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Ecological Impact Assessment Report

**Proposed Housing Development at *Lisdaran,*
*Co. Cavan***

Document Details

Client: Genesis Planning

Project Title: Proposed Housing Development at Lisdaran, Co. Cavan

Document Title: Ecological Impact Assessment

Prepared by: Flynn Furney Environmental Consultants

Rev	Status	Date	Author(s)	Approved by
01	Draft	19/03/2025	LW	CD
02	Draft	01/10/2025	LW	BF

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1 Introduction

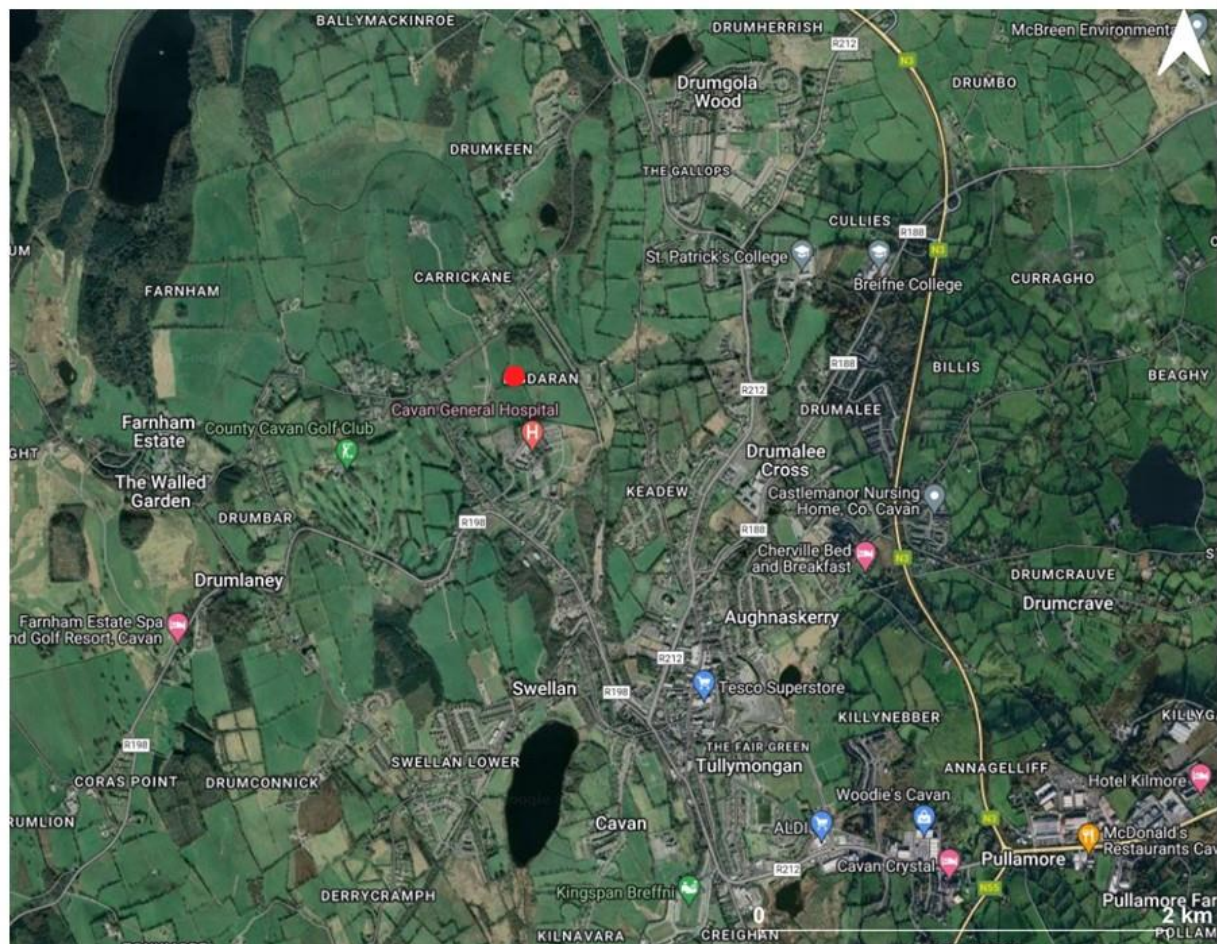
Flynn Furney Environmental Consultants have been appointed to prepare an EcIA for a proposed housing development at Lisdaran, Co. Cavan. The site was visited by Ecologists from Flynn Furney Environmental Consultants Ltd. in August 2024. This survey was carried out to investigate whether any Annex I habitats (EU Habitats Directive), Annex II species (EU Habitats Directive), Annex I Bird Species (EU Birds Directive), 'stepping stones/Ecological Corridors' (as covered under Annex 10 of the EU Habitats Directive) or locally important habitats or species are likely to be impacted upon by the proposed development.

This assessment aimed to;

- Establish baseline ecological data for the proposed development site;
- Determine the ecological value of the identified ecological features;
- Assess the impact of the proposed development on ecological features of value (biodiversity);
- Apply mitigation measures to avoid, reduce, remedy or compensate impacts; and
- Identify any residual impacts after mitigation and compensation.

1.1 Outline Description of the Proposed Site of Works

The proposed housing development site is situated north of Cavan General Hospital. To the north and southeast of the site, there are residential properties as well as small and medium-scale industrial buildings. Agricultural land surrounds the site to the west and east, with the site itself being predominantly agricultural. A small woodland area is located at the northeast section of the site. The site covers just under eight hectares.



Lisdiran Proposed Development Location

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Legend

● Location of site



Date: 13/08/2024

Version: 1

Prepared by: LW

Imagery from: Google

Disclaimer: This map has been prepared in accordance with the scope of services described in the contract or agreement between Flynn Furney Environmental Consultants and the Client. Any findings only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client.

Figure 1: Location of proposed development

1.2 Planning Application and Description of Works

The development will consist of the provision of a total of 109no. residential units along with provision of a crèche. Particulars of the development comprise as follows:

- (a) Site excavation works to facilitate the proposed development to include excavation and general site preparation works.
- (b) The provision of a total of 65no. residential dwellings which will consist of 23no. 2 bed units, 30no. 3 bed units and 12no. 4 bed units. The dwelling types range from detached units to terrace units and are 2storey.
- (c) The provision of a total of 44no. duplex apartment units consisting of 8no. 1 bed units, 18no. 2bed units and 18no. 3 bed units. The duplex units range in height from 2storey to 3storey.
- (d) Provision of a two-storey creche with associated parking, bicycle and bin storage.
- (e) Provision of associated car parking at surface level via a combination of in-curtilage parking for dwellings and via on-street parking for the creche and duplex apartment units.
- (f) Provision of electric vehicle charge points with associated site infrastructure ducting to provide charge points for residents throughout the site.
- (g) Provision of associated bicycle, bin and bulky items storage facilities for duplex apartment units.
- (h) Upgrading the existing access point from Loreto Road with associated works to include for provision of a right turning lane, provide for internal access roads, footpaths and associated site works.
- (i) Provision of internal access roads and footpaths and associated works to include for regrading of site levels as required along with connections onto the Greenway.
- (j) Provision of residential communal open space and public open space areas to include formal play areas along with all hard and soft landscape works with public lighting, planting and boundary treatments

to include boundary walls, railings & fencing.

(k) Internal site works and attenuation systems which will include for provision of hydrocarbon and silt interceptors prior to discharge.

(l) All ancillary site development/construction works to facilitate foul, water and service networks for connection to the existing foul via a rising main and provision of a foul pumping station, water connections and ESB network connections along with provision of an ESB substation.

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1.2.1 Wastewater & Stormwater Management

An existing foul sewer network exists to the north of the development and is connected to the existing pumping station to the north-east of the site. Another rising main, part of the existing foul network on site, runs along the treelines to the east of the site and will join a proposed foul network which will connect the proposed houses to the south-east of the site to the existing network. A pre-connection enquiry has been completed with Uisce Éireann and joining to the foul network has been deemed feasible.

Stormwater on-site will be managed in a number of ways. To the north of the site there are stormwater twinwalls which will carry stormwater to a number of attenuation tanks. One attenuation tank will have a capacity of 143.7 m³ with a hydrobrake controlling flow at 2L/s. Surface water will discharge to the existing stream. Another 265.3 m³ capacity tank will have a with a hydrobrake to restrict flow to 14.5l/s which will discharge to the stream. A third attenuation tank will have a capacity of 203.2 m³. a fourth attenuation tank will have a capacity of 47.4 m³ with a hydrobrake to restrict flow to 2l/s. This tank will discharge to an existing storm sewer. To the south of the site, there will be a fifth attenuation tank with a capacity of 583.4 m³ with a hydrobrake to restrict flow to 14.5l/s. This will discharge into an existing open drain. To the south-east of the site. In addition to this, there will be road gullies, manholes, French drains and swales throughout the site. Internal site works and attenuation systems which will include for provision of a hydrocarbon and silt interceptor prior to discharge.

