proposed development site provides suitable habitat for this species. In summary, the local non-volant mammal populations are assessed as being of *Local importance* (*higher value*).

3.2.2.2 Bats

All bats and their roosting sites are legally protected under the EU Habitats Directive, as transposed into Irish law through the Habitats Regulations. With the exception of the Lesser Horseshoe bat (*Rhinolophus hipposideros*), which is listed as an Annex II species, all other bat species are classified as Annex IV species. However, Lesser Horseshoe bat is highly unlikely to occur on-site, as it lies outside its current known range and distribution in Ireland (NPWS, 2019b)[19]. Bats are also protected under the Wildlife Act 1976 (as amended). Across Europe, bats are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which aims to conserve all bat species and their habitats. Additionally, the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was established to protect migratory species across all European boundaries. The Irish government has ratified both of these conventions.

A review of the NBDC records found that within a 10km^2 data grid square (Grid Code: N04), the following species have been recorded: Soprano pipistrelle (*Pipistrellus pygmaeus*), Common pipistrelle, Brown long-eared bat (*Plecotus auritus*), Daubenton's bat (*Myotis daubentonii*), Leisler's bat, Natterers (*Myotis nattereri*) and whiskered bat (*Myotis mystacinus*).

[19] NPWS (2019b). *The Status of EU Protected Habitats and Species in Ireland*. Volume 3: Species Assessments. Unpublished NPWS report.

The NBDC online database also provides the Model of Bat Landscapes for Ireland, which assesses the relative importance of landscape and habitat associations for bat species across Ireland (Lundy *et al*., 2011). This model further evaluates the landscape resource value for bats within the corresponding national grid square(s) overlapping the study site. The scores are divided into 5 no. qualitative categories of suitability, namely:

- 0.000000 - 13.000000: Low
- 13.000001 - 21.333300: Low – Medium
- 21.333301 - 28.111099: Medium
- 28.111100 - 36.444401: Medium – High
- 36.444402 - 58.555599: High
-

The suitability index for specific bat species is presented in **Table 3.1**. The proposed development site is located in an area with a High (41.22) suitability score for bats in general. The landscape suitability index is High for No. 6 species, Medium-High for No. 2 species, and Low for No. 1 species.

Table 3.1: Bat Suitability Index for the site and its surrounding area (NBDC, 2025).

Suitability index for different bat species:		
Common Name	Scientific Name	Suitability Score
Soprano pipistrelle	*Pipistrellus pygmaeus*	52
Brown long-eared bat	*Plecotus auritus*	53
Common pipistrelle	*Pipistrellus pipistrellus*	58
Lesser horseshoe bat	*Rhinolophus hipposideros*	3
Leisler's bat	*Nyctalus leisleri*	55
Whiskered bat	*Myotis mystacinus*	29
Daubenton's bat	*Myotis daubentonii*	43
Nathusius' pipistrelle	*Pipistrellus nathusii*	30
Natterer's bat	*Myotis nattereri*	48
Total Score for All Bat Species		**41.22**

The landscape surrounding the proposed development site primarily consists of agricultural land interspersed with mature treeline and a well vegetated cemetery. The high level of connectivity within this landscape makes it suitable for commuting and foraging bat populations. In previous bat surveys (Ash Ecology) the landscape was considered of local importance (Higher value) for bats a 'High' score for landscape suitability for bats (Enviroguide, 2023). During these surveys, Leislers, common and soprano pipistrelle were recorded as using the lands to the northeast of the proposed development (Enviroguide, 2023).

Preliminary Roost Assessment (PRA)

The daytime preliminary roost assessment (PRA) survey was conducted on the mature trees within the proposed development. No evidence of roosting bats was found during the inspections of the and trees on-site. However, the sessile oaks within the proposed development could provide some potential roosting opportunities for bats as they had large crevices, apertures, and in some cases

dense ivy growth that would provide suitable roosting opportunities for bats (**Appendix 2, Photograph 9.14**). In previous surveys (Ash Ecology) in the surrounding lands to the northeast of the proposed development, bat roosts were found in mature beech trees (Enviroguide, 2023).

3.2.2.3 Birds/Avifauna

The NBDC online database lists No. 110 bird species within the 10km grid square (N04) since 2000, that overlaps the majority of the proposed development site (**Further Appendices, Table 9.1).** Of these species, nine are listed under Annex I of the Birds Directive, including Kingfisher (*Alcedo atthis*), Whooper Swan (*Cygnus cygnus*), Hen Harrier (*Circus cyaneus*), Golden Plover (*Pluvialis apricaria*), Peregrine Falcon (*Falco peregrinus*), Red Kite (*Milvus milvus*), Common Tern (*Sterna Hirundo*), Little Egret (*Egretta garzetta*) and snowy owl (*Bubo scandiaca*) of which there was a single record in 2006. No Annex I species were recorded during the site walkover on the 22nd May 2025. Fourteen species were recorded (**Table 3.2**). No. 2 Amber-listed species—house martin and spotted flycatcher were recorded (**Table 3.2**). The remaining species recorded were common, Green-Listed species, such as Blackbird, Robin, Great Tit, and Wren, etc. The grassland habitat and well developed treeline within the proposed development site provides foraging and nesting habitat for these woodland-edge bird species. The species recorded are typical of Irish farmlands and woodlands and are associated with habitats characteristic of those present within the proposed development site. Overall, the proposed development site provides locally valuable habitat for a range of common bird species.

Table 3.2: Bird species seen or heard during the site walkover in April 2025.

Bird Species Recorded During site walkover with BoCCI status.	
Species	BoCCI Status
Blackbird (*Turdus merula*)	Green Listed
Blackcap (*Sylvia atricapilla*)	Green Listed
Blue Tit (*Cyanistes caeruleus*)	Green Listed
Chaffinch (*Fringilla coelebs*)	Green Listed
Dunnock (*Prunella modularis*)	Green Listed
Coal Tit (*Periparus ater*)	Green Listed
Goldfinch (*Carduelis carduelis*)	Green Listed
Great Tit (*Parus major*)	Green Listed
House martin (*Delichon urbicum*)	Amber Listed
Magpie (*Pica pica*)	Green Listed
Robin (*Erithacus rubecula)*	Green Listed
Spotted flycatcher (*Muscicapa striata*)	Amber Listed
Treecreeper (*Certhia familiaris*)	Green Listed
Woodpigeon (*Columba palumbus*)	Green Listed
Wren (*Troglodytes troglodytes*)	Green Listed

3.2.2.4 Other Taxa

Site surveys included an assessment of the presence and likely occurrence for protected amphibians, reptiles and aquatic species etc, within the proposed development site and the wider area. Habitat assemblages within the proposed development site were assessed for field signs and patterns of usage by fauna in addition to resting places and breeding sites. Particular attention was given to the drainage ditch and field network boundaries adjoining the survey area.

Amphibians

The Common Frog (*Rana temporaria*) and Smooth Newt (*Lissotrition vulgaris*) are recorded in the 10km grid square but not within 2km, surrounding the site (**Further Appendices, Table 9.4**). During the walkover survey no incidental signs of amphibians were recorded and the drainage ditch was dry at the time of the walkover. However, this is not always the case and the drainage ditch and wet grassland would provide suitable habitat within the proposed development.

Reptiles

The Common Lizard (*Zootoca vivipara*) was not recorded in the 10km grid square and no observations of reptiles were recorded during the site walkover.

Section 4: DESIGNATED SITES

4.1 European Designated Sites

The potential for impact on Natura 2000 sites has been fully assessed in a Natura Impact Statement (NIS) report prepared by CAAS Ltd (October 2024) in support of the current application.

There are currently No. 13 Natura 2000 sites located within c. 15 km of the proposed development (**Table 4.1**) (**Appendix 1, Figure 9.3**).

Table 4.1: Natura 2000 sites located within c. 15 km of the proposed development site.

Designated Site	Site Code	Approximate Distance from the Proposed Works (km)
Lough Ree SAC	000440	1.3 km
River Shannon Callows SAC	000216	2.5 km
Crosswood Bog SAC	002337	2.5 km
Carn Park Bog SAC	002336	4.3 km
Pilgrims Road Esker SAC	001776	10.9 km
Castlesampson Esker SAC	001625	11.1 km
Ballynamona Bog and Corkip Lough SAC	002339	11.2 km
Mongan Bog SAC	000580	11.3 km
Fin Lough (Offaly) SAC	000576	12.9 km
Lough Funshinagh SAC	000611	13.7 km
Lough Ree SPA	004064	1.3 km
Middle Shannon Callows SPA	004096	2.5 km
Mongan Bog SPA	004017	11.5 km

The Site Synopsis and Conservation Objectives for the listed Natura 2000 sites are available at http://www.npws.ie. The Qualifying Interests for the Natura 2000 sites within 15km of the proposed development site are listed in **Table 4.2** below.

Identification of Relevant Natura 2000 sites

The source-pathway-receptor (S-P-R) conceptual model was used to identify a list of relevant Natura 2000 sites (i.e. those that could be potentially affected by the proposed development). This model is a standard tool in environmental assessment (OPR, 2021). For an effect to occur, all three elements of the mechanism must be present. The absence or removal of any one element of the mechanism means there is no likelihood of an effect occurring. In the context of the proposed development, the model comprises:

- Source(s) – e.g. sediment run-off from proposed development works.
- Pathway(s) – e.g. watercourses and waterbodies connecting to a Natura 2000 site.
- Receptor(s) – e.g. Special Conservation Interests (SCI) or Qualifying Interests (QI).

Of the 13 Natura 2000 sites, the Lough Ree SPA and SAC are considered relevant due to their proximity to the proposed development site and a hydrological connection that exists between an agricultural drain within the proposed development which flows into the Kippinstown stream, which is directly connected to Lough Ree approximately 1.6 km downstream. There are no hydrological pathways between the proposed development and any of the remaining Natura 2000 sites.

Table 4.2: Identification of Natura 2000 sites within the Likely Zone of Influence using SPR model.

Site Code	Site Name	Qualifying Interests (* denotes a priority habitat)	Distance from Study Area	Source-Pathway-Receptor Connectivity
000440	Lough Ree SAC	**Habitats** 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7230 Alkaline fens 8240 Limestone pavements* 91D0 Bog woodland* 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* **Species** 1355 Otter *(Lutra lutra)*	1.3 km	
000216	River Shannon Callows SAC	**Habitats** 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) 7230 Alkaline fens 8240 Limestone pavements* 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* **Species** 1355 Otter *(Lutra lutra)*	2.5 km	
002337	Crosswood Bog SAC	**Habitats** 7110 Active raised bogs* 7120 Degraded raised bogs	2.5 km	

		still capable of natural regeneration		
002336	Carn Park Bog SAC	**Habitats** 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration	4.3 km	
001776	Pilgrims Road Esker SAC	**Habitats** 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	10.9 km	
001625	Castlesampson Esker SAC	**Habitats** 3180 Turloughs* 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	11.1 km	
002339	Ballynamona Bog and Corkip Lough SAC	**Habitats** 3180 Turloughs* 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion 91D0 Bog woodland*	11.2 km	
000580	Mongan Bog SAC	**Habitats** 7110 Active raised bogs* 7120 Degraded raised bogs still capable of natural regeneration 7150 Depressions on peat substrates of the Rhynchosporion	11.3 km	
000576	Fin Lough Offaly SAC	**Habitats** 7230 Alkaline fens **Species** 1013 Geyer's Whorl Snail *(Vertigo geyeri)*	12.9 km	
000611	Lough Funshinagh SAC	**Habitats** 3180 Turloughs* 3270 Rivers with muddy banks with Chenopodion rubri p.p. and Bidention p.p. vegetation	13.7 km	
004064	Lough Ree SPA	**Birds** A004 Little Grebe *(Tachybaptus ruficollis)* A038 Whooper Swan *(Cygnus cygnus)* A050 Wigeon *(Anas penelope)* A052 Teal *(Anas crecca)* A053 Mallard *(Anas platyrhynchos)* A056 Shoveler *(Anas*	1.3 km	

		clypeata) A061 Tufted Duck *(Aythya fuligula)* A065 Common Scoter *(Melanitta nigra)* A067 Goldeneye *(Bucephala clangula)* A125 Coot *(Fulica atra)* A140 Golden Plover *(Pluvialis apricaria)* A142 Lapwing *(Vanellus vanellus)* A193 Common Tern *(Sterna hirundo)* **Habitats** Wetlands		
004096	Middle Shannon Callows SPA	**Birds** A038 Whooper Swan *(Cygnus cygnus)* A050 Wigeon *(Anas penelope)* A122 Corncrake *(Crex crex)* A140 Golden Plover *(Pluvialis apricaria)* A142 Lapwing *(Vanellus vanellus)* A156 Black-tailed Godwit *(Limosa limosa)* A179 Black-headed Gull *(Chroicocephalus ridibundus)* **Habitats** Wetlands	2.5 km	
004017	Mongan Bog SPA	**Birds** A395 Greenland White-fronted Goose *(Anser albifrons flavirostris)*	11.5 km	

4.2 Summary of Connectivity Analysis with Natura 2000 sites

Connectivity to SPAs: In the absence of specific European or Irish guidance on SPAs, the SNH Guidance, *Assessing Connectivity with Special Protection Areas (SPA)* (2016)[20], was consulted. This document provides guidance in relation to the identification of 'connectivity' between development proposals and SPAs. It considers the distances species may travel beyond the boundary of their SPAs and includes information on the dispersal and foraging ranges of bird species, which are often encountered when considering plans and projects. Additionally, the DAFM bird table (Version 06 Jan 2020)[21] was reviewed to identify scenarios where species may be screened in/out of the assessment. Although the DAFM bird table is specifically related to forestry operations, the guidance remains relevant, as it provides

[20] Scottish Natural Heritage (SNH) (July 2016). Assessing Connectivity with Special Protection Areas (SPA). Available at: https://www.nature.scot.
[21] DAFM Bird Foraging Table (version 6th Jan. 2020). Available at: Bird Foraging Table.

valuable information on the dispersal and foraging ranges of species that could be impacted by the proposed development.

Lough Ree SPA and SAC are considered relevant due to their proximity to the proposed development site and identified source-pathway-receptor relationships. A drainage ditch to the northeast of the proposed development site connects to the Kippinstown stream (c. 189 metres north), which is directly connected to Lough Ree approximately 1.6 km downstream. These Natura 2000 sites also have a shared groundwater body (Athlone Gravels) between the proposed development site and Lough Ree SAC and SPA. Lough Ree SAC is designated for Alkaline fens (7230) which are groundwater dependant habitats and therefore sensitive to potential changes to groundwater as a result of developments. The proposed development will connect to the Kippinstown stream directly via a small open drain north of the site in the operational phase of the proposed development, to facilitate surface water drainage.

There is no source pathway connectivity via surface water, groundwater, or environmental vectors between the proposed development site and any other Natura 2000 sites within 15 km of the proposed development site. As there are no pathways (physical or hydrological connections that could act as a route for potential impacts) from the source site to any other Natura 2000 sites, they cannot be considered potential receptors and impacts on these Natura 2000 sites and their Conservation Objectives/Qualifying Interests can be screened out.

4.3 Nationally Designated Sites

Natural Heritage Areas (NHAs) are sites considered to be of national ecological importance and are afforded protection under the Wildlife Act 1976 (as amended), with many NHA boundaries overlapping with Natura 2000 sites. Proposed Natural Heritage Areas (pNHAs) have not been statutorily proposed or designated under the Wildlife Act (as amended); however, they are afforded some protection under County Development Plans (CDP), including schemes such as agri-environment schemes.

There are No. 3 NHAs located within 15km of the proposed development site and No. 10 pNHAs located within 15km of the proposed development site.

The nearest nationally designated site is Lough Ree pNHA which is approximately 1.3 km of the site and is already considered due to its proximity and hydrological connection of the Lough Ree SAC and SPA to the proposed development. The proposed development site is not within the likely ZoI of any NHAs, and further assessment is not required.

4.4 Additional Sites

An online search was conducted to identify Ramsar sites potentially located within the ZoI of the proposed development. There is No. 1 Ramsar site i.e. Mongan Bog (Site ID: 416) designated in 1988 located within a 15km radius of the study area[22]. An online search was also undertaken to identify Important Bird and Biodiversity Areas (IBAs) potentially located within the ZoI of the proposed development. The River Shannon Callows IBA is located within a 15km radius of the study area[23]. The proposed development site is not within the likely ZoI of any of any other Ramsar or IBA sites, and further assessment is not required.

4.5 Summary of Ecological Evaluation

In accordance with ecological impact assessment guidelines (CIEEM, 2018; EPA, 2022), ecological receptors of Local Importance (higher value) or above, within the likely ZoI of the proposed development, are considered further to evaluate the potential or likelihood of significant effects. Potential impacts that are unlikely to result in significant effects on ecological receptors are not considered further as part of this assessment.

Table 4.3 below summarises all identified Key Ecological Receptors (KERs). KERs have been identified as being at risk of potentially significant impacts via a source-pathway-receptor link. KER's are valued as *Local importance* (*higher value*) or above, in accordance with the criteria outlined in **Section 2.5**.

[22] Ramsar Convention on Wetlands. (n.d.). Ramsar Sites Information Service. Available at: https://rsis.ramsar.org. and Irish Sites - Irish Ramsar Wetlands Committee

[23] BirdLife International (2025) Data Zone. Available at: https://datazone.birdlife.

Table 4.3: Ecological evaluation of Key Ecological Receptors.

Ecological Receptor	Ecological Evaluation	KER
Designated Sites		
Natura 2000 sites (SACs/SPAs)	International	**Yes**
Ramsar Sites	International	No
Important Bird and Biodiversity Areas (IBAs)	International	No
Natural Heritage Areas (NHAs)	National	No
Proposed Natural Heritage Areas (pNHAs)	National	No
Habitats		
Buildings and artificial surfaces (BL3)	Local Importance (lower value)	No
Dry meadow and grassy verge (GS2)	Local Importance (medium value)	No
Wet grassland (GS4)	Local Importance (higher value)	**Yes**
Drainage ditches (FW4)	Local Importance (higher value)	**Yes**
Treelines (WL2)	Local Importance (higher value)	**Yes**
Earth banks (BL2)	Local Importance (higher value)	**Yes**
Fauna Species		
Non-volant Mammals	Local importance (higher value)	**Yes**
Bats	Local importance (higher value)	**Yes**
Avifauna	Local Importance (higher value)	**Yes**
Reptiles & Amphibians	Local Importance (lower value) /Local Importance (higher value)	No - due to a lack of significant suitable habitat

Table 4.4: Evaluation of the ecological value of each habitat within the proposed development site.

Habitat	Evaluation	Rationale
Buildings and artificial surfaces (BL3)	Local Importance (lower value)	Due to the highly modified nature of these features, they would be considered of low ecological value.
Dry meadow and grassy verge (GS2)	Local Importance (medium value)	These fields are less modified than improved agricultural grassland (GA1) and have a greater species diversity.
Wet grassland (GS4)	Local Importance (higher value)	These habitats are declining throughout Europe due to drainage programmes but are species rich, often providing important refugia for plant diversity in farmed landscapes (Sullivan *et al.* 2010).
Treelines (WL2)	Local Importance (higher value)	The treelines are mature with a diversity of flowering and fruiting species. They provide potential nest and roost sites for birds and bats and movement corridoors for mammal species.
Drainage Ditches (FW4)	Local Importance (higher value)	The drainage ditch could provide important habitat for amphibians but was dry at the time of the survey. However, it has been documented as supporting water. It is currently used as a movement corridor by badgers and potentially other mammal species.
Earth banks	Local Importance (higher value)	This area supports a diversity of flora and provides valuable cover and food for a variety of species. Trails were evident leading into this area and at the time of the survey, the bramble high a high proportion of bee different bee species and butterflies such as speckled wood (*Pararge aegeria)* and small white *(Pieris rapae).*

Table 4.5: Evaluation of the importance of the proposed development site for species.

Species	Importance	Rationale
Bat Species	Local Importance (higher value)	The mature treelines offer suitable foraging and commuting habitat. In addition, the mature sessile oaks throughout the site have features that make them potentially suitable for bat roost sites.
Birds	Local Importance (higher value)	The proposed development site provides quality foraging and nesting habitats, e.g., mature, diverse trees and cover.
Amphibians	Local Importance (higher value)	The proposed development site contains areas of wet grassland and a drainage ditch which supports water in times heavy rain.
Reptiles	Local importance (lower value).	The proposed development site offers low suitability for the common lizard. Although there are potential basking and sheltering locations, the species was not observed during the field surveys.
Badger (*Meles meles*)	Local Importance (higher value)	Signs of badger activity were recorded throughout the site in the form of hair, and well developed trails. No active setts were found within the proposed development but one was found just outside the red line boundary at the north of the proposed development. The proposed development appears to represent a portion of their home range used for foraging and transversing the wider landscape.
Otter (*Lutra lutra*)	Local Importance (lower value)	No signs of otter were observed during any of the surveys. This species has also not been previously recorded within 2km of the proposed development but has been recorded within 10km. It would be deemed unsuitable for this species. However, the presence of the drainage ditch could mean that this site is used as a movement corridor during times of dispersal or home range expansion.
American Mink (*Mustela vison*)	Local Importance (lower value)	No signs of mink were observed during any of the surveys. This species has also not been previously recorded within 2km of the proposed development but has been recorded within 10km. The presence of the drainage ditch could mean that this site is used as a movement corridor during times of dispersal or home range expansion.
Deer spp.	Local Importance (lower value)	No signs of deer were detected. No deer species have been recorded within 10 km of the proposed development.
Fox (*Vulpes vulpes*)	Local Importance (higher value)	Signs of fox activity were recorded throughout the site in the form of trails and fur on the barb wire bordering the proposed development.
Hedgehog (*Erinaceus europaeus*)	Local Importance (higher value)	With no easily detectable signs, it is difficult to determine the presence of hedgehogs at the site. However, the well-developed hedgerows, areas of scrub, and nearby residential properties provide suitable habitat for this species.
Irish Hare (*Lepus timidus hibernicus*)	Local Importance (medium value)	No sign of the Irish hare were recorded during the site walkover but they have been recorded within 10km of the proposed development. The site would provide suitable habitat for this species.
Pine marten (*Martes martes*)	Local Importance (medium value)	No evidence of pine marten was detected during the surveys, but they have been recorded within 10km. Suitable habitat is available both within the proposed development and in the surrounding area (north and west) due to the mature trees and cover.

Species	Importance	Rationale
Rabbit (*Oryctolagus cuniculus*)	Local Importance (medium value)	Rabbits have been recorded within 2km of the proposed development. While not recorded during the site walkover, suitable habitat is available within the proposed development.
Rodent spp.	Local Importance (higher value)	No sign of rodents were detected during the site walkover but given the nature of the habitat with high levels of connectivity and cover, this site would be deemed suitable for several rodent species.
Shrew spp.	Local Importance (higher value)	The high levels of vegetative cover at the site make it suitable for both pygmy and greater white-toothed shrew both of which have been recorded within 10km.
Hedgehog (*Erinaceus europaeus*)	Local importance (medium value)	Hedgehogs have been recorded on 32 occasions within 10km of the proposed development. No sign of hedgehogs was recorded during the site walkover. However, with no easily detectable signs, it is hard to determine the presence of hedgehogs at a site. However, the well-developed treeline, areas of cover and residential properties near the proposed development would provide suitable habitat for this species.
Squirrel spp.	Local Importance (lower value)	No evidence of squirrel was detected during the surveys despite both species being recorded within 10km. Suitable habitat is largely outside the proposed development in areas such as the Cornamagh cemetery to the west.
Stoat (*Mustela erminea Hibernica*)	Local Importance (medium value)	No evidence of stoat was found during the surveys and they were not recorded within 10km of the proposed development. However, this species is highly elusive and difficult to detect and suitable habitat is available within the proposed development.

Section 5: POTENTIAL IMPACTS

5.1 Elements of the Proposed Development that could contribute to Ecological Impacts

This section identifies the elements of the proposed development that could potentially impact ecological receptors within the receiving environment. The analysis considers the relevant aspects of the proposed development described in **Section 1**, along with the sensitivity of the receiving environment outlined in **Sections 3** and **4**. **Table 5.1** below summarises the potential effects of the proposed development on ecological receptors within the proposed development's likely ZoI.

Table 5.1: Potential Impact Source, Pathway, and Zone of Influence for the Proposed Development.