2 Legislation and Planning Policy

2.1 European Council Directives

2.1.1 Council Directive on the conservation of Natural Habitats of Wild Fauna and Flora

2.1.1.1 92/43/EEC- The Habitats Directive

The main aim of the Directive is to promote the maintenance of biodiversity through the conservation of natural habitats and wild species listed on the Annexes of the Directive. Member States are required to

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take measures to maintain or restore, at favourable conservation status, biodiversity whilst taking account of economic, social, cultural requirements and regional and local characteristics.

It gives effect to site and species protection measures through establishment of the Natura 2000 network and designation of European Sites including Special Areas of Conservation (SAC) and Special Protected Areas (SPA). It also establishes a list of species (other than birds) whose habitats must be protected to secure their survival. These priority species and habitats are subject to a higher level of protection.

The Directive also requires appropriate assessment of any plan or project not directly connected with or necessary to the management of a European Site, but likely to have significant effects upon a European site, either individually or in combination with other plans or projects.

2.1.2 Council Directive on the Conservation of Wild Birds

2.1.2.1 2009/147/EC- The Birds Directive

The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It makes provisions for the maintenance of the wild bird populations across their natural range; conserves the habitats for rare or vulnerable species listed in Annex I and of migratory species through the classification of SPAs and provides protection for all wild birds.

2.2 Irish Legislation

2.2.1 The European Communities

2.2.1.1 (Birds and Natural Habitats) (Amendment) Regulations 2015 S.I. No. 355 of 2015

The European Communities (Birds and Natural Habitats) (Amendment) Regulations provides that the following shall be construed together as one:

- Wildlife Act 1976
- Wildlife (Amendment) Acts of 2000, 2010 and 2012

- European Communities (Birds and Natural Habitats) (Restrictions of the Use of Poison Bait) Regulations 2010
- European Communities (Birds and Natural Habitats) Regulations 2011
- European Communities (Birds and Natural Habitats) (Amendment) Regulations of 2013, 2015
- Wildlife Amendment Bill 2016 (proposed legislation)

2.2.2 European communities (Birds and Natural Habitats)

2.2.2.1 Regulations 2011 to 2015

The Regulations give effect to requirements relating to the designation of protected sites under the Birds Directive and Habitats Directive. The Regulations provide for the protection and management of European Sites and place obligations on all public authorities to have regard to the requirements of the Habitats Directive beyond the realms of planning related consents issued under the Planning and Development Act 2000, as amended (the PDA). The Regulations also provide for the protection of species of European importance.

2.2.2.2 Wildlife Acts 1976 to 2023

The Acts provide for *inter alia* the protection of wildlife. The Acts prohibit the intentional killing, taking or injuring of certain wild birds or wild animals; or the intentional destruction, uprooting or picking of certain wild plants.

2.2.2.3 Wildlife Amendment Bill 2016

The purpose of the Bill is to provide for the implementation of a reconfiguration of the Raised Bog Natural Heritage Area Network arising from (i) the proposals from the Review of Raised Bog Natural Heritage Area Network published in January 2014; (ii) an assessment of the effects on the environment of the proposals arising from the Review and, if required, any other screening for an assessment or as the case may be, assessment, including public consultation undertaken and (iii) observations or submissions received during the course of public consultation.

Taken as a whole, nature conservation legislation is of key importance in undertaking EclA for proposed development as it shapes planning policy.

2.3 Planning Policy

2.3.1 National Planning Policy

2.3.1.1 *Project Ireland 2040 – National Planning Framework*

The National Planning Framework (NPF) is a high-level strategy that will shape growth and development in Ireland up to 2040. The NPF draws upon lessons learned from the National Spatial Strategy 2002-2022 and provides a framework for the sustainable development of Ireland's existing settlements. As a framework document it sets in train a process by which more detailed planning documents must follow, including the relevant RSES and County Development Plan. The Strategy contains a range of National Policy Objectives (NPO's) providing a wider context for targeting future growth across the country, and which support the delivery of residential development at a suitable location and scale to achieve an overall target of 550,000 additional households nationwide by 2040.

The National Planning Framework 2040 sets out the importance of development within existing urban areas and sets out strategic objectives which Planning Authorities are to have regard to.

We highlight a number of objectives contained within the NPF which specifically refer to the subject site such as:

Objective 3a 'To deliver at least 40% of all homes Nationally within the built-up footprint of existing urban settlements.'

Objective 3b 'Deliver at least 30% of all new homes that are targeted in settlements other than the five Cities and their suburbs, within their existing built-up footprints'.

Objective 4 states to 'ensure the creation of attractive, liveable, well designed, high quality urban places

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that are home to diverse and integrated communities that enjoy a high quality of life and wellbeing.'

Objective 5 'To develop cities and towns of sufficient scale and quality to compete internationally and be drivers of national and regional growth, investment and prosperity.'

Objective 6 'Regenerate and rejuvenate cities, towns and villages of all types and scale as environmental assets, that can accommodate changing roles and functions, increased residential population and employment activity and enhanced levels of amenity and design quality, in order to sustainably influence and support their surrounding area.'

Objective 7 'Reversing the stagnation or decline of many smaller urban centres, by identifying and establishing new roles and functions and enhancement of local infrastructure and amenities'; and

'Encouraging population growth in strong employment and service centres of all sizes, supported by employment growth.'

In more self-contained settlements of all sizes, supporting a continuation of balanced population and employment growth.'

Objective 11 'In meeting urban development requirements, there will be a presumption in favour of development that can encourage more people and generate more jobs and activity within existing cities, towns and villages, subject to development meeting appropriate planning standards and achieving targeted growth.'

Objective 13 states 'In urban areas, planning and related standards, including in particular building height and car parking will be based on performance criteria that seek to achieve well-designed high quality outcomes in order to achieve targeted growth.'

Objective 35 states 'Increase residential density in settlements through a range of measures including reductions in vacancy, re-use of existing buildings, infill development schemes, area or site-based

regeneration and increased building heights.’

3 Methodologies

3.1 Desk Study

Prior to the main fieldwork contributing to this assessment, a desktop survey of available information sources was carried out in March 2025. These included:

- The National Biodiversity Data Centre Online Database
- The National Biodiversity Network Online Atlas
- The OSI Geohive Database
- The NPWS Protected Species Database and Online Mapping
- The Environmental Protection Agency Database and;
- The EPA Water Quality in Ireland Report

Designated sites were identified using the current boundary shapefiles (SAC 2024, SPA 2024, NHA 2019/06, pNHA 2015), downloaded from the NPWS website. Other online mapping reviewed included Geohive maps, All Ireland Wetland Survey maps, aerial photography and EPA shapefile datasets. Habitat mapping reviewed included the Irish Semi-Natural Grassland Surveys (ISGS), the National Survey of Native Woodland (NSNW) and the Ancient and long-established Woodland (NPWS shapefiles). Desk research also included review of records available through the National Biodiversity Data Centre mapping system.

3.2 Zone of Influence

Following the guidance set out by the NRA (2009b), the proposed development has been evaluated based on an identified zone of influence (Zoi) with regard to the potential impact pathways to ecological feature (habitats, flora and fauna). The Zoi for terrestrial habitats is limited to the footprint of the proposed development. Hydrological linkages between the proposed development and aquatic

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habitats/species can occur over significant distances; however, the significance of the impact will be site specific depending on the receiving water environment and nature of the potential impact. Adopting a precautionary approach, the distance over which surface water discharges could have a significant impact on receiving watercourses is considered to extend downstream of the proposed development site to the Irish Sea. The ZoI for significant impacts to breeding birds is considered to extend no more than 100 m from the proposed development to take account of disturbance during construction. The ZoI for mammals such as Bats, badgers and otters may extend over larger distances due to the fact that they can commute and forage many kilometres from their breeding sites.

3.3 Field Surveys

Field work for this survey was carried out in August 2024. The primary aims of the field surveys were to:

- Identify habitat types within the study area
- Assess for the presence of protected species of flora and fauna
- Identify ecological and environmental constraints to the construction of this residential development
- Identify ecological sensitivities around and within the study area
- Identify any protected fauna species that may be present.