Source of Potential Effect	Description of Pathway	Potential Zone of Influence of the Effect
Construction Phase		
Earthworks/stripping of overburden (e.g., excavation, digging); stockpiling of construction materials (sand, aggregates, etc.); use of contaminants (e.g., hydrocarbons, wet cement, lubricants, and general waste) and general waste.	Hydrological Pathways: These include drainage channels, streams, rivers, groundwater, and other connected waterbodies linking the proposed development site to downstream areas. Surface water run-off and accidental spills.	The ZoI for potential hydrological effects depends on the nature of the contaminant (e.g., silt, hydrocarbons). The worst-case ZoI is considered to encompass the entire length of the aquatic pathway, extending from the proposed development site to adjoining watercourses, groundwater, and other connected waterbodies, as well as the downstream components of relevant designated conservation sites.
Noise, vibration, artificial lighting, human presence, and movement of vehicles associated with construction activities. Potential unintentional release of invasive species.	Terrestrial: Direct contact with construction personnel or machinery during site works. Air: Transmission of noise effects. Visibility: Onsite presence of construction personnel.	The ZoI varies depending on the affected habitat and reliant species. For example, potential impacts on wintering birds can extend up to 300m from the proposed development footprint (see Madsen, 1985; Smit & Visser, 1993; and Rees *et al.,* 2005). For otters, the distance may be as low as 150m for holts (NRA, 2008b) but could be higher for other sensitive species, such as breeding birds like snipe, although these were not recorded.
Operational Phase		
Movement of people, vehicles, and equipment associated with ongoing maintenance works.	Terrestrial: Direct contact with construction personnel or machinery during site works. Air: Transmission of noise effects. Visibility: On-site presence of construction personnel.	Effects are not likely to be significant due to the limited duration of maintenance activities. The nature of the proposed development means that during the operational phase, vehicle movement will be restricted to certain routes with refugia still retained in the form of the mature tree line, green areas and allotments. Within the proposed development itself disturbance by people will be minimal and confined largely to certain times. Ongoing

Source of Potential Effect	Description of Pathway	Potential Zone of Influence of the Effect
		maintenance will also be slight and expected to cause marginal disturbance.
Use of contaminants (e.g. hydrocarbons, lubricants) and general waste.	Hydrological pathways: These include drainage channels, streams, rivers, groundwater, and other connected waterbodies linking the proposed development site to downstream areas. Surface water run-off and accidental spills.	The ZoI for potential hydrological effects depends on the nature of the contaminant (e.g., silt, hydrocarbons). The worst-case ZoI is considered to encompass the entire length of the aquatic pathway, extending from the proposed development site to adjoining watercourses, groundwater, and other connected waterbodies, as well as the downstream components of relevant designated conservation sites. Measures have been put in place to prevent surface water run off (**See section 6.4.1**).

5.2 Potential Impacts on Designated Sites

A Natura Impact Statement (NIS) in support of the Appropriate Assessment (AA) process was undertaken to determine whether the proposed development, alone or in combination with other plans or projects, is likely to result in significant effects on Natura 2000 sites, in view of the sites Conservation Objectives. A total of No. 13 Natura 2000 sites were identified within a 15 km radius of the proposal, as listed in **Tables 4.1** and **4.2** above. For further information, refer to the NIS report (CAAS, 2024), which accompanies the planning application for the proposed development.

Based on the findings of the assessment, it is considered that upon the application of the appropriate mitigation measures, the proposed development will not adversely affect the integrity of the Natura 2000 sites within the study area. This conclusion applies to the construction and operation stages of the proposed development. None of the SCI's of the Lough Ree SPA and SAC were recorded during the site walkover in May 2025. In previous bird surveys at the proposed development (CAAS, 2024), no SCI's utilised the site for ex-situ foraging. A single whooper swan (*Cygnus cygnus*) was recorded in December 2023 but this was just seen flying over. Similarly, black headed gulls (*Chroicocephalus ridibundus*) (maximum of 5) which are an SCI of the middle Shannon callows SPA (004096) was recorded flying over in December 2023 and February 2024 (CAAS, 2024). However, no aspect of the proposed development will impact on commuting by these species. Similarly, in the surrounding lands, breeding and winter bird surveys conducted prior to the ongoing development, found that no SCI waterbird species of Lough Ree SPA (004064) and the Middle Shannon Callows SPA (004096) utilised the site lands (Enviroguide, 2023).Mitigation measures to limit potential impacts on the qualifying features of Natura 2000 sites are detailed in the accompanying NIS report prepared by CAAS, 2024.

5.3 Overview of Potential Impacts

There are several elements associated with the proposed development that may give rise to direct and indirect impacts, potentially resulting in likely significant effects on key ecological receptors. The significance of these impacts depends on the scale of the impact, as well as the ecological condition and the sensitivities of the ecological features. The elements of the proposed development that may lead to potential impacts, considered with regard to likely significant effects on key ecological receptors, are outlined as follows:

Construction Phase

- Water quality impairment:
    - Uncontrolled release of silt, sediments, and/or other pollutants into the air due to earthworks.
    - Surface water run-off containing silt, sediments, and/or other pollutants into nearby waterbodies.
    - Surface water run-off containing silt, sediments, and/or other pollutants into local groundwater.
- Waste generation during construction, including soils and construction debris.
- Disturbance / displacement to species:
    - Increased noise, dust, and/or vibrations due to construction activity.
    - Increased dust and air emissions from construction traffic.
    - Increased lighting in the vicinity due to construction activity and security requirements.
    - Loss or degradation of habitat due to the construction of access roads and project infrastructure.
- Accidental mortality of wildlife due to construction machinery.
- Disturbance to hedgerow / trees during vegetation removal works.
- The introduction or spread of invasive alien species due to construction activities.

Operational Phase

- Disturbance or displacement of wildlife due to noise, vibration, and human presence.
- Habitat fragmentation or barrier effects.
- Surface water run off.

5.4 Potential Impacts on Water Quality

In the absence of mitigation, there is potential for a range of pollutants (e.g., petrol, diesel, and oils from machinery) to enter watercourses and waterbodies during the construction phase of the proposed development, potentially resulting in significant impacts on downstream habitats and species.

Considering the proposed development site's location, layout, and existing topography, the primary potential water pollution receptor is the drainage ditch at the northeast of the proposed development which is connected to the Kippinstown stream (EPA code: 26K74) which flows into the Garrynafela River (EPA code: 26G51) which in turn flows into Lough Ree SAC and SPA at Balaghkeeran Bay, approximately 1.6 km from the proposed development site. Without mitigation, the stripping of vegetation, ground disturbance, and the storage of stripped soils and aggregates near the drainage ditch, increases the risk of materials being washed into theses connected waterbodies during periods of heavy or prolonged rainfall and flood events. This could lead to potential impacts on water quality through increased turbidity levels and sedimentation, as well as the potential mobilisation of a variety of substances that may be contained within the soils. Construction activities may also alter local groundwater levels which is shared with Lough Ree SAC and SPA, and surface water flows through extraction activities and/or discharge of water. No other receptors, such as turloughs or sinkholes, have been identified or mapped within or in the immediate vicinity of the proposed development site.

Construction phase activities have the potential to contribute to surface water impacts to the receiving and surrounding environment in the absence of mitigation. Such impacts include the risk of pollution from fuel spillages, oil leakages, release of particulate matter and other accidents with potential to lead to serious impacts causing the contamination of surface water run-off and the degradation of water quality in the vicinity of the proposed development site, consequently impacting the habitats and species present in any affected waterbody.

Without appropriate mitigation it is considered that there may be potential for water quality impairment to local water quality and within the wider watercourse network as a result of the proposed development works. From a precautionary standpoint, best practice construction measures, 5 metre buffers around the drainage ditch and standard pollution prevention protocols will be implemented during the construction phase to eliminate any potential for adverse effects on the receiving waterbodies and the downstream watercourse network.

5.5 Potential Disturbance to Fauna

5.5.1 Terrestrial Mammals (Non-Volant)

Disturbance to fauna is primarily expected during the construction phase of the proposed development. Localised earthworks and excavation activities required during this phase will occur predominantly on dry meadow and grassy verge agricultural land, with feature trees and hedgerow for the most part being retained.

The proposed works may cause short-term displacement of mammal species due to increased human presence, noise, and vibration. This displacement could affect both breeding and resting sites, as well as foraging habitats. However, given the short duration of the disturbance and the relatively small number of individuals the habitats are likely to support, significant short-term effects on the local mammal population or their conservation status are extremely unlikely. In addition, areas of refugia will be provided in the areas bordering the proposed development at the north and west of the proposed development, as well as by the retention of the mature tree line. Therefore, disturbance/displacement during construction is unlikely to result in a significant negative effect, at any geographic scale.

The site walkover identified badger utilising the site for commuting and foraging purposes. Setts have been identified outside of the proposed development site during this survey and previous surveys (Enviroguide, 2023). Therefore, if setts are discovered during construction phase, mitigation measures will be required to ensure no impacts occur to this species.

Although the drainage ditch bisecting the proposed development site may provide commuting habitat to suitable habitats in the wider area, the site walkover surveys and previous surveys (Enviroguide, 2023, CAAS, 2024) did not identify otter activity within the proposed development site or bordering area. No evidence of breeding, feeding, or resting sites for otters were recorded within the study area nor was the site deemed suitable. Historic records for otter are all located outside the footprint of the proposed development site. Therefore, it is considered that the proposed development will not result in any disturbance to otter. Furthermore, water mitigation measures that will be implemented throughout the construction phase will ensure no adverse effects occur to otter utilising the wider watercourse network.

The grassland and treeline within the proposed development site are likely to support small mammal species such as pygmy shrew and hedgehog. Given the relatively low numbers of individuals of each species that are likely to be affected, and that they are highly mobile species, construction at the proposed development site is unlikely to result in injury or mortality that would affect the species' conservation status. Furthermore, wildlife corridoors will be maintained and enhanced ensuring refugia for these species.

Although construction activities may result in temporary, indirect disturbance impacts to fauna using the proposed development site for commuting or foraging purposes, these impacts are expected to be indirect, temporary, and imperceptible. Furthermore, mitigation measures will be implemented onsite to ensure no impacts occur to terrestrial mammals. Therefore, the impact on local non-volant mammals as a result of the proposed development site is predicted to be negative, not significant, long-term.

5.5.2 Avifauna

The species recorded within the proposed development are typical of Irish farmlands and woodlands and are associated with habitats characteristic of those present within the proposed development site. Activity was primarily along the treeline which in most cases will be retained providing a continued food, nest and refugia site. During the construction phase the site will be temporarily less attractive to many of the passerine species currently using it. However, while it will involve temporary disturbance and displacement and some habitat loss, examples of similar habitat are present in the wider landscape at the north and west of the proposed development and along the treeline ensuring continuous areas of food and cover.

During previous surveys (CAAS, 2024 and Enviroguide, 2023), either no SCI's were recorded or small numbers of SCI's (whooper swan and black headed gull) of the Lough Ree SPA (004064) and Middle Shannon Callows SPA (004096). They were recorded flying over with no records of SCI's using the site for ex-situ foraging.

Operational phase works are not expected to cause significant disturbance to birds due to the intermittent, small-scale, and localised nature of the works (such as maintenance and vegetation management). Therefore, habitat loss and disturbance during all stages of the proposed development are considered to be limited in nature.

5.5.3 Bats

No bat activity surveys were conducted at the proposed development. However, the proposed development was surveyed for potential roosts. The mature sessile oaks contained crevices, apertures and ivy (**Appendix 2, Photograph 9.14**) which could provide potential roost sites. Surveys of the development to the east of the proposed development found roost sites within mature trees (Enviroguide, 2023). Suitability of the proposed development and surrounding area is high with the mature, continuous treeline providing important foraging and commuting routes.

During the construction phase, there will be an increased human presence on-site, particularly during the initial phase, which will involve the main construction and site clearance activities. Following this, noise emissions are expected to decrease in subsequent phases. The use of machinery and general

construction activities will lead to a temporary increase in noise emissions, which will be above the current baseline conditions. However, these emissions will be minor and localised, confined to specific areas of the proposed development site where work is being carried out at any given time.

During the construction phase, there will be an increase in on-site lighting, primarily for temporary security lighting of the construction compound(s). However, this will be temporary and primarily associated with works conducted during standard construction hours. The lighting will be localised to the specific areas of active work at any given time.

Considering the protection afforded to bats and the proposed development site's suitability for roosting/commuting/foraging bats, a precautionary approach has been adopted, with mitigation measures provided in **Section 6.3** below to address any potential impacts on bats. Therefore, despite any short-term effects, disturbance from artificial lighting/noise associated with the construction of the proposed development is unlikely to affect the conservation status of the local bat population and will not result in a significant negative effect at any geographic scale.

5.6 Potential Habitat Disturbance

5.6.1 Trees

Habitats within the proposed development footprint will be disturbed and lost. Habitat loss will predominantly impact the areas of dry meadow and grassy verge which is primarily considered of moderate botanical diversity, ecological value, and ecosystem functionality. There are also representatives of this habitat in the wider area at the north and west of the proposed development. One of the habitats of highest ecological value within the proposed development is the mature tree line, the stand of sessile oaks and the three single oaks in the large field to the west (**Appendix 2, Photograph 9.9**). These oaks will all be retained as will the existing treeline and undergrowth which will be maintained as a wildlife corridor. Any hedgerows/treelines that need to be removed will be replaced where necessary with native trees and appropriate mitigation measures will be implemented to ensure the protection of all retained hedgerows, treelines and trees.

Overall, the loss, disturbance, and fragmentation of habitats within the proposed development footprint are considered to have negative effects at the local scale, resulting in slight negative impacts on habitats primarily considered of *Local importance* (*medium value*).

5.6.2 Invasive species

No high-impact invasive plant species (as listed by the NBDC) were recorded within the proposed development site footprint during the site visits. Plants and pathogens can be transported with machinery and equipment. To mitigate potential impacts on water quality and protect habitats and species, stringent mitigation measures are proposed. Machinery should always be cleaned before entering the site to avoid the transport of alien invasive species. All machinery and equipment used in water should be treated to prevent the spread of invasive species (Check/Clean/Dry or disinfection).

5.7 In-combination Assessment

The proposed development has been considered in combination with other plans and projects in the locality that could result in cumulative/in-combination effects on the relevant ecological receptors. Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated within an area or location. The primary sources of potential cumulative effects arising from interactions between the proposal and other proposed/permitted developments are considered to include cumulative habitat loss, cumulative water quality impacts, and/or cumulative species disturbance/displacement impacts.

The in-combination assessment focuses on projects/plans that could, in fact, act in-combination with the current proposed development to affect the relevant ecological receptors. This targeted approach ensures that the assessment of in-combination impacts is concentrated on the relevant impacts. In the case of projects, the in-combination impacts of both plans and projects must be considered (i.e. not solely other projects). Plans and projects that are not yet proposed generally do not need to be included in the assessment of in-combination effects, even if they are part of an overarching masterplan. The exception to this is where the project is considered to be functionally interdependent with the development before the competent authority.

A search of the Westmeath County Council planning enquiry system (https://www.eplanning.ie) and An Bord Pleanála, was conducted on the 26th May 2025. Finalised applications submitted within the vicinity of the proposed development in the last 5 years were examined. These applications primarily consist of medium to large-scale residential development both bordering and in close proximity to the proposed development. These projects are in various stages of development with the residential development bordering the proposed development to the east currently in an advanced stage of development. As a result of the scale of development in the local area, and the potential effects regarding surface water runoff and dust to Lough Ree's SPA and SAC, the risk for in-combination effects with these developments cannot be reasonably excluded and mitigation is required.

Table 5.2: In-combination Assessment with regards to the proposed development.

Planning reference	Proposal	Characteristics of the potential interactions between the projects; sources and pathways	Is there a risk of in-combination effects
ABP Ref: LH25M.319902 Planning Authority Ref: 2660374 Granted with revised conditions: 23/9/24	Large Scale Residential Development on a site of total c. 7.31 ha comprising of a residential development and public open space comprising the following: Construction of 177 no. residential units on a gross site area of 7.31 ha, ranging in height from 2-3 storeys comprising detached, semi-detached, and terraced houses, maisonettes and 3 storey duplex apartments. 65 no. 2 bed houses, 71 no. 3 bed houses and 9 no. 4 bed houses will be provided. 24 no. 1 bed maisonette apartment units and 8 no. 3 storey duplex apartment units will be provided included all associated development works. This development will form part of a larger phase of permitted and proposed development. This planning application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement	This project is part of a wider, large scale residential development for the area, the consent process for which was subject to applicable EIA and AA requirements. Considering the proximity of the project to the proposed development and elevated levels of development ongoing in the immediate area of Cornamaddy, the possibility of in-combination effects cannot be ruled out for dust and surface water runoff and mitigation is required. applicable EIA and AA requirements.	Yes
ABP Ref: PL25M.318510 Planning Authority Ref: 22577 Granted with revised conditions: 23/4/24	Amendments to permitted application. Construction of 70 residential units and all associated site works. The planning application is accompanied by an Environmental Impact Assessment Report and Natura Impact Statement.	This site is adjacent to the proposed development and is is part of a wider, large scale residential development for the area, the consent process for which was subject to applicable EIA and AA requirements. Considering the proximity of the project to the proposed development and elevated levels of development ongoing in the immediate area of Cornamaddy, the possibility of in-combination effects cannot be ruled out for dust and surface water runoff and mitigation is required. applicable EIA and AA requirements.	Yes
ABP Ref: LH25M.318736 Planning Authority Ref: 2360074 Granted with revised conditions: 16/4/24	Large scale residential development: 10 year permission for 332 residential units along with provision of a creche, car parking, electric vehicle charge points bicycle and bin storage facilities, link road, footpath, open space areas, residential communal open space areas and site development works. Natura Impact Statement and Environmental Impact Assessment Report submitted to planning authority.	This project is part of a wider, large scale residential development for the area, the consent process for which was subject to applicable EIA and AA requirements. Considering the proximity of the project to the proposed development and elevated levels of development ongoing in the immediate area of Cornamaddy, the possibility of in-combination effects cannot be ruled out for dust and surface water runoff and mitigation is required. applicable EIA and AA requirements.	Yes
ABP Ref: PL25M.313637 Planning Authority Ref: 22103 Granted with revised conditions: 11/12/23	Retain the change of use of a former wholesalers/warehouse building to the use as a shop including ancillary staff offices and canteen, changes to the external finish of the building including door openings to the North, South and East elevations, car parking and associated site works	The scale of the works and the distance from the proposed development, including being buffered by the N55 means that any potential interactions are not envisioned.	No

ABP Ref: PL25.244826 Planning Authority Ref: 22253 Granted with revised conditions: 6/12/22	The development will consist of the following: Construction of 75 no. residential units comprising: 51 no. 2 storey semi-detached and terraced houses (consisting 4 no. 2 bed houses and 47 no. 3 bed houses, ranging in size from c.78 sq.m – 120 sq.m each), and 24 no. 3 storey apartment/duplex units (consisting 12 no. 2 bed apartments and 12 no. 3 bed duplexes, ranging in size from 84sq.m to 121 sq.m each), with associated private gardens and east/west facing terraces; All pedestrian and vehicular access roads and footpaths including a section of the planned east/west distributor road connecting to a section of the distributor road to the south east of the site. All associated site development works, services provision, drainage works, residential open space (c.0.28ha) and public open space (c.0.82ha), landscaping, boundary treatment works, public lighting, 1 no. esb substation cabinets, bin stores, car and bicycle parking provision; Provision of a new detention basin on the eastern portion of the site designed to cater for the proposed development. This development will form part of a larger/future phase of the development; No changes to the existing pumping station located outside the northern site boundary; A Natura Impact Statement has been prepared in respect of this application.	This project is part of a wider, large scale residential development for the area, the consent process for which was subject to applicable EIA and AA requirements. Considering the proximity of the project to the proposed development and elevated levels of development ongoing in the immediate area of Cornamaddy, the possibility of in-combination effects cannot be ruled out for dust and surface water runoff and mitigation is required. applicable EIA and AA requirements.	Yes

Section 6: PROTECTIVE MITIGATION MEASURES

This section outlines the mitigation measures to be implemented during the construction, operational, and decommissioning phases of the proposed development to avoid or reduce potential impacts on the receiving environment. All of the mitigation measures will be implemented in full and are best practice, tried and tested, effective control measures to protect the receiving environment. In order to avoid and protect the existing ecological features on-site and within the surrounding area, the following mitigation measures are recommended below. While the proposed mitigation methods may be amended and supplemented, the risk of these measures failing to prevent significant ecological impacts is low.

6.1 Design Phase Mitigation

As part of the proposed development, buffer zones will be maintained around sensitive where possible to minimise ecological disturbance. These are recommended as 5 metres around the drainage ditch, treeline and feature oaks.

6.1.1 Mitigation by Avoidance and Design

The following measures have been incorporated into the proposed development design to reduce impacts on designated sites, flora, and fauna through avoidance and design:

- In line with policy CPO 12.24 from the Westmeath County Council Development Plan 2021-2027, the development will protect and where possible enhance biodiversity and ecological connectivity. The site design and layout have been carefully planned to incorporate features such as the mature sessile oaks and the mature treeline. The latter and its understorey will be conserved as a wildlife corridor to conserve ecological connectivity.
- The proposed development layout has been selected to avoid the land take of potentially sensitive habitats.
- Care has been taken to ensure that sufficient buffers are in place between project infrastructure and hydrological features, such as the drainage ditch and trees.
- Construction access routes and site layout have been planned to minimise disruption to surrounding areas and avoid impacting sensitive ecological zones.

6.2 Construction Phase Mitigation

6.2.1 Protection of Soil, Surface Waters and Groundwater

The following measures will be implemented to protect soil, surface waters, and groundwater during the construction phase of the proposed development:

- The contractor will ensure that no direct discharge of surface water occurs to the relevant waterbodies. A temporary positive drainage system shall be installed prior to the commencement of the construction works. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed before being discharged in a control manner. Alternatively, a 'siltbuster' silt control unit can be used on the outfall. The surface water will then be discharged into the below ground attenuation tank before outfalling into the public surface water network via the permanent outfall for the site. By directing the surface water from the construction works through this temporary drainage system and then through the permanent attenuation tank and outfall it will ensure that:
  - site disturbance is minimised;
  - build-up of sediment is controlled;
  - the potential for erosion is minimised; and,
  - sediment-contaminated water is prevented from leaving the site.
- A programme for monitoring water quality at the outfall will be implemented as part of the construction of this development, in agreement with the Planning Authority. This programme and locations of sampling will be agreed with Westmeath County Council.
- All liquids, solids, and powders will be stored in clearly labelled, sealable containers to prevent accidental spillages.
- Spill kits will be provided in areas where liquids are stored.
- All liquid and hazardous materials will be stored in a designated, temporarily bunded area (e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally) with appropriate signage in order to prevent accidental spillage. This temporarily bunded area will be located within the designated hardstanding storage area on-site and placed furthest away from the drainage ditch. An existing hard standing area is located at the entrance to the proposed development at the south of the site.
- The delivery point for concrete will be within the temporarily bunded area. This will prevent potential concrete spillage from truck mixers, contaminating the ground and leaching out into the groundwater.

- Compressors and generators will be fitted with drip trays to collect fuel and oil spills, which could otherwise contaminate the groundwater and lead to pollution of waterbodies.
- Contractors will be responsible for ensuring the regular maintenance of construction plant and equipment to prevent leaks.
- Any significant storage of hydrocarbons is not envisaged as construction vehicles will be refuelled off site.
- Construction plant and equipment shall only be parked over-night within the site compound at the existing hardstanding area. Construction plant and equipment shall be checked daily for any visible signs of oil or fuel leakage, as well as wear and tear.
- The local authority will be informed immediately of any spillage or pollution incident that may occur on-site during the construction phase.
- All small plant, such as generators and pumps, will be stood in drip trays capable of holding 110% of their tank contents.
- All small plant will be positioned as far as practicable from the drainage ditch.
- Waste oils, empty oil containers and other hazardous wastes will be disposed of in accordance with the requirements of the Waste Management Act, 1996 (as amended), and European Waste Catalogue (EWC) codes, and be disposed of at a licensed waste facility.
- The washing out of concrete trucks on site will not be permitted as they are a potential source of high alkalinity in waterbodies. Consequently, it is a requirement that all concrete truck washout takes place back in the ready-mix depot.
- A suitable road sweeper and mobile water bowser will be maintained on-site throughout the construction period. Any mud or debris deposited on the public road will be immediately removed.
- All mobile equipment brought to the proposed development site will be thoroughly power-washed and cleaned before arrival to prevent the spread of invasive alien species.
- The ground works operation will be carried out at a manner to ensure that material removed from the ground is taken away at regular intervals in order to reduce the amount of material that can be stored on site. Excavated subsoil layers are expected to be suitable for re use as non- structural fill subject to relevant onsite testing (GII will be conducting Site Investigation works in the future in line under the direction of Civil Structural Engineering Consultant Hayes Higgins).

- Materials generated during construction will only be temporarily stored within the construction compound before disposal. Typically, these materials will be transported to a licensed recycling facility on the same day they are collected.

6.2.2 Control of Noise

Environmental noise arising from activities within the proposed development site will be controlled in accordance with the requirements of British Standard BS5228. The following noise control measures for generated noise shall be implemented during the construction works:

- Work will only be conducted during normal working hours, with no work on Sundays or Bank Holidays, except in exceptional circumstances or emergencies. Night-time work is not anticipated and should be avoided. The hours of construction will be subject to the requirements and prior agreement with Westmeath County Council.
- All contractors will ensure that the plant and construction methods employed are the quietest available for the required purpose, insofar as practicable. This will minimise disturbance to avian species utilising the site or flying over it.
- All contractor vehicles will use existing site access roads and construction compound areas (surfaces of hard standing).
- Engines, vehicles and equipment will be switched off when not in use.
- Machinery with rotating parts will be serviced according to supplier recommendations to prevent friction-induced sound.
- Materials will be lowered, not dropped, insofar as practicable and safely.
- Use of enclosures and screens around noise sources.
- Liaison with the public.