These surveys considered a broad survey area to ensure all other important features that could be impacted by the development due to connectivity to the proposed development site were considered. These included significant treelines and hedgerows, mammal paths, streams and other watercourses feeding and surrounding parts of the application site. Gross habitat mapping was carried out and is presented in Appendix A. Surveys were carried out for mammals, birds, invertebrates, mature and veteran trees, habitats, Bat roosting habitats and botanical features where considered necessary. The surveys and impact assessment have been carried out in accordance with the following guidelines:

- Habitat survey and mapping was carried out as per the guidelines given by Smith et al (2011).

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- Habitats were classified according to Fossitt's Guide to Habitats in Ireland (Fossitt, 2000).
- Surveys for invertebrates were carried out as per the National Road Authority's Ecological Surveying Techniques for protected Flora and Fauna (NRA, 2008).
- Mammal survey methodology followed NRA (2008) and NRA (2005).
- Bat surveys methodology followed Collins (2023) and classification of Bat roost potential followed Billington & Norman (1997) .

These surveys were all carried out by experienced competent ecologists of Flynn Furney Environmental Consultants during optimal time periods. No ecological survey constraints exist for this project.

3.3.1 Flora

Habitats on site were classified using A Guide to Habitats in Ireland (Fossitt, 2000) and mapped in accordance with the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith, O'Donoghue, O'Hora, & Delaney, 2011). The classification is a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. The classification is hierarchical and operates at three levels, using codes to differentiate habitats based on the plant species present. Species recorded in this report are given both their scientific and common names, following the nomenclature as given in the 'New flora of the British Isles' (Stace, 2010). Invasive species from the First Schedule list of Invasive Alien Species of National Concern were also recorded during site visits and findings are discussed in this report.

3.3.2 Terrestrial Fauna

The site survey conducted included an assessment of the presence, or likely presence, of a range of rare or protected fauna species. Habitats were assessed for field signs and/or usage by fauna, such as well-used pathways, droppings, places of shelter and features or areas likely to be of particular value as foraging resources.

3.3.3 Bat Surveys

The proposed works are largely planned for grassland, with a hedgerows and treelines delineating the

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fields on-site. Bat surveys included a visual inspection during daylight hours of trees and hedgerows within the area, an assessment for roosting Bats. Bat habitat suitability was assessed as per Collins' Bat surveys for professional ecologists: Good practice guidelines (4th edn.) which sets out the need for Bat surveys and the methodology to assess habitats for Bat suitability.

Table 1 Impacts on Bats (Bat Conservation Trust, 2023)

Impacts on Bats that can arise from the proposed activities		
Bats	Roosting habitats	Commuting and foraging habitats
Physical disturbance Noise disturbance through, for example, increased human presence or the use of noise-generating equipment.	Modification of access points to a roost, either physically or through, for example, lighting or removal of vegetation.	Modification of commuting or foraging habitats either physically or through disturbance, e.g. light spill/noise.
Lighting disturbance.	Modification of a roost either physically, for example by roof removal, or through, for example, changed temperature, humidity, ventilation or lighting regime.	Severance of commuting routes (fragmentation).
Injury/ mortality (e.g. in roost during destruction or collision with traffic.	Loss of roosts.	Loss of foraging habitat.

A separate Bat survey was also conducted by Aidan Murphy MSc. on the 10th of September 2024. The aim of the Bat survey was to gather information pertaining to use of the site by Bats, by carrying out the following:

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- Bat activity surveys to identify the baseline use by Bats in the habitats determined to be suitable for foraging/commuting Bats, including recording species present, activity levels, important Bat habitats, and assessing landscape connectivity;
- Facilitate the conservation of local Bat populations.

Aidan holds a BSc (Hons) in Wildlife Biology and an MSc in Ecological Assessment (UCC). Aidan has worked for eight years as a freelance ecologist with survey experience including Bats, birds, freshwater & terrestrial invertebrates, and botanical surveys. Aidan holds a National Parks & Wildlife Service (NPWS) Bat Survey Licence, (NPWS Survey Licence No.: DER/BAT 2024-69, expiry date: 31st December 2024).

Bat activity surveys (transect surveys) conducted at the study area consisted of a walked transect route following the field boundaries along hedgerows and treelines. The transects were walked twice at a slow pace starting at sunset and finished 2 hours after sunset. The transects concentrated on the proposed inner development area and surrounds. The transect surveys were conducted using an AnaBat Scout (full spectrum Bat detector) and Echometer Touch Pro Bat detector. Weather conditions were optimal for Bat activity during the surveys with calm, dry and mild conditions.

Table 2 Details relating to Bat surveys conducted on site on 10th September 2024

Date	Survey	Survey Times	Weather	Temperature
10 th September 2024 (Sunset 19:57)	Transect survey/ Bat activity survey	19:55 – 22:06	20% cloud, no rain, slight wind. Insect activity low	13°C - 12°C

Transects were walked while recording geo-positioned Bat registrations. Recordings were observed live, as well as being stored for later analysis. Bat sonograms were manually analysed and identified to species level using specialist software, Wildlife Acoustics Kaleidoscope Viewer Pro. Activity analysis of recorded

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Bat echolocation was defined as registrations/contacts per species within a 15 second (maximum) file. Multiple passes/calls/pulses of the same species within a (maximum) 15 s file count as a single registration.

A previous Bat survey by Flynn Furney Environmental Consultants undertaken at the site on 7th of September 2021 identified a Bat roost in the roof of the vacant house (ITM 640954 806285). Three Pipistrelle Bats were counted emerging. To supplement the present surveys, infra-red (IR) cameras were deployed to monitor the buildings for emerging Bats. The cameras were set up to face potential access features and cameras were equipped with additional IR lights. The survey method has been informed by the Interim Guidance Note (BCT, 2022) which supersedes Collins (2016) and details the new requirement for night vision aids (NVAs), e.g. infra-red (IR) cameras, during roost surveys, to be fully phased in by 2024.

Survey constraint. The interior of the vacant house was inaccessible.

No buildings are present within the proposed development footprint; however, the two main buildings and outhouses are located ca. 50 m west of the footprint boundary and any Bat roosts present could potentially be disturbed by the development works. The external assessment of site buildings was undertaken according to the Bat Conservation Trust (BCT) Guidelines (2023) on 10th September 2024 during daylight hours from ground level. Binoculars were used for wall sections and roofs over 2 m in height. The surveys identified any potential roost features or evidence of use by Bats. Evidence for Bats sought are dead and live animals, droppings, discarded insect remains, urine stains, and greasy marks at entrances to structural crevices and gaps where Bats may possibly roost. General bird activity and signs of nesting birds were also noted during these surveys.

Following the BCT Guidelines, features within buildings were assigned as having either a 'negligible, low, moderate or high' status in terms of their potential to provide Bat roosting opportunities, referred to in the BCT Guidelines as the presence of 'Potential Roost Features' (PRFs). The criteria for assessing Potential Bat Roosts (PBRs) are set out in **Table 3** below.

Table 3 Criteria for Assessing the Potential Suitability of the Site for Bats, Collins (2023)

Tree Category	Description/ Roosting habitats
Negligible	Negligible habitat features on-site likely to be used by roosting Bats
Low	A structure with potential roosts used by individual Bats opportunistically. Not enough space/shelter for larger numbers of Bats for hibernation and roosting. A tree of sufficient size and age to contain PRFs but none seen from the ground
Moderate	Structure or tree with one or more potential roost sites that could be used by Bats due to their size and shelter, but unlikely to support a roost of high conservation status
High	Structure or tree with one or more potential roost sites that are obviously suitable for use by large numbers of Bats on a more regular basis and potentially for longer periods of time due to their size, protection and surrounding habitat

3.3.4 Avifauna

The site was assessed for the suitability of bird breeding habitats. Birds were observed and recorded during field surveys. Surveys targeted BOCCI species but also recorded common species.

3.3.5 Aquatic Environment

The ecological survey included the assessment of the site for drains which may drain into waterbodies, which in turn would impact water quality and aquatic fauna.

3.4 Statement of Authority of the Ecology Team

Flynn Furney Environmental Consultants have more than 20 years of experience in ecological surveying and management. The company has detailed knowledge on the principles and implementation of both Irish and European environmental legislation. FFEC has worked closely with statutory bodies including the National Parks and Wildlife Service and Waterways Ireland on habitat management and protection projects. Other expertise includes Ecological Impact Assessment, Habitat and Floral Surveys, Bird Surveying, Bat Surveying, Fish and Waterways surveys.

The surveying and reporting were carried out by Billy Flynn, Jennifer McAree and Lauren Woods. This report was reviewed by Christopher Doyle.

3.5 Ecological Impact Assessment Methodology

This ecological impact assessment has been prepared in accordance with relevant legislation and best practice guidance including:

- The Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal 2nd Edition. CIEEM (2018).
- The EPA's Draft Advice Notes on Preparing Environmental Impact Statements (EPA, 2015a).
- The EPA's Draft Revised guidelines on Information to be Contained in Environmental Impact Statements (EPA, 2015b).
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009).

Ecological features (habitats and species) were evaluated for their conservation importance according to the National Roads Authority's scheme (NRA 2009). For habitats or species, significance of effects was assessed with reference to their conservation status, abundance and distribution. Description of significant effects follows guidance outlined in the EPA Draft Revised Guidelines on the Information to be

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Contained in EIS (EPA, 2015b). The term ‘significant effect’ as used in this report follows guidance (CIEEM, 2018) and is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or for biodiversity in general. In the case of designated sites, a negative significant effect would be one that undermines the conservation objectives and targets for that site. The significance of impacts on habitats was determined with reference to the value of the feature being affected and the magnitude of the impact. Impacts are considered ecologically significant at a stated geographic scale or are considered not significant.

3.5.1 Introduction and Context

The impacts which may be expected from the development of the proposed residential area are assessed below. These possible impacts have been assessed under the CIEEM (2018) and the National Roads Authority guidelines (NRA, 2006). Criteria for assessment of duration of impacts used (EPA 2002). These provide guidance on assessing impact significance upon features of sites proposed for works. Impact significance must be given in context of their respective ecological value of the site and features under study.

3.5.2 Assessing Ecological Value

The ‘ecological value’ of an area or feature is therefore defined with reference to geographical context. That is, whether it is of value locally, regionally, nationally or internationally. This is assessed by ecologists on reviewing survey outcomes. Key criteria are the presence of designated sites, the site or feature containing protected species or areas of high biodiversity. The criteria for ecological value are given in Table 4.

Table 4 Ecological Value Criteria

Ecological Value	Criteria
International	European Sites’ including Special Areas of Conservation (SAC) & Special Protection Areas (SPA).

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	• 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 animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Sites • World Heritage Sites (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Sites hosting significant species populations under the Bonn Convention • Sites hosting significant populations under the Berne Convention
National	• Areas of Special Scientific Interest (ASSI) or Natural Heritage Area (NHA). National Nature Reserves (NNR). • Marine Nature Reserves (MNR). • Area of Outstanding Natural Beauty (AONB). • Refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended). • Undesignated sites fulfilling the criteria for designation as an ASSI; NNR; MNR; and/or refuge for species protected under the Wildlife (Northern Ireland) Order 1985 (as amended).

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	• Resident or regularly occurring populations (important at the national level) of the following: • Species protected under Wildlife (Northern Ireland) Order 1985 or Wildlife Act 1976, as amended); 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.
Regional	• Sites of Local Nature Conservation Importance (SLNCI). Areas subject to a Tree Preservation Order. • Resident or regularly occurring populations (assessed to be important at the Regional 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 (Northern Ireland) Order 1985 (as amended); and/or • Species listed on the relevant Red Data list. • Sites containing areas of the habitat types listed in Annex I of the Habitats Directive that do not satisfy the criteria for valuation as of International or National importance. • Regionally important populations of species or viable areas of semi-natural habitats or natural heritage features identified in the National or Local Biodiversity Action Plan (BAP), if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a regional context and a high degree of naturalness, or populations of species that are uncommon within the region.

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	Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local	- Locally important populations of priority species or habitats or features of natural heritage importance 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 (Northern Ireland) Order 1985 (as amended); and/or - Species listed on the relevant Red Data list 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; - 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.

Ecological Impact Assessment must also consider the significance of effects that may be expected arising from a proposed development. CIEEM guidelines (2018) define a significant effect as:

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“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) or 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”.

It also states that:

“an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring”.

3.5.3 Assessing Significance of Effects

The criteria for assessment of significance of effects is given in the following table. It should be noted that significant effects may also include beneficial effects.

Table 5 Criteria for Assessing Significance of Effects

Impact Significance		Criteria
Significant Negative Effect	Major Adverse	• Loss of, permanent damage to, or adverse impact on any part of a site of international or national importance; • Loss of a substantial part or key feature of a site of regional importance; • Loss of favourable conservation status (FCS) of a legally protected species; • Loss of or moderate damage to a population of nationally rare or scarce species.

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	Moderate Adverse	• Temporary disturbance to a site of international or national importance, but no permanent damage; • Loss of or permanent damage to any part of a site of regional importance; • Loss of a key feature of local importance; • A substantial reduction in the numbers of legally protected species such that there is no loss of FCS but the population is significantly more vulnerable; • Reduction in the amount of habitat available for a nationally rare or scarce species, or species that are notable at a regional or county level.
No Significant Effect	Minor Adverse	• Temporary disturbance to a site of regional value, but no permanent damage; • Loss of, or permanent damage to, a feature with some ecological value in a local context but that has no nature conservation designation; • A minor impact on legally protected species but no significant habitat loss or reduction in FCS; • A minor impact on populations of nationally rare or scarce species or species that are notable at a regional or county level.
	Negligible	• No impacts on sites of international, national or county importance; • Temporary disturbance or damage to a small part of a feature of local importance; • Loss of or damage to land of negligible nature conservation value;

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		- No reduction in the population of legally protected, nationally rare, nationally scarce or notable (regional level) species on the site or its immediate vicinity. - Beneficial and adverse impacts balance such that resulting impact has no overall affect upon feature.
	Minor Beneficial	A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before or where the new habitats exceeds in area that habitats lost.
	Moderate Beneficial	Larger new scale habitats (e.g. net gains over 1 ha in area) created leading to significant measurable gains in relation to the objectives of biodiversity action plans.
	Major Beneficial	Major gains in new habitats (net gains of at least 10 ha) of high significance for biodiversity being those habitats, or habitats supporting viable species populations, of national or international importance cited in Annexes I and II of the habitats Directive or Annex I of the Birds Directive.

3.5.4 Impact Duration and Likelihood

The duration of impact must also be considered when assessing overall ecological impacts. Criteria for assessment of duration of impacts used (EPA 2002), the following terms when quantifying duration:

Table 6 Impact Duration and Timescales

Impact Duration	Timescale
Temporary	Up to 1 year
Short-term	1-7 years

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Medium-term	7-15 years
Long-term	15-60 years
Permanent	Over 60 years

The likelihood of impacts should also be defined. Assessment of likelihood of impact followed CIEEM guidelines. The assessed likelihood are as follows:

Table 7 Likelihood and Probability of Impacts

Likelihood	Probability
Almost Certain	Probability estimated at greater than 95%
Probable or Likely	Probability estimated between 50% and 95%
Unlikely	Probability estimated between 5% and 50%
Extremely Unlikely	Probability estimated at less than 5%
Almost Certain	Probability estimated at greater than 95%

3.6 Key Ecological Receptors

In accordance with National Roads Authority guidelines (2009), impact assessment is only undertaken of 'key ecological receptors' (KERS). KERS are within the zone of influence of the project and are "both of sufficient value to be material in decision making and likely to be affected significantly". To qualify as KERS, features must be of local ecological importance (higher value) or higher.

Features falling below this threshold are not assessed. Impacts are described as being either significant or not significant. Broadly, significant effects encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) (CIEEM, 2018).

4 Results

4.1 Designated Areas

The proximity of the proposed development area to European sites, and Qualifying Interests (QIs)/ Special Conservation Interests (SCIs) of European sites, is of importance when identifying potentially likely significant effects. Mobile species have 'range' outside of the European site in which they are QI/SCI. The range of mobile QI/SCI species varies considerably, from several meters (e.g. in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds). Whilst static species and habitats are generally considered to have Zols within close proximity of the proposed development, they can be significantly affected at considerable distances from an effect source; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source. Hydrological linkages between the proposed development and European sites (and their QIs/SCIs) can occur over significant distances; however, any effect will be site specific depending on the receiving water environment and nature of the potential impact. A reasonable worst-case Zol for water pollution from the proposed development is considered to be the ground and surface water, wherein the proposed works are to be located. The likely effects of the proposed development on European sites has been appraised using a source-pathway-receptor model, where:

- A 'source' is defined as the individual element of the proposed development that has the potential to impact on an European site, its qualifying features and its conservation objectives;
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor;
- A 'receptor' is defined as the Special Conservation Interests of Special Protection Areas (SPA) or Qualifying Interests (QI) of Special Areas of Conservation (SAC) for which Conservation Objectives have been set for the European sites being screened.
- A source-pathway-receptor model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or

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removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The source pathway-receptor model was used to identify a list of European sites, and their QIs/SCIs, with potentially links to European sites. These are termed as 'relevant' European sites/QIs/SCIs throughout this report

4.1.1 European Sites

SACs are sites of international importance due to the presence of Annex I habitats and/or Annex II species listed under the EU Habitats Directive (92/43/EEC). SPAs are designated for the protection of bird species listed on Annex I of the Bird Directive (2009/147/EC), regularly occurring populations of migratory species and areas of international importance for migratory birds. The European sites correspond to those that were subject to Screening for Appropriate Assessment (presented under separate cover). The assessment considered the European sites within the ZoI of the proposed development and/or with hydrological connectivity to the proposed development sites, and concluded that there is no likelihood of effects as a result of the proposed development, either alone or in combination with other plans and projects, if the correct mitigation measures are enacted. All sites designated for the conservation of nature within the ZoI of the proposed works are detailed in **Table 8**.