6.2.3 Dust

A site representative responsible for matters relating to dust management will be appointed prior to construction on site. The site representative responsible for dust management shall ensure that dust management procedures are followed. Measures include the following:

- Construction activities and storage piles will be placed with consideration to the location of sensitive receptors and prevailing wind conditions to minimise the potential dust nuisance. Site management will include the ability to respond to adverse weather conditions by either restricting operations on site or using effective control measure in a timely manner before potential for nuisance occurs.

- A speed limit of at < 20km/hr will apply for all on-site vehicles
- Water bowsers will be provided during periods of dry weather to ensure unpaved areas are kept moist.
- Exposed site haul roads will be sprayed during dry and / or windy weather.
- Paved roads will be kept clean and free of mud and other materials.
- Un-surfaced roads will be restricted to essential site traffic.
- Water bowsers will be provided during periods of high winds and dry weather conditions to ensure moisture content is high to increase the stability of the soil.
- During the proposed infrastructure works the following mitigation measures shall be implemented to minimise dust emissions.
- Construction techniques shall minimise dust release into the air.
- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site.
- There will be regular watering of stockpiles during dry and windy periods.
- Any stockpiles will be located away from sensitive receptors, (i.e., receptors sensitive to dust release). Tarpaulins will be placed over all unacceptable excavated materials being carted off site.
- The wheels of all vehicles leaving the construction site will be washed to ensure that dirt and dust is not transferred onto the public roadway.
- During dry spells and if deemed necessary monitoring of dust levels shall be carried out using the Bergerhoff Method i.e., analysis of dust collecting jars left on-site (German Standard VDI 2119, 1972). Results will be compared to the TA Luft guidelines (TA Luft, 1972). Should an exceedance of the TA Luft limit occur, additional mitigation measures, for example more regular spraying of water, shall be implemented.

6.3 Protection of Flora and Fauna

Good environmental working practices will be upheld throughout the construction phase to mitigate potential ecological impacts. Construction noise, vibration, dust, and lighting will be minimised to reduce their effects on local wildlife.

All personnel involved in the project will receive an on-site induction regarding operations and the environmentally sensitive nature of local watercourses, waterbodies, and notable ecological features. This induction will emphasise the necessary precautions and mitigation measures to be implemented.

The spread and introduction of invasive species and noxious weeds will be prevented through the implementation of mitigation measures outlined in the NRA guidelines (2010)[24], Transport Infrastructure Ireland (TII) (2020) regarding the management and removal of invasive plant species, and best practice management guidelines outlined by Kelly *et al*., (2015).

According to Section 40 of the Wildlife Act (as amended):

- *"40(1) (a) It shall be an offence for a person to cut, grub, burn or otherwise destroy during the period beginning on the 1st day of March and ending on the 31st day of August in any year, any vegetation growing on any land not then cultivated.*
- *(b) It shall be an offence for a person to cut, grub, burn or otherwise destroy any vegetation growing in any hedge or ditch during the period mentioned in paragraph (a) of this subsection."*

Trees along the boundary as well as the sessile oaks on site will be protected in accordance with BS 5837: (2012) *Trees in Relation to Design, Demolition and Construction.* Tree root systems can be damaged during site clearance and groundworks. No materials should be stored within the root protection area of mature trees, as materials such as soil and stones can impede air and water circulation to the roots. Retention of the existing networks of treelines/hedgerows that form the external boundaries of the proposed development site will provide natural screening and help to maintain biodiversity and wildlife corridoors.

The following measures are applicable to the proposed development site:

- Should the removal of scrub, hedgerow, tree felling or delimbing be required, this should be undertaken outside of the bird breeding season (1st March to 31st August inclusive). A pre-works check by a qualified ECoW should be undertaken to ensure nesting birds are absent.
- No removed material or run-off will be allowed to enter a waterbody of any sort.
- For any material entering the site, the supplier must provide assurance that it is free of invasive species.
- All site personnel will be made aware of invasive species management, biosecurity protocols, and treatment methods through toolbox talks before site operations begin.

[24] National Roads Authority (NRA). (2010). *The management of noxious weeds and non-native invasive plant species on national roads*. Dublin, Ireland. Available at: The Management of Noxious Weeds and Non-Native Invasive Plant Species.

- Adequate site signage, hoarding, and fencing will be erected as needed to support the management of biodiversity features, including non-native invasive species, protected habitats, and wildlife corridors.
- All plant and equipment used during works will be in good working order, fit for purpose, regularly serviced/maintained and have no evidence of leaks or drips.
- All birds, their eggs, nests, and young, with the exception of certain species, are protected under the Wildlife Acts. Areas of the site found containing nests will be cordoned off to a distance of c. 20 m from any nests. All plant and construction activities will remain outside this cordon until the young have fledged (left the nest entirely). The 20-metre radius will be centred on the nest site, with each nest protected by an equivalent circle. All other areas will remain accessible for operations.

6.3.1 Bats

Bat activity was not recorded for the proposed development. However, suitability for bats in this area is deemed high.

If bat roosts or bats are discovered during clearance or construction activities, works will cease immediately, and the NPWS will be contacted to avoid committing an offence by disturbing a bat roost. Work will remain suspended until appropriate measures are implemented to mitigate any potential harm.

If a bat roost may be impacted by the proposed development, a Derogation Licence issued under Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 will be required prior to any works affecting the relevant buildings, structures, or trees on-site. This licence must be obtained from the DHLGH through NPWS in advance of any works taking place which would or potentially could disturb bats or their roosts. This licence is required irrespective of any requirement for planning consent, or otherwise. Activities requiring a Derogation Licence may only proceed once the licence is granted and will be subject to any conditions attached.

The sessile oaks on site and the mature treeline could potentially be utilised as bat roosts. While these features are proposed to be retained. If trees do need to be removed, the following precautionary measures should be implemented:

- Tree-felling should be undertaken from late August to late October. During this period, bats are capable of flight, which may mitigate the risks associated with tree-felling.

- Felling during the winter months should be avoided, as this presents the additional risk that bats may be in hibernation and unable to escape from the tree being felled. Additionally, disturbance during winter may reduce the likelihood of survival, as the bats' body temperature is too low, and they may need to consume excessive body fat to survive.
- Tree-felling should be carried out using heavy plant and chainsaws. A wide range of equipment is available that is both heavy and stable enough to safely fell a tree. Typically, trees are pushed over, with a need to excavate and sever roots in some cases. To ensure the optimum warning for any roosting bats that may still be present, an affected tree should be pushed lightly two to three times, with a pause of approximately 30 seconds between each push to allow bats to become active. The tree should then be pushed to the ground slowly and left in place for a period of at least 48 hours to allow bats, if present, to escape.
- Trees that have been felled should NEVER be immediately sawn up or mulched, to avoid harming any protected wildlife that may be present.
- Trees used for future landscaping should consist of a high percentage of native Irish species of local provenance.
- To ensure continuity of treelines/hedgerows for commuting and foraging bats, gaps of less than 10m should be left. Larger gaps may negatively impact bat flight dynamics.
- It is recommended to cut back heavy ivy on trees to be retained, as excessive ivy can cause suppression of the crown and increase the wind sail area, making the tree more vulnerable to wind damage. Where necessary, ivy should be cut at ground level, allowing it to die off and gradually fall from the tree over time.

Lighting for Bats

In line with the Westmeath County Councils Development Plan 2021-2027, policy CPO 12.21**:** Lighting fixtures should provide only the amount of light necessary for personal safety and should be designed so as to avoid creating glare or emitting light above a horizontal plane. Lighting should only be installed where necessary, illuminated during the required time period, and set to levels that enhance visibility. To preserve the commuting/foraging potential of all treelines and hedgerows to be retained and minimise disturbance to bats using the proposed development site in general, the lighting and layout of the proposed development will be designed to minimise light-spill onto habitats potentially used by the local bat population, foraging or commuting such as the mature treeline or feature sessile oaks. This will be achieved by ensuring that the design of lighting is in accordance with the guidelines presented in the Bat Conservation Trust and Institute of Lighting Professionals 'Bats and Lighting in

the UK'[25]. The IPL and BCT (2023)[26] guidelines provide a list of recommendations in relation to luminaire design, based on extensive research completed to-date on the potential impact of lighting on bats. The street lighting used will be Veelite metro series with LED, cut off lighting with light directed downwards (**Figure 6.1**) and taking into consideration what the appropriate luminaire specifications for bats is. The design strategy aims to minimise the potential impact on bats by incorporating the following measures:

- Direct lighting of existing trees and proposed areas of habitat creation/landscape planting will be avoided. Excessive lighting will be minimised by using only the minimum light level necessary for safety (**Figure 6.2**).
- All luminaires will lack UV elements and metal halides and fluorescent sources will not be used. Lighting regimes that attract large numbers of insects can deplete insect populations in other areas that bats may use for foraging.
- LED luminaires will be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700Kelvin) will be adopted to reduce blue light component.
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Low-level downward directional luminaires will be used to retain darkness above.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- Light spill will be minimised by eliminating any bare bulbs and any upward pointing light. The spread of light will be kept near to or below the horizontal.
- Lighting will only be turned on when required, ensuring that it is only active during maintenance or security activities, and minimising its impact on bat behaviour.

[25] BCT (2008) Bats and Lighting in the UK. Bats and the Built Environment Series.

[26] Bat Conservation Trust and Institute of Lighting Professionals (2023) Guidance Note 08/23: Bats and artificial lighting in the UK. ILP, Rugby.

Figure 6.1: The Veelite metro series LED light proposed for the street lighting.

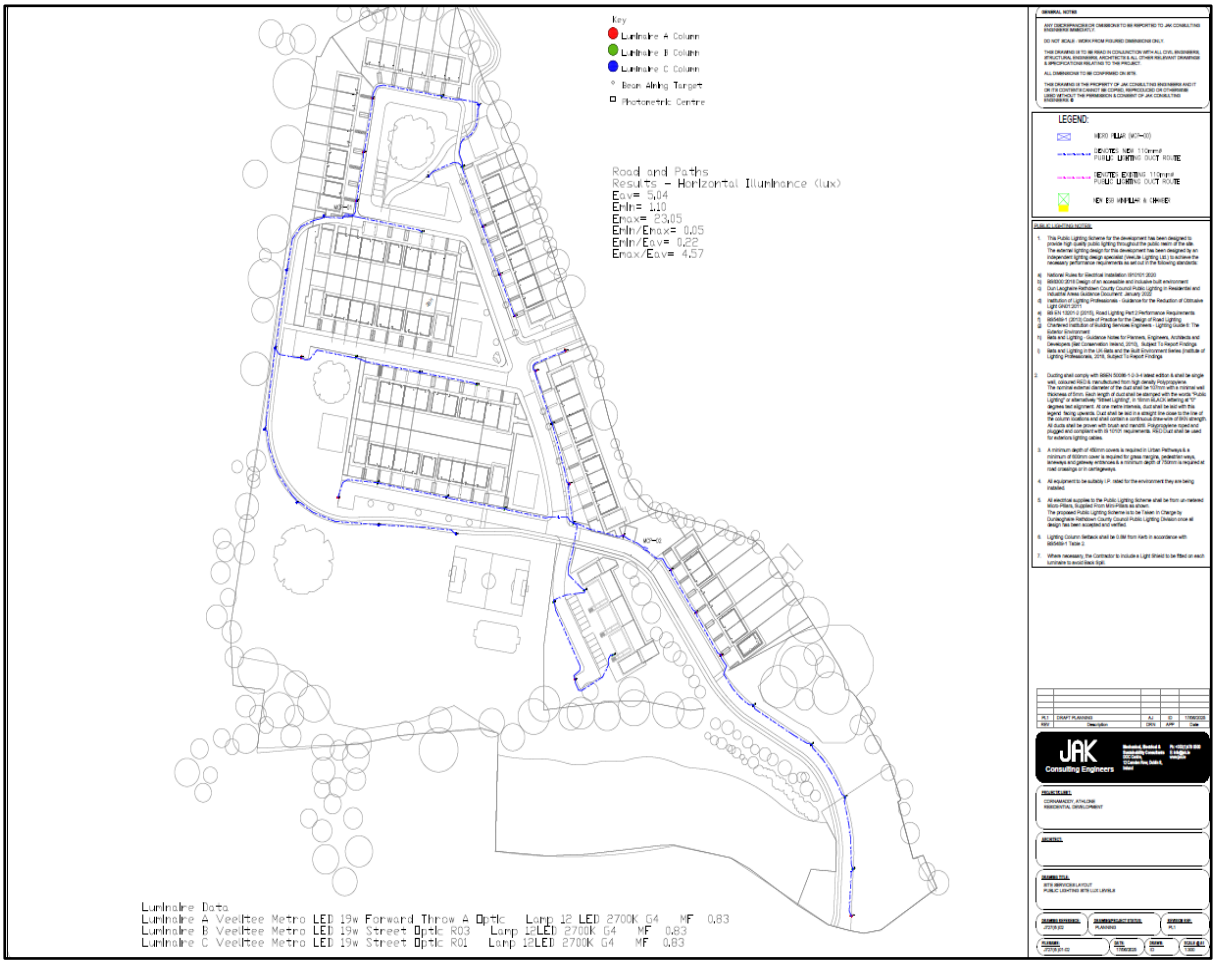

Figure 6.2: The proposed location of street lighting.