Table 8 Internationally designated sites within the ZoI of the proposed development

Site Name, Designation and Code	Qualifying Interest	Approximate Distance from the Site
Lough Oughter and Associated Loughs SAC [000007]	- Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation [3150] - Bog woodland [91D0] <i>Lutra lutra</i> (Otter) [1355]	The direct distance between the site and this SAC is 1.3 km and the hydrological distance via the Cavan 36 river (Cavan_020 waterbody) is 2.2 km

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Lough Oughter Complex SPA [004049]	• Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Wigeon (<i>Anas penelope</i>) [A050] • Wetland and Waterbirds [A999]	The direct distance between this site and this SPA is 1.6 km and the distance via the Cavan 36 river (Cavan_020 waterbody) is 4.2 km
Upper Lough Erne SAC [UK0016614]	• Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion alvae</i>) • <i>Lutra lutra</i> (Otter) • Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i>-type vegetation • Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	The direct distance between this site and this SAC is 12.5 km and the distance via the Cavan 36 river (Cavan_020 waterbody) is 25.4 km
Upper Lough Erne SPA UK [UK9020071]	• Whooper Swan (<i>Cygnus cygnus</i>)	The direct distance between this site and this SPA is 12.6 km and the distance via the Cavan 36 river (Cavan_020 waterbody) is 25.4 km

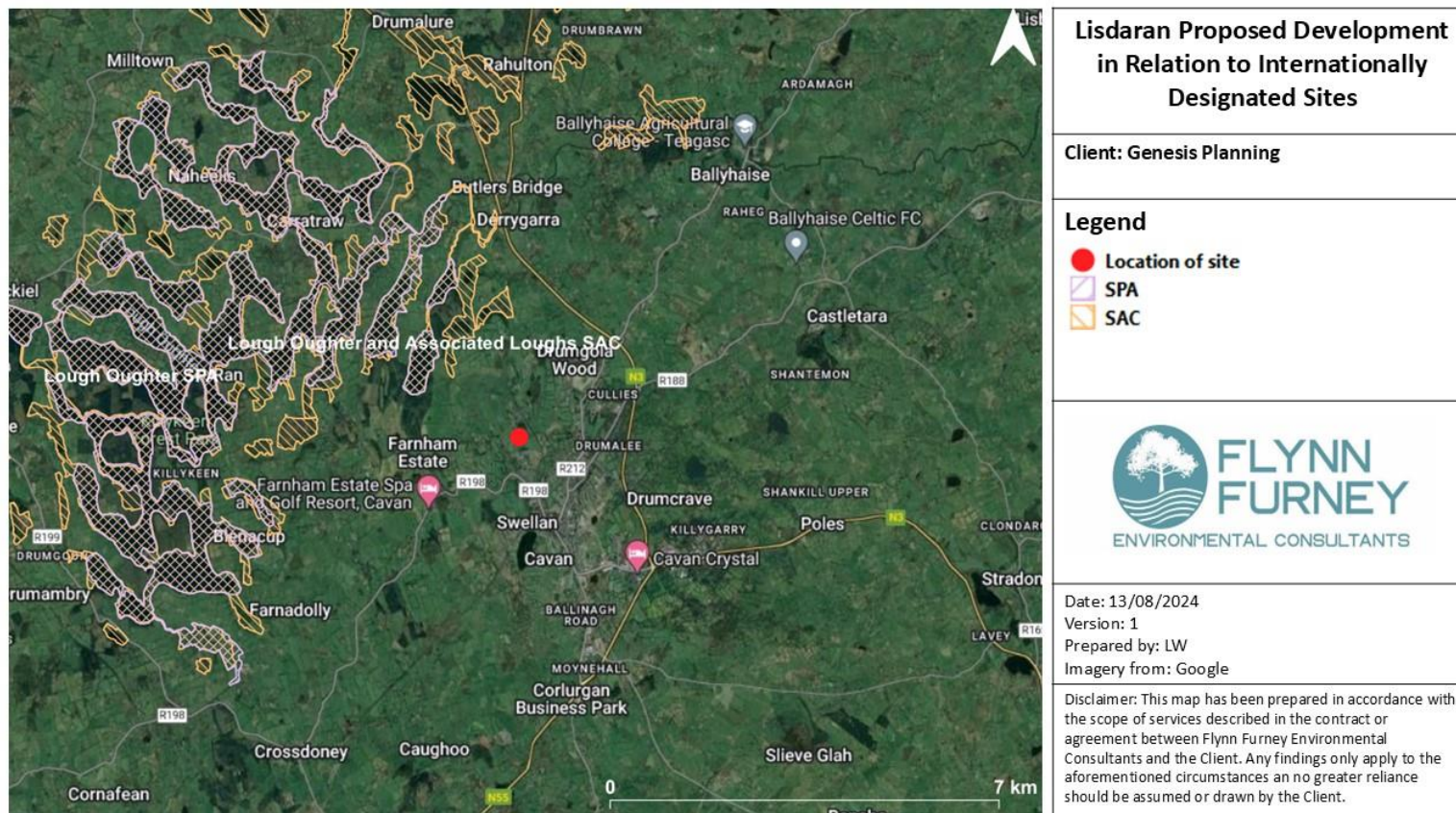


Figure 3 SPAs and SACs within the ZOI

A separate Natura Impact Statement has been prepared for this project. The Natura Impact Statement has considered the potential for significant impacts arising from the proposed development of Lisdaran residential development. The potential to adversely affect any Natura 2000 site; about their qualifying interests and conservation objectives has been examined. The proposed development will not include works within the SAC or SPA but is hydrologically connected to these sites.

The potential for direct, indirect, and cumulative impacts affecting the above designations has therefore been assessed in the NIS. The appraisal undertaken in the NIS has been informed by project-specific site surveys and specialist reporting concerning the ecological communities and habitats potentially affected by the proposed development, to provide a scientific basis for evaluations.

Measures for impact reduction have been incorporated into the project proposal, including avoidance, in addition to mitigation measures proposed in the NIS for the avoidance and reduction of impacts on the qualifying interests and conservation objectives of the designated Natura 2000 site within the study area.

With the implementation of these measures, this Lisdaran housing development will not result in direct, indirect, or cumulative impacts which would have the potential to adversely affect the qualifying interests/special conservation interests of the Natura 2000 sites within the study area or the range, population densities or conservation status of the habitats and species for which these sites are designated (i.e. conservation objectives).

It may therefore be concluded that the proposed project, with the implementation of the prescribed mitigation measures, will not give rise to significant impacts, either individually or in combination with other plans and projects, in a manner that adversely affects the integrity of any designated site within the Natura 2000 network.

4.1.2 Nationally Designated Sites

Natural Heritage Areas (NHAs) are sites deemed to be of national ecological importance and are afforded protection under the Wildlife (Amendment) Act 2000. Many NHA boundaries overlap with European sites. The proposed NHAs (pNHAs) have not been statutorily proposed or designated under

the Wildlife Act (as amended). However they are afforded some protection under planning legislation and objectives are included in the current County Development Plan specifically aimed at protecting pNHAs or providing complimentary protective measures that enhance the network of pNHAs.

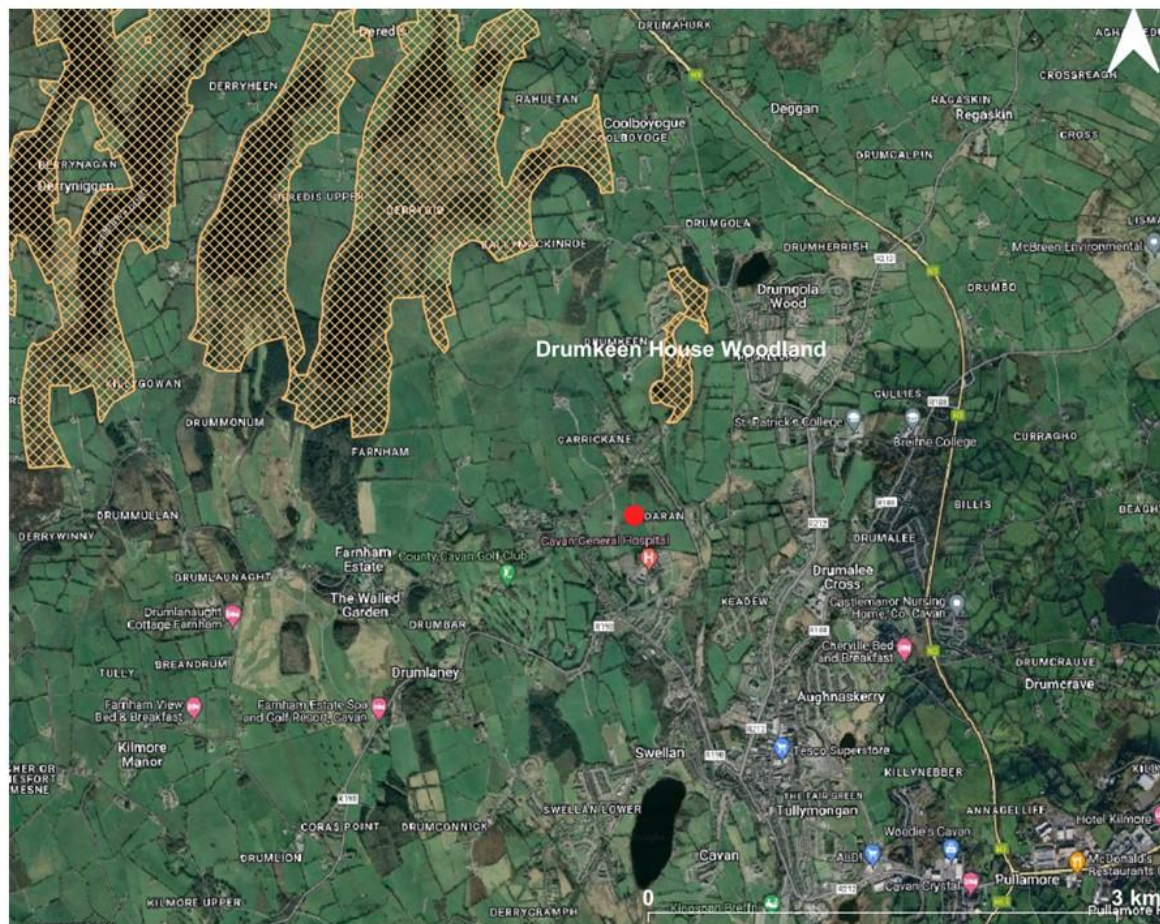
There are 8 pNHAs within the ZOI of the proposed development. The majority of the sites are at a great remove and have no identifiable connectivity with the proposed works. The closest pNHA is Drumkeen House Woodland pNHA which is approximately 30 m to the north-east of the site. This pNHA, which is located about 3 km north of Cavan Town, consists of mainly deciduous woodlands, dominated by Beech trees (*Fagus sylvatica*). Though not extensive or entirely natural, the woodland's diversity, including species like Bluebell (*Hyacinthoides non-scripta*), Cleavers (*Galium aparine*), and a small lake, makes it locally significant due to the scarcity of mature woodlands in the area. Although there is only a short distance between the proposed housing development and this pNHA, it is not likely that there will be significant impacts to this site as no habitat loss will occur. The proposed housing development is also hydrologically connected to Lough Oughter and Associated Loughs SAC via the drainage ditch on-site. There is potential for impacts to occur to this site due to the hydrological connection and short distance between the proposed development and the site.

The remainder of the sites are at a great remove and have no identifiable connectivity with the proposed development. Given the nature and scale of the proposed development, there is no known vector, pathway or conduit for impacts between the proposed works and the remaining NHAs/ pNHAs. Therefore, the proposed works are considered *extremely unlikely* (NRA, 2009) to have any significant direct or indirect impacts on the remaining the sites and they are not considered further.

Table 9 pNHA sites in the surrounding area

Site Name and Code	Designation	Approximate Distance to Site
Drumkeen House Woodland [000980]	pNHA	Approx. 30 m
Lough Oughter and Associated Loughs [000007]	pNHA	1.6km direct, 2.1 km hydrologically
Bruse Hill [000002]	pNHA	1.8 km

Drumcor Lough [001841]	pNHA	12.2 km
Lough Garrow and Lough Gudboo [000984]	pNHA	12.7 km
Annagheane Lough [001836]	pNHA	12.7 km
Glasshouse Lake [000983]	pNHA	13.3 km
Cordonaghy Bog[000978]	pNHA	14.5 km



Proposed Housing Development at Lisdaran, Co. Cavan
Client: Genesis Planning
Legend ● Approximate location of site pNHA
FLYNN FURNEY ENVIRONMENTAL CONSULTANTS
Date: 20/08/2024 Version: 1 Prepared by: LW Imagery from: Google
Disclaimer: This map has been prepared in accordance with the scope of services described in the contract or agreement between Flynn Furney Environmental Consultants and the Client. Any findings only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client.

Figure 4 pNHAs within the ZOI

4.1.3 All Ireland Wetlands Survey

Wetland is a collective term for ecosystems (habitats and their associated species) whose formation has been dominated by water, and whose processes and characteristics are largely controlled by water. A wetland is a place that has been wet enough for a long enough time to develop specially adapted vegetation and other organisms (Maltby 1986). They occur where the water table is at or near the surface of the land, or where the land is covered by a layer of shallow water, either throughout the entire year or seasonally.

The All-Ireland Wetland Survey in conjunction with Foss Environmental Consulting, Wetland Surveys have developed an online map of all known wetlands in the Republic of Ireland. This map was investigated to identify any wetlands which may be affected by the proposed development. No wetlands were identified as having the possibility to be affected by the development however, it is important to note that there is wetland indicating sediment to the east, west and north of the site (cut over raised peat).

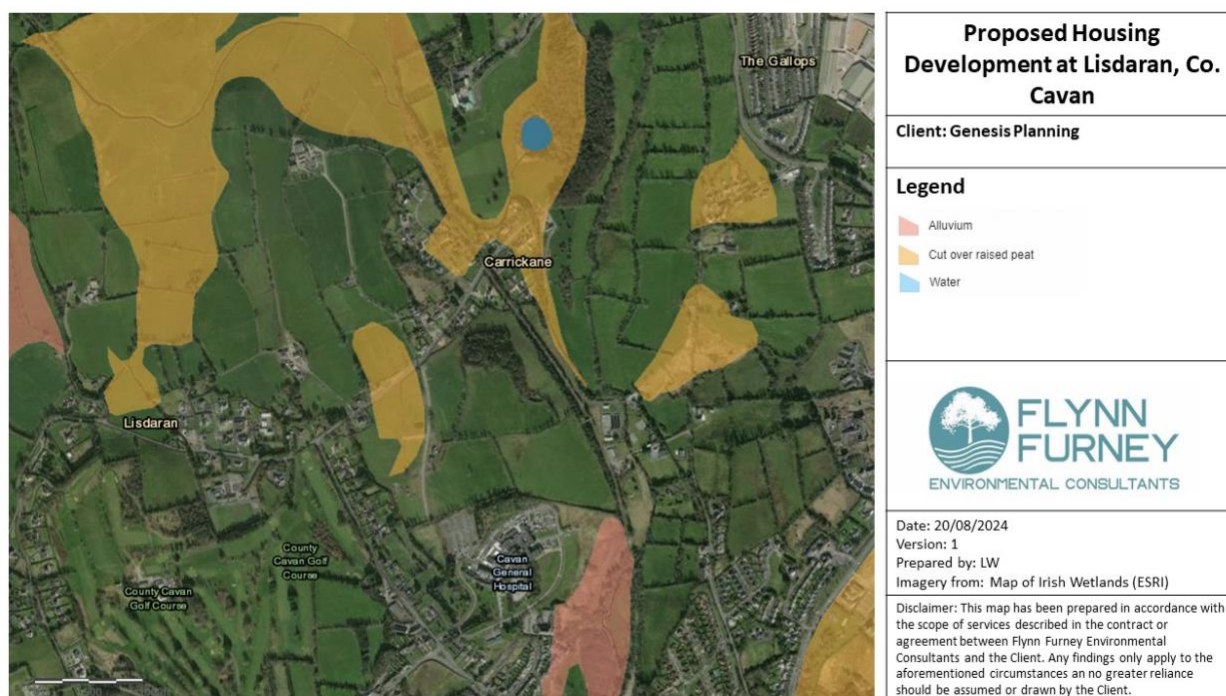


Figure 5 Wetland indicating sediments surrounding the site

4.2 Biodiversity Records

Records of rare and protected species of fauna were obtained from the National Biodiversity Data Centre (NBDC) online database, the National Biodiversity Network (NBN) Atlas and the Flora Protection Order (FPO) Map Viewer. NBDC records can be seen in **Error! Reference source not found..**

5 Field Surveys

5.1 Overview of Habitats and Habitats Classification

An overview of the main habitats recorded is detailed below.