6.3.2 Mammals (non-volant)

The following measures shall be implemented to prevent impacts on non-volant mammals:

- Stringent and robust mitigation measures are proposed to avoid impacts on water quality.
- A site speed limit of c. 20 km/h will be strictly enforced to prevent vehicular traffic fatalities.
- While badgers were found to use the proposed development for commuting and foraging, no setts were found on site. An unverified sett was located north of the proposed development and setts were previously found in the area to the east which is currently under development (Enviroguide, 2023). Given the potentially disturbance caused by this development, badgers may move into the proposed development. Therefore, if a sett is discovered on site during the construction phase, no heavy machinery will be used within 50m during the breeding season (December to June) or 30m outside of this time. Lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance; and light work, such as digging by hand or scrub clearance, should not take place within 10m of sett entrances. This should be supervised by the ecological clerk of works (ECoW) for the proposed development.
- As best-practice, all construction-related rubbish on-site (e.g., plastic sheeting, netting, etc.) should be kept in a designated area on-site and off the ground level to protect hedgehogs and other small mammals (e.g., pygmy shrew) from entrapment and death.
- Works likely to cause disturbance during hedgehog hibernation (e.g., removal of hibernation habitats such as log piles and dense scrub) should not take place from November to March.
- The majority of vegetation will be retained but where vegetation removal is necessary, it will be removed in sections, working in a consistent direction to prevent entrapment of protected fauna that may be present. This will be supervised by the ECoW for the proposed development.
- Construction operations will take place during the hours of daylight to minimise disturbances to faunal species at night.
- Vehicular traffic during the construction phase along the site access roads may result in fatalities, however, this is not expected to be significant due to the mainly diurnal requirement for access and speed restrictions which will be in place.
- During construction, open trenches/excavations must incorporate facilities for badgers (and other wildlife, such as otters, foxes, hedgehogs etc.) to escape, by means of gently sloping earth inclines to be left at the end of each workday at each end of any open trenches/excavations.

- In the event that an issue arises, the NPWS will be updated and consulted. Relevant guidelines shall be followed, and any licences/amendments to licences will be sought from NPWS.

6.3.3 Avifauna

The following measures shall be implemented to prevent impacts on birds:

- Any clearance of vegetation should be carried out outside the main breeding season, i.e., 1st March to 31st August, in compliance with the Wildlife Acts. Should any vegetation removal be required during this period, the NPWS will be consulted, and instructions followed accordingly.

To mitigate daytime noise disturbance, the following measures will be implemented:

- Select plant with low inherent potential for generating noise.
- Site plant as far away from sensitive receptors as permitted by site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Properly balance plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies the drop point.
- Use alternative reversing alarm systems on plant machinery.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limit the hours during which site activities likely to generate high levels of noise are permitted.
- Appoint a site representative responsible for matters relating to noise.
- Monitor typical noise levels during critical periods and at sensitive locations.

Nesting Birds

Vegetation removal during the breeding season may not be possible as verifying an absence of nests from these vegetation types is extremely difficult. Therefore, the preferred mitigation is to leave vegetation in place until after the bird nesting season. At the end of the season, it is important to continue checking for nesting birds, as some species continue to nest after the recognised season (March to August incl.).

The buffer zones for green-listed species will be approximately 10m-20m. For red- and amber-listed species, appropriate buffer zones, ranging from 50m to 600m, depending on the on the species' sensitivity to disturbance and relevant guidance.

All project personnel should receive an environmental induction on a scale relevant to their work activities. This induction should include specific considerations for avifauna, focusing on the potential impacts of construction activities on the relevant bird species and their habitats.

6.3.4 Biosecurity

There is potential for aquatic and/or terrestrial invasive species or pathogens (e.g. ash dieback) to be accidentally introduced to a location via contaminated vehicles and/or equipment, particularly tracked vehicles that have previously been used in locations containing invasive species. The following best-practice avoidance measures will help contain and/or prevent the introduction of invasive species:

- Prior to arrival at the proposed development site, contractors' vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning with water >65°C, in addition to the removal of all vegetative material. Items difficult to soak/spray will be wiped down with a suitable disinfectant (e.g. a 1% Virkon® Aquatic solution).
- Evidence that all machinery has been cleaned will be required and kept on file for review by the statutory authorities. The level of evidence required from the contractor will include registration plates of vehicles on-site and a register detailing when, how, and where each vehicle was cleaned before arriving at the proposed development.
- Visual inspections will be carried out on all machinery and equipment for evidence of attached plant or animal material or adherent mud or debris. Any attached or adherent material will be removed before entering or leaving the proposed development site, securely stored (away from traffic) for removal to an appropriate waste storage area at the end of the workday.
- No removed material or run-off will be allowed to enter a waterbody of any sort.
- Following cleaning, all equipment and vehicles will be visually inspected to ensure that all adherent material and debris has been removed manually.
- Each field vehicle must carry a 'disinfection box'. This will contain Virkon Aquatic or another proprietary disinfectant, a spraying mechanism, cloths or sponges, a scrubbing brush and protective gloves. Protective gloves must be worn when using any disinfectant solution.
- Records of supplies and the cleaning of delivery vehicles will be maintained.
- Disinfectants must be used strictly in accordance with the manufacturer's instructions. They must be disposed of safely and never close to open waters such as drains etc.
- For any material entering the proposed development site, the supplier must provide an assurance that it is free of invasive species.

- Ensure all site users are aware of the invasive species management plan, biosecurity and treatment methodologies (as appropriate). This can be achieved though 'toolbox talks' before works begin within the proposed development.
- Adequate site signage, hoarding and fencing will be erected in relation to the management of non-native invasive species should they be found on site.

6.4 Operational Phase

6.4.1 Surface water run-off

The proposed development's operational phase will connect to the Kippinstown stream directly via a small open drain north of the site in order to facilitate surface water drainage from the proposed development. However, best practice SuDS measures will be implemented as part of the proposed development's operational phase. These include:

- Limiting surface run off in the operational phase to greenfield run off rates (Qbar); attenuation on site via 3 (no.) underground eco bloc attenuation systems with capacity for 1-in-100 year rainfall event with additional allowance for climate change and increased development;
- 3 (no.) petrol interceptors with a peak flow of 100 L/S and storage capacity of 1000L.

These are standard measures, recommended as part of objectives of the Westmeath County Development Plan 2021-2027[24] and best practice guidance on SuDS[25], and are installed regardless of relationships to European sites and thus not intended to address potential effects[26]. Therefore, there are no sources for effect in this regard.

6.4.2 Disturbance and displacement

Ecological corridoors will be maintained along the boundary of the site, ensuring continued connectivity and refugia. Noise will be largely restricted to the daytime which will have little impact on many of the nocturnal species who appear to utilise the proposed development for foraging and commuting. As this is a residential area the noise levels produced during the operational phase would be in line to that already present in the wider area. Excessive lighting will be avoided with external light fixtures providing only the amount of light necessary for personal safety. Light will be directed away from the treeline and other sensitive habitats. There will be no upward lighting, to minimise skyglow and reduce the potential impact on bat foraging and commuting routes.

Section 7: CONCLUSION

A comprehensive ecological impact assessment was undertaken to evaluate the layout, nature, and construction methods of the proposed development, along with all associated activities during the construction and operational phases. This assessment provided a detailed examination of the potential for adverse effects on the local ecology.

Based on the collation of the above information, it is concluded that the proposed development will have a localised impact on habitats covered under the footprint of the proposed works during the construction phase. The majority of the habitat value is in the mature treeline and mature sessile oaks. The ethos of the proposed development has a strong emphasis on retaining and working with the existing landscape for instance, the three mature sessile oaks and sessile oak stand will be retained. The existing treeline and undergrowth bordering the perimeter of the proposed development will also be retained as a wildlife corridoor. In addition, an allotment area is proposed in the southeast of the site which will further ensure that the biodiversity value of the area is conserved.

Provided that the proposed development is constructed and operated in accordance with the design, best practice and mitigation measures outlined, significant residual effects are not anticipated on any key ecological receptors at any scale.

The implementation of mitigation and protection measures throughout the construction and operational phases will ensure that the proposed development does not result in significant residual impacts, either alone or in combination with other plans or projects.

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Section 9: Appendices

Appendix 1: Maps

Figure 9.1: Habitat map of the proposed development.

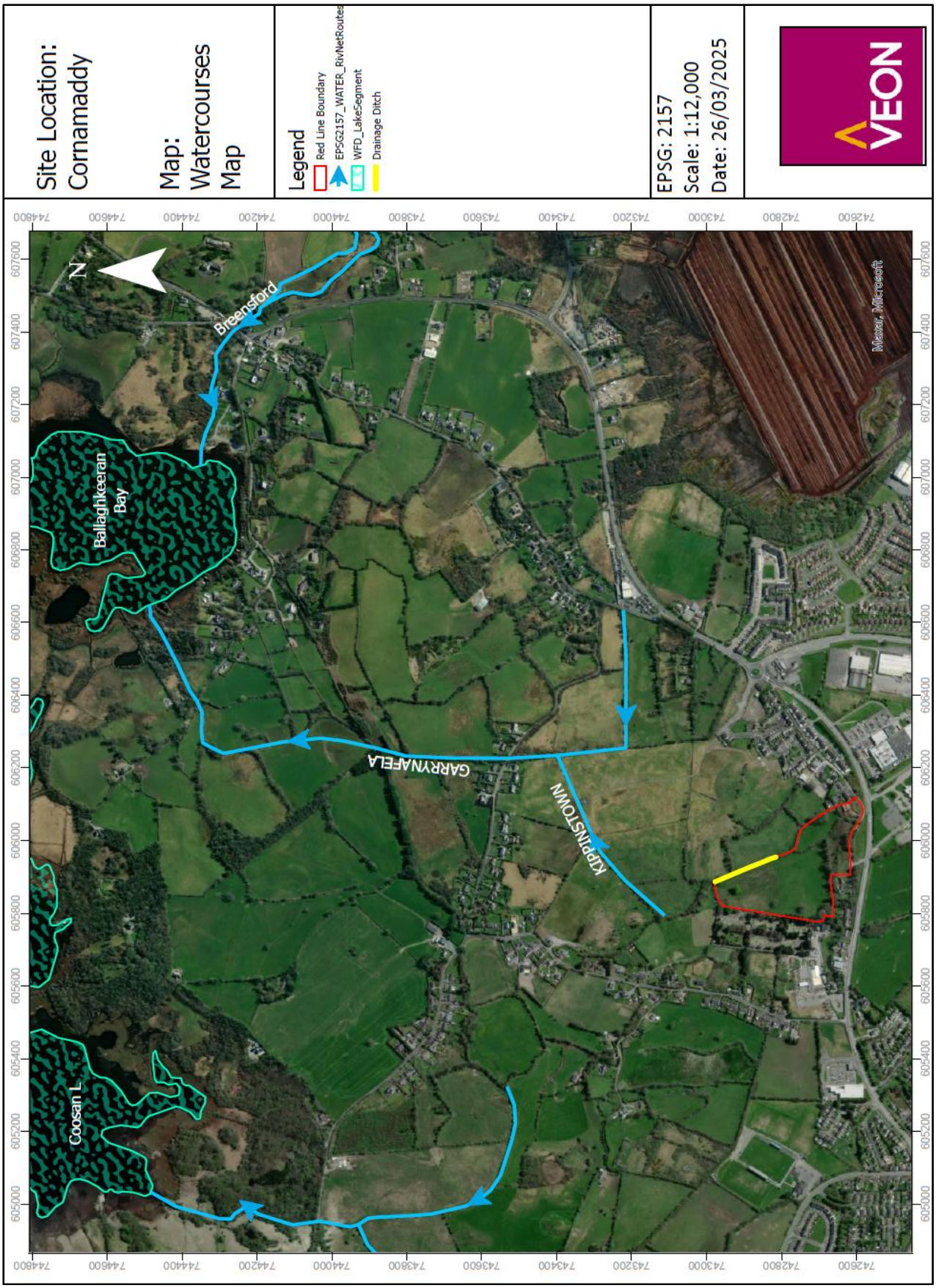


Figure 9.2: Watercourses bordering the surrounding area.

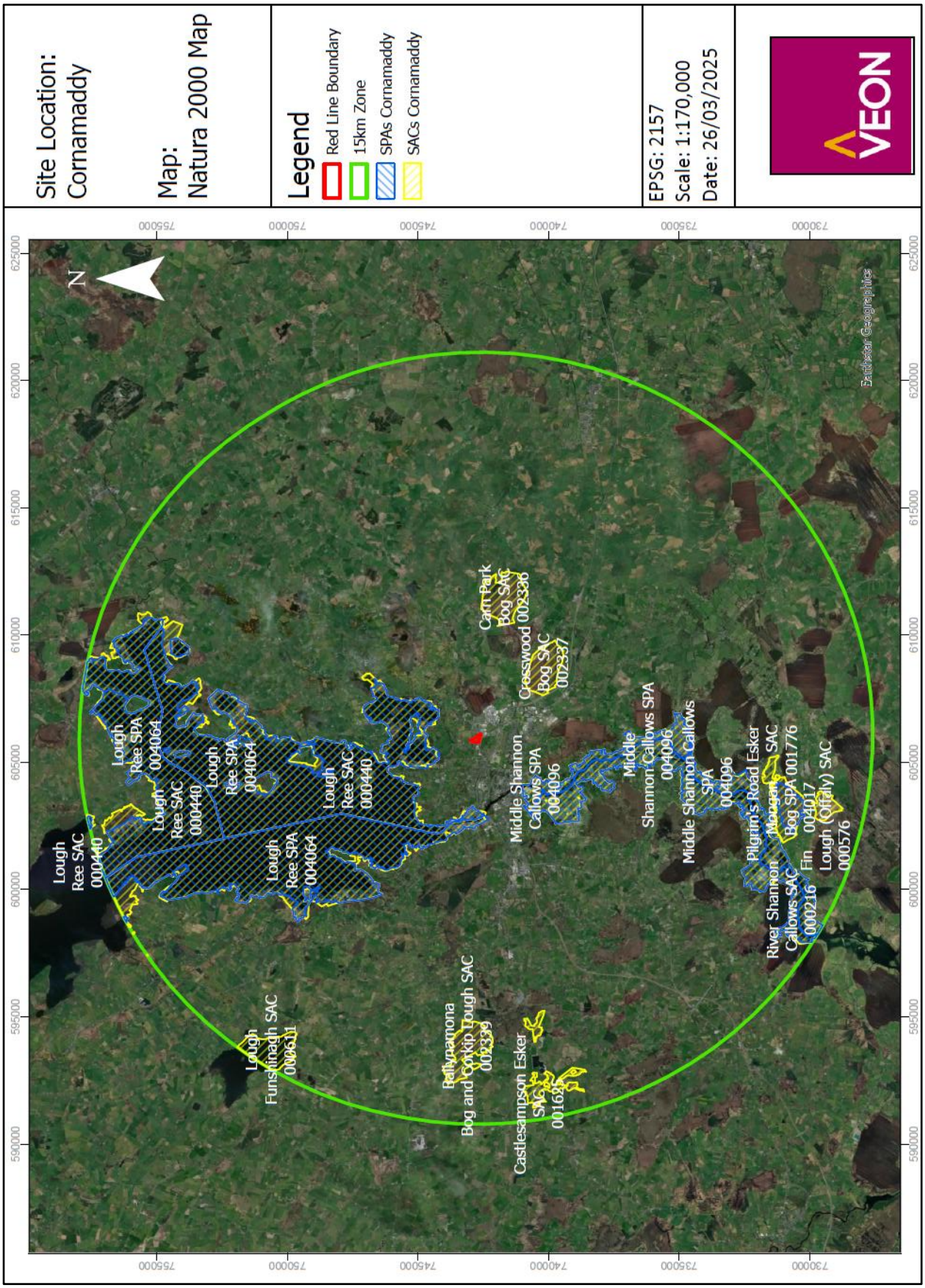


Figure 9.3: Natura 2000 sites within 15km of the proposed development.

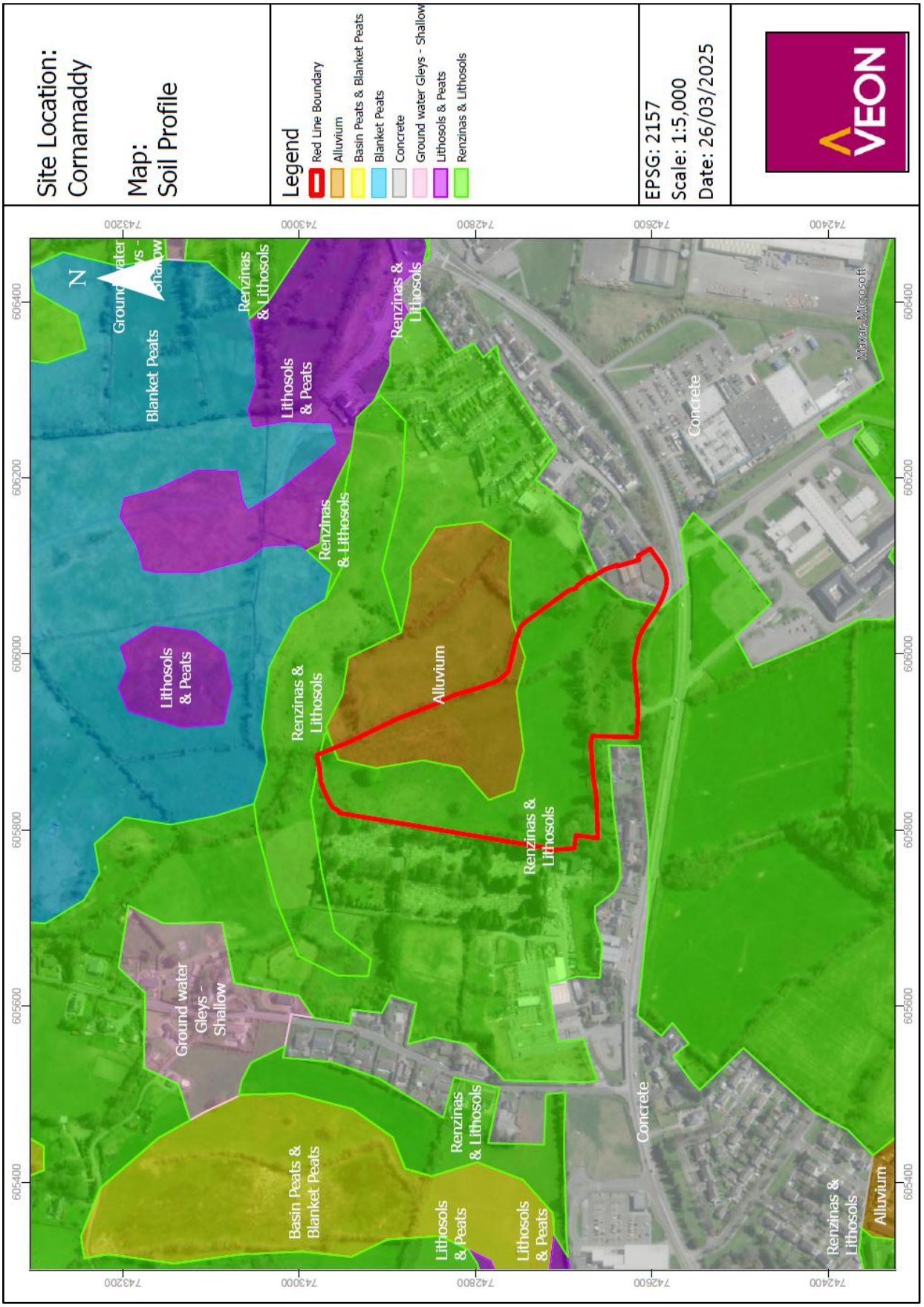


Figure 9.4: Soil profile of the proposed development and surrounding area.

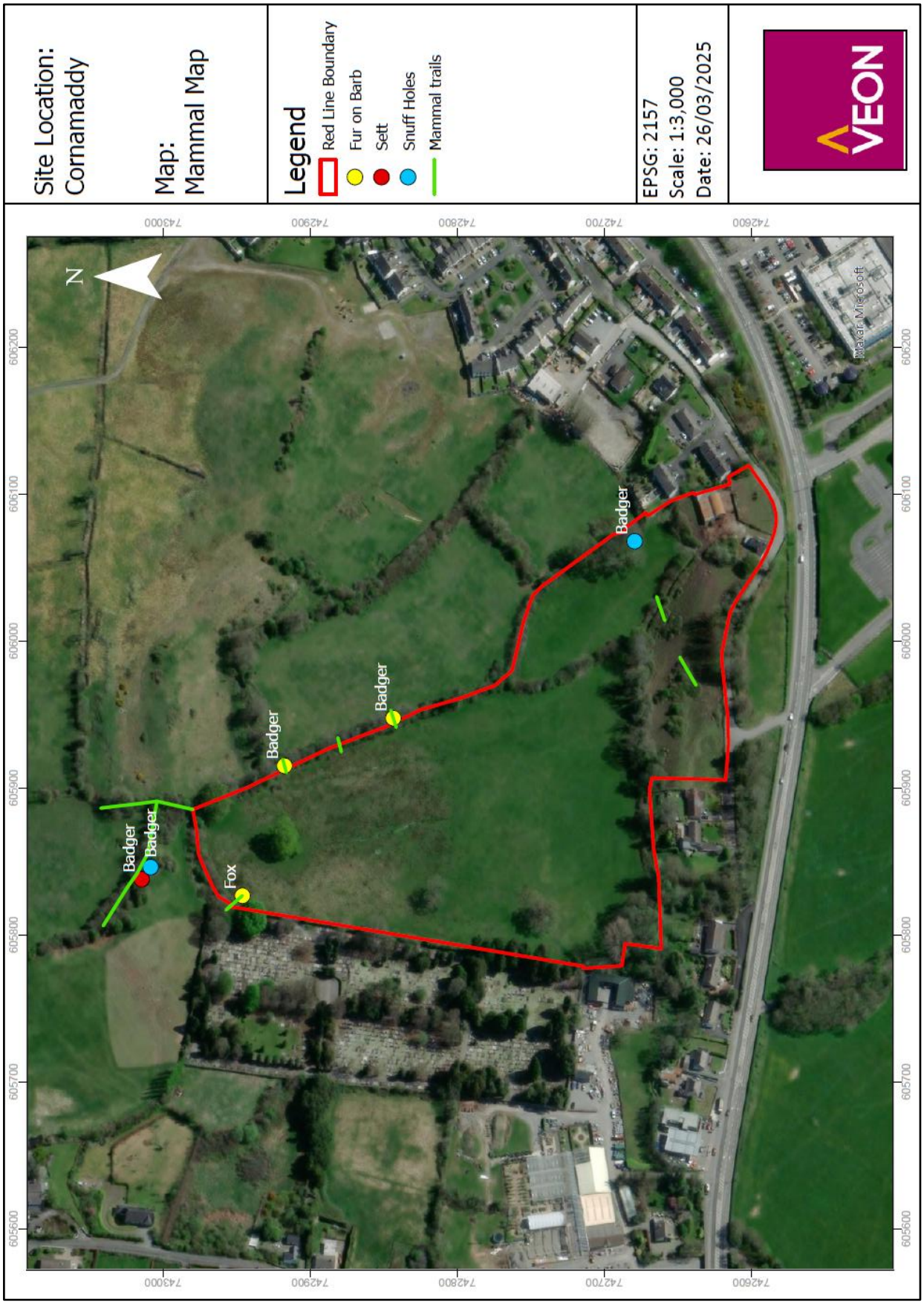


Figure 9.5: Signs of mammal activity within the proposed development and immediate area.

Further Appendices (Biodiversity Data)

Table 9.1: Protected bird species recorded in 10km^2 grid surrounding the site (NBDC, 2025).