Habitats within the study area were mapped according to Level 3 of the Heritage Council classification (Fossitt, 2000) following the Heritage Council's Best Practice Guidance (Smith et al., 2011) and the Joint Nature Conservation Committee's (JNCC) Handbook for Phase 1 Habitat Survey – a technique for environmental audit (JNCC, 2010). The Heritage Council's *A Guide to Habitats in Ireland* (Fossitt, 2000) is the standard habitat classification system used in Ireland. Habitats were also assessed for correspondence to the Habitats Directive Annex I habitat types (European Commission, 2013).

5.1.1 Habitat Descriptions

The majority of the proposed development site falls within Improved **Agricultural Grassland (GA1)**, which is dominated by grass species such as Yorkshire Fog (*Holcus lanatus*), Perennial Rye (*Lolium perenne*), and Annual Meadow Grass (*Poa annua*). Other species present include Lesser Stitchwort (*Stellaria graminea*), Meadow Vetchling (*Lathyrus pratensis*), Creeping Buttercup (*Ranunculus repens*), Ribwort Plantain (*Plantago lanceolata*), Dandelion (*Taraxacum officinale*), Docks (*Rumex spp.*), Meadow Buttercup (*Ranunculus acris*), Meadowsweet (*Filipendula ulmaria*), Common Rush (*Juncus effusus*), Flowering Rush (*Butomus umbellatus*), Selfheal (*Prunella vulgaris*), Thistles (*Cirsium spp.*), and Nettles (*Urtica dioica*). Species composition varied across different fields on-site, with some fields cut at the time of the survey and uncut sections of grassland to the north.

Hedgerows (WL1) and **Treelines (WL2)** were present throughout the site. The treeline along the southern boundary was dominated by Ash (*Fraxinus excelsior*), with a mix of Sycamore (*Acer pseudoplatanus*), Grey Willow (*Salix cinerea*), Wych Elm (*Ulmus glabra*), Blackthorn (*Prunus spinosa*), Holly (*Ilex aquifolium*), Hawthorn (*Crataegus monogyna*), Crab Apple (*Malus sylvestris*), Ivy (*Hedera helix*), Bramble (*Rubus fruticosus*), Dog Rose (*Rosa canina*), Hogweed (*Heracleum sphondylium*), Nettles, Field Thistle (*Cirsium arvense*), Creeping Buttercup, Bush Vetch (*Vicia sepium*), Herb Robert (*Geranium robertianum*), Hart's Tongue Fern (*Asplenium scolopendrium*), Ribwort Plantain, Hoary Willowherb (*Epilobium parviflorum*), Docks, Hawkbit (*Leontodon spp.*), Selfheal, and mosses. The treelines between fields were dominated by Ash, with a mixture of Hawthorn, Blackthorn, Holly, Willow, and Bird Cherry (*Prunus padus*) in one area. Two mature lines of Oak (*Quercus robur*) and Sycamore were present along the existing road for site access. The hedgerows contained similar species but were not dominated by mature Ash like the treeline habitats. A hedgerow of Leylandii (*x Cuprocyparis leylandii*), Privet (*Ligustrum spp.*), and Red Flowering Currant (*Ribes sanguineum*) was located between the drainage ditch to the north of the site and existing houses nearby.

A significant area of mature **Oak-Ash-Hazel Woodland (WN2)** is located on the Lisdaran site, outside the proposed development area. Holly, Hawthorn, and Beech (*Fagus sylvatica*) are scattered throughout, with patches of Scrub (WS1) mainly at the woodland edges. Noteworthy examples of mature oaks are found in the northern and southwestern corners of the woodland. A (Mixed) Broadleaved Woodland (WD1) to the south of the site contains a mixture of Ash (suffering from Ash Dieback), Hawthorn, Holly, Scots Pine (*Pinus sylvestris*), and Sycamore. This woodland had a dense carpet of Ivy and Bramble, with occasional Honeysuckle (*Lonicera periclymenum*). Scrub occurred in various sections of the site, including a small area dominated by Gorse (*Ulex europaeus*) and Bramble in the northwest corner of one field. Another small scrub section contained Willow, Bramble, Great Willowherb (*Epilobium hirsutum*), Meadowsweet, and Bindweed (*Convolvulus arvensis*).

A **small pond (FL8)** is located in the field northwest of the existing house and barn, though it is not within the development area. The access road will pass close to it. Aquatic vegetation in the pond is dominated by Bulrush (*Typha latifolia*) and Unbranched Bur-reed (*Sparganium emersum*). A **Drainage**

Ditch (FW4) was found to the north of the site, where the instream vegetation is dominated by Duckweed (*Lemna minor*). The banks of the ditch supported species such as Meadowsweet, Marsh Thistle (*Cirsium palustre*), Hairy Willowherb (*Epilobium hirsutum*), Watermint (*Mentha aquatica*), and Rosebay Willowherb (*Chamerion angustifolium*). Tutsan (*Hypericum androsaemum*) and Montbretia (*Crocasmia x crocosmiiiflora*) were also recorded at various locations along the ditch.

South of the drainage ditch, an area of **Spoil and Bare Ground (ED2)** and **Recolonising Bare Ground (ED3)** was observed. These habitats included a mixture of grasses, Marsh Thistle, Docks, Reed Canary Grass (*Phalaris arundinacea*), Marsh Woundwort (*Stachys palustris*), and Nettles near the ditch. This area appeared to have been reseeded following disturbance, with some parts successfully recolonised while others remained mostly bare ground.

The **Buildings and Artificial Surfaces (BL3)** habitat in the area consisted of existing tarmacked roads and houses located outside the proposed development zone.