Bird species recorded in 10km^2	
Common Name/Scientific Name	**Designations/Conservation Status**
Barn Owl (Tyto alba)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Barn Swallow (Hirundo rustica)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Black-billed Magpie (Pica pica)	
Blackcap (Sylvia atricapilla)	
Black-headed Gull (Larus ridibundus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Blue Tit (Cyanistes caeruleus)	
Chaffinch (Fringilla coelebs)	
Coal Tit (Periparus ater)	
Common Blackbird (Turdus merula)	
Common Bullfinch (Pyrrhula pyrrhula)	
Common Buzzard (Buteo buteo)	
Common Chiffchaff (Phylloscopus collybita)	
Common Coot (Fulica atra)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Cuckoo (Cuculus canorus)	

Common Eider (Somateria mollissima)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Goldeneye (Bucephala clangula)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Grasshopper Warbler (Locustella naevia)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kestrel (Falco tinnunculus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Kingfisher (Alcedo atthis)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Linnet (Carduelis cannabina)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Moorhen (Gallinula chloropus)	
Common Pheasant (Phasianus colchicus)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species

Common Pochard (Aythya ferina)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Raven (Corvus corax)	
Common Redshank (Tringa totanus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Sandpiper (Actitis hypoleucos)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Shelduck (Tadorna tadorna)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Snipe (Gallinago gallinago)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Common Starling (Sturnus vulgaris)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Swift (Apus apus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Tern (Sterna hirundo)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Whitethroat (Sylvia communis)	

Common Wood Pigeon (Columba palumbus)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Eurasian Collared Dove (Streptopelia decaocto)	
Eurasian Curlew (Numenius arquata)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Jackdaw (Corvus monedula)	
Eurasian Jay (Garrulus glandarius)	
Eurasian Oystercatcher (Haematopus ostralegus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Siskin (Carduelis spinus)	
Eurasian Sparrowhawk (Accipiter nisus)	
Eurasian Teal (Anas crecca)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Eurasian Treecreeper (Certhia familiaris)	
Eurasian Wigeon (Anas penelope)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Eurasian Woodcock (Scolopax rusticola)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
European Golden Plover (Pluvialis apricaria)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
European Goldfinch (Carduelis carduelis)	
European Greenfinch (Carduelis chloris)	
European Robin (Erithacus rubecula)	
European Shag (Phalacrocorax aristotelis)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Fieldfare (Turdus pilaris)	
Gadwall (Anas strepera)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Garden Warbler (Sylvia borin)	
Goldcrest (Regulus regulus)	
Great Black-backed Gull (Larus marinus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Cormorant (Phalacrocorax carbo)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Great Crested Grebe (Podiceps cristatus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Shearwater (Puffinus gravis)	
Great Spotted Woodpecker (Dendrocopos major)	
Great Tit (Parus major)	
Grey Heron (Ardea cinerea)	
Grey Phalarope (Phalaropus fulicarius)	
Grey Plover (Pluvialis squatarola)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Grey Wagtail (Motacilla cinerea)	
Hedge Accentor (Prunella modularis)	
Hen Harrier (Circus cyaneus)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Herring Gull (Larus argentatus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Hooded Crow (Corvus cornix)	
House Martin (Delichon urbicum)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow (Passer domesticus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Lesser Black-backed Gull (Larus fuscus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lesser Redpoll (Carduelis cabaret)	
Little Egret (Egretta garzetta)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Little Grebe (Tachybaptus ruficollis)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Long-eared Owl (Asio otus)	
Long-tailed Tit (Aegithalos caudatus)	
Mallard (Anas platyrhynchos)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Meadow Pipit (Anthus pratensis)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Mew Gull (Larus canus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mistle Thrush (Turdus viscivorus)	
Mute Swan (Cygnus olor)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Northern Lapwing (Vanellus vanellus)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Northern Pintail (Anas acuta)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Northern Shoveler (Anas clypeata)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Peregrine Falcon (Falco peregrinus)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Pied Wagtail (Motacilla alba subsp. yarrellii)	
Red Kite (Milvus milvus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Redwing (Turdus iliacus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Reed Bunting (Emberiza schoeniclus)	
Ringed Plover (Charadrius hiaticula)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Rock Pigeon (Columba livia)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Rock Pipit (Anthus petrosus)	
Rook (Corvus frugilegus)	
Sand Martin (Riparia riparia)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Sedge Warbler (Acrocephalus schoenobaenus)	
Sky Lark (Alauda arvensis)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Snowy Owl (Bubo scandiaca)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Song Thrush (Turdus philomelos)	
Sooty Shearwater (Puffinus griseus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Spotted Flycatcher (Muscicapa striata)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Stonechat (Saxicola torquata)	
Tufted Duck (Aythya fuligula)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Water Rail (Rallus aquaticus)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Whimbrel (Numenius phaeopus)	
Whinchat (Saxicola rubetra)	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
White Wagtail (Motacilla alba)	
White-tailed Eagle (Haliaeetus albicilla)	Protected Species: Wildlife Acts
Whooper Swan (Cygnus cygnus)	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Willow Warbler (Phylloscopus trochilus)	
Wilson's Storm-petrel (Oceanites oceanicus)	
Winter Wren (Troglodytes troglodytes)	

Table 9.2: Mammal species recorded in 10km^2 grid surrounding the site (NBDC, 2025).

Mammal species recorded in 10km^2	
Common Name/Scientific Name	**Designations/Conservation Status**
American Mink (Mustela vison)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Bank Vole (Myodes glareolus)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Brown Long-eared Bat (Plecotus auritus)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Common Pipistrelle (Pipistrellus pipistrellus sensu stricto)	
Daubenton's Bat (Myotis daubentonii)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Eastern Grey Squirrel (Sciurus carolinensis)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Eurasian Badger (Meles meles)	Protected Species: Wildlife Acts
Eurasian Pygmy Shrew (Sorex minutus)	Protected Species: Wildlife Acts
Eurasian Red Squirrel (Sciurus vulgaris)	Protected Species: Wildlife Acts
European Otter (Lutra lutra)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
European Rabbit (Oryctolagus cuniculus)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Greater White-toothed Shrew (Crocidura russula)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Irish Hare (Lepus timidus subsp. hibernicus)	
Lesser Noctule (Nyctalus leisleri)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts

Natterer's Bat (Myotis nattereri)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Pine Marten (Martes martes)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Pipistrelle (Pipistrellus pipistrellus sensu lato)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Red Fox (Vulpes vulpes)	
Soprano Pipistrelle (Pipistrellus pygmaeus)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
West European Hedgehog (Erinaceus europaeus)	Protected Species: Wildlife Acts
Whiskered Bat (Myotis mystacinus)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Wood Mouse (Apodemus sylvaticus)	

Table 9.3: High impact invasive species recorded in 10km^2 grid surrounding the site (NBDC, 2025).

High impact invasive species recorded in 10km^2		
Group	**Common Name/Scientific Name**	**Designations/Conservation Status**
crustacean	Hemimysis anomala	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Flatworm (Turbellaria)	Arthurdendyus triangulatus	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
flowering plant	Cherry Laurel (Prunus laurocerasus)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
fungoid	Aphanomyces astaci	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
terrestrial mammal	Eastern Grey Squirrel (Sciurus carolinensis)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Canadian Waterweed (Elodea canadensis)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Indian Balsam (Impatiens glandulifera)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Japanese Knotweed (Fallopia japonica)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
flowering plant	Nuttall's Waterweed (Elodea nuttallii)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

flowering plant	Rhododendron ponticum	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
mollusc	Zebra Mussel (Dreissena (Dreissena) polymorpha)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
terrestrial mammal	American Mink (Mustela vison)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

Table 9.4: Other protected species recorded in 10km^2 grid surrounding the site (NBDC, 2025).

Other protected species recorded in 10km^2		
Group	**Common Name/Scientific Name**	**Designations/Conservation Status**
amphibian	Common Frog (Rana temporaria)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
amphibian	Smooth Newt (Lissotriton vulgaris)	Protected Species: Wildlife Acts
clubmoss	Fir Clubmoss (Huperzia selago)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V
crustacean	Freshwater White-clawed Crayfish (Austropotamobius pallipes)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
flowering plant	Narrow-leaved Helleborine (Cephalanthera longifolia)	Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order || Threatened Species: Endangered
insect - butterfly	Marsh Fritillary (Euphydryas aurinia)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Threatened Species: Vulnerable
mollusc	Desmoulin's Whorl Snail (Vertigo (Vertigo) moulinsiana)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: Wildlife Acts || Threatened Species: Endangered
mollusc	Geyer's Whorl Snail (Vertigo (Vertigo) geyeri)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: Wildlife Acts || Threatened Species: Vulnerable
moss	Large White-moss (Leucobryum glaucum)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Threatened Species: Least concern
reptile	Common Lizard (Zootoca vivipara)	Protected Species: Wildlife Acts

Appendix 2: Photographs

Photograph 9.1: Artificial surfaces at the southern entrance of the proposed development.

Photograph 9.2: Dry meadow (GS2) at the east of the proposed development.

Photograph 9.3: The main portion of the proposed development looking from the south to the north.

Photograph 9.4: The proposed development showing the wet grassland (GS4) to the north of the field and the three mature oaks (above) and the Cornamagh Cemetary at the western boundary of the site (below) from the south of the site looking north.

Photograph 9.5: Wet grassland (GS4) at the north of the site. Photo taken from the north looking south.

Photograph 9.6: Dry meadow (GS2) at the south of the proposed development showing the new residential development bordering the site to the east.

Photograph 9.7: Drainage ditch (FW4) which was dry at the time of the ecology walkover.

Photograph 9.8: Treeline (WL2) and dry meadow and grassy verge (GS2) at the southern boundary of the site looking towards the west.

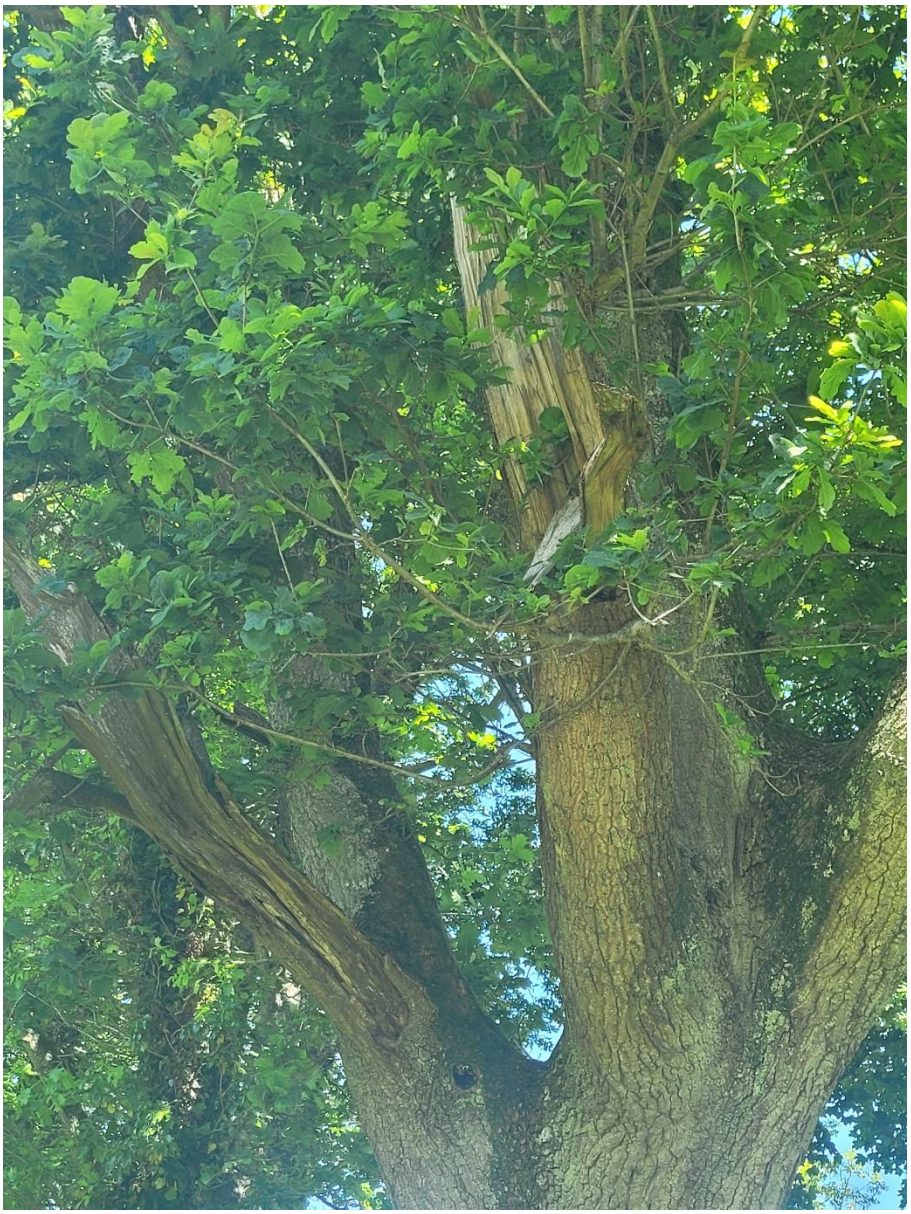
Photograph 9.9: Two of the mature oaks in the proposed development which will be retained.

Photograph 9.10: Badger (*Meles meles*) fur on barb wire at the drainage ditch (FW4) between the proposed development and new residential development.

Photograph 9.11: Fox (*Vulpes vulpes*) fur on barb wire at the northern boundary of the proposed development.

Photograph 9.12: Trail going into the drainage ditch (FW4) at the west of the proposed development. Badger fur was also seen on the barb wire above the trail.

Photograph 9.13: Trail going into the brambles at the south of the proposed development.



Photograph 9.14: Crevices in one of the mature oaks which could potentially be used as a bat roost.