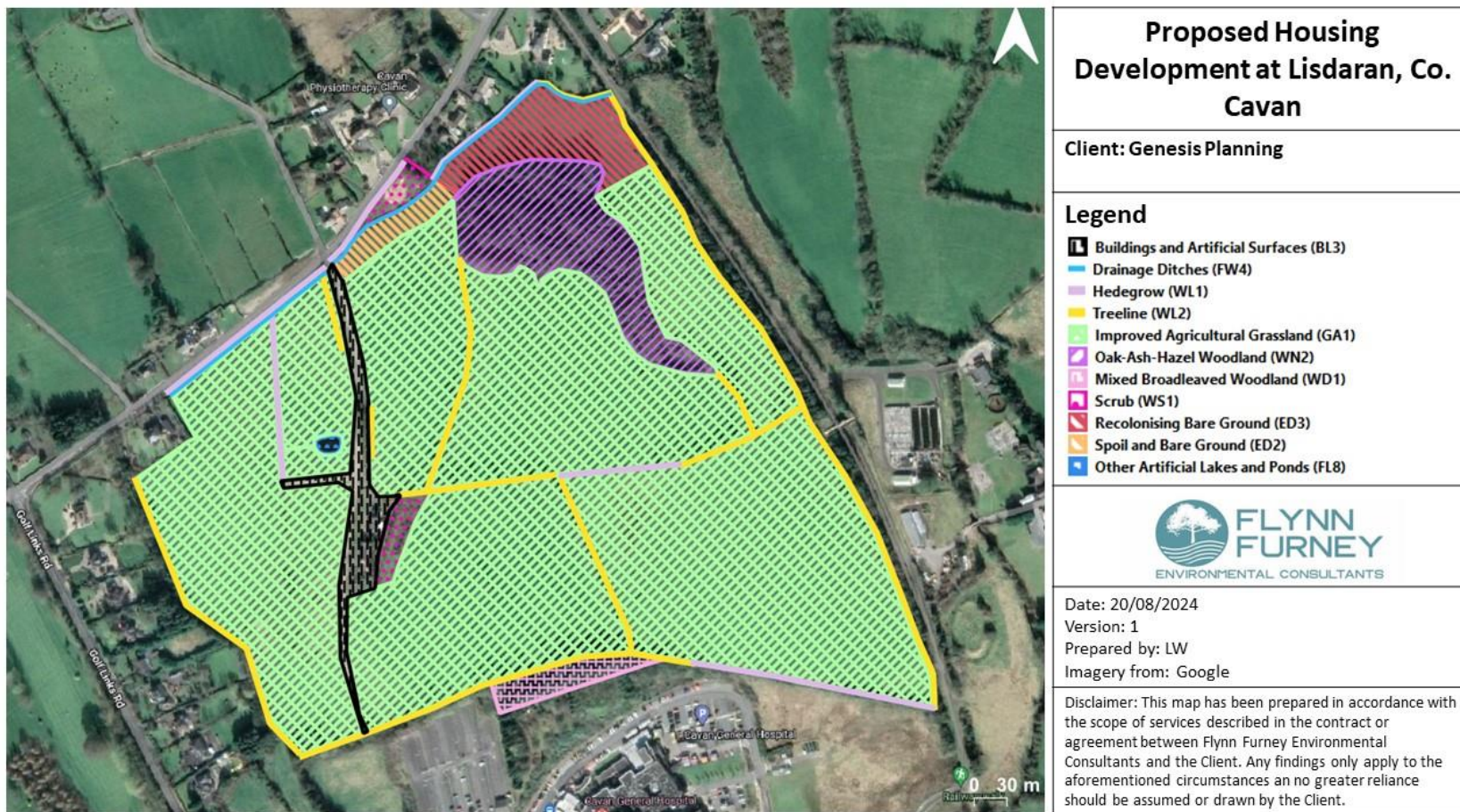


Figure 6 Habitat map

5.2 Fauna

5.2.1 Mammals

Most terrestrial mammals enjoy some level of legal protection in Ireland, with 13 listed on the EU Habitats Directive, 22 on national legislation in the Republic of Ireland, and 18 on national legislation in Northern Ireland. It is an offence to intentionally kill or injure a protected species or to wilfully interfere with or destroy the breeding site or resting place of a protected wild animal. Evidence of several mammal was observed at the site. Evidence of foxes was recorded at 641160.57,806170.57 ITM (fox prints on ground) and at 641160.57,806170.57 ITM (fox scat). Evidence of badgers were observed at several locations as outlined in the table below.

Table 10 Locations of Badger evidence on-site

Evidence of Badger	Location (ITM)
Active sett (4 entrances)	641111.59,806510.65
Scrapes	641132.48,806281.01
	641125.42,806298.28
	641119.53,806313.59
	641103.05,806315.16
	641085.39,806310.05
	641068.12,806310.45
	641046.93,806306.52
Scat	641186.24,806334.78

Print	641197.12,806174.94
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Mammal trails also occurred throughout the site.

5.2.2 Birds

A dedicated bird survey was not carried out, however, all species seen or heard were noted. No birds protected under the EU Birds Directive (2009/147/EC), or the Habitats Directive (Council Directive 92/43/EEC) were observed within the footprint of the proposed development. Birds recorded at or flying above the site are outlined below:

Table 11 Birds recorded during the field surveys

Bird Species	Approximate Location	Activity	Conservation Status
Goldfinch (<i>Carduelis carduelis</i>)	640949.57,806325.68	Flock flying south	Green
House Martin (<i>Delichon urbicum</i>)	640962.23,806327.03	Feeding over fields	Amber
Long-tailed Tit (<i>Aegithalos caudatus</i>)	641117.26,806156.63	Song heard nearby	Green
Wren (<i>Troglodytes troglodytes</i>)	641162.91,806166.13	Call heard in nearby vegetation	Green
Robin (<i>Erithacus rubecula</i>)	641168.56,806336.98	Song heard nearby	Green
	641039.52,806461.39		
Mistle Thrush (<i>Turdus viscivorus</i>)	641201.10,806386.25	Flying across field	Green
Raven (<i>Corvus corax</i>)	641035.45,806483.65	Flying north	Green
Cormorant (<i>Phalacrocorax carbo</i>)	641011.27,806586.03	Flying south-east	Amber
Buzzard (<i>Buteo buteo</i>)	641094.264,806667.612	Heard in distance	Green
Grey Heron (<i>Ardea cinerea</i>)	640904.43,806323.02	Flying north-east	Green

Swallow (<i>Hirundo rustica</i>)	640921.04,806508.91	Several observed flying above	Amber
Starling (<i>Sturnus vulgaris</i>)	640924.31,806504.84	Flying west	Amber

5.2.3 Bats

In Ireland, nine species of Bat are currently known to be resident. These are classified into two Families: the *Rhinolophidae* (Horseshoe Bats) and the *Vespertilionidae* (Common Bats). The lesser horseshoe Bat *Rhinolophus hipposideros* is the only representative of the former Family in Ireland. All the other Irish Bat species are of the latter Family and these include three pipistrelle species: Common (*Pipistrellus pipistrellus*), Soprano (*P. pygmaeus*) and Nathusius' (*P. nathusii*), four Myotis: Natterer's (*Myotis nattereri*), Daubenton's (*M. daubentoniid*), Whiskered (*M. mystacinus*), Brandt's (*M. brandtii*), the Brown Long-eared (*Plecotus auratus*) and Leisler's (*Nyctalus leisleri*) Bats.

The proposed works are largely planned for grassland with hedgerows bordering some sections of the site. Bat surveys included a visual inspection during daylight hours of trees within the area and an assessment for roosting Bats. The hedgerows on site have low to moderate suitability Bat habitat as it does not provide enough space, shelter, protection to be used by a large number of Bats on a regular basis. Most trees did not contain obvious holes, cracks or cavities and many trees were not large dead trees covered with mature ivy. However, there was one tree at approx. 641046.06,806455.34 ITM which was recorded as having high Bat roosting potential. An assessment of the sites suitable for Bat roosting and foraging was carried out based on Colins (2023). The site was noted as having overall low to moderate roosting habitat and moderate to high commuting and foraging habitat.

5.2.3.1 Transect Survey & Bat Activity Survey

The following Bat species have been recorded during this Bat survey: Common Pipistrelle, Soprano Pipistrelle, Nathusius's Pipistrelle, Leisler's Bat, Brown Long-Eared Bat and a *Myotis* species (most likely Natterer's Bat). This represents six of the nine resident Bat species known to Ireland, results are summarised in **Table 12**.

Table 12 Bat species recorded & locations

Time	Location	Species	Comments
20:22	54.006332 -7.374840	Leisler's Bat	1 detection - not seen
20:27	54.004990 -7.374142	Soprano Pipistrelle	1 detection, flying over hedgerow
20:33	54.004477 -7.373025	Leisler's Bat	1 faint detection - not seen
20:38	54.004279 -7.372416	Soprano Pipistrelle	1 detection, flying over hedgerow
20:43	54.003239 -7.372282	Common Pipistrelle	1 detection, flying over hedgerow
20:44	54.003225 -7.372773	Soprano Pipistrelle	2 very faint detection - not seen
20:45	54.002962 -7.373993	<i>Myotis sp.</i>	1 detection – foraging over treeline
20:47	54.003682 -7.374451	Soprano Pipistrelle	1 detection-commuting south
20:49	54.003682 --7.374451	Soprano Pipistrelle	1 faint detection, not seen
20:50	54.004384 -7.374294	Nathusius's Pipistrelle	2 detections - not seen
20:57	54.005633 -7.376042	<i>Myotis sp.</i>	2 detection - flying along treeline
20:58	54.005997 -7.376168	<i>Myotis sp.</i>	3 detections - flying along treeline
21:07	54.005908 -7.374003	Common Pipistrelle	4 detections - not seen
21:24	54.004013 -7.375390	<i>Myotis sp.</i>	1 detection - not seen
21:30	54.003910 -7.375662	Soprano Pipistrelle	2 detections – foraging west of buildings
21:35	54.004298 -7.375217	Brown Long-Eared Bat	2 faint detections - not seen
21:37	54.004152 -7.375538	Soprano Pipistrelle	2 detections – foraging west of buildings
21:40	54.003646 -7.375315	<i>Myotis sp.</i>	1 detection – south of buildings, not seen
21:45	54.003988 -7.374886	Common Pipistrelle	2 very faint detections - not seen
21:48	54.004932 -7.375078	Soprano Pipistrelle	2 detections- not seen
22:00	54.004593 -7.375657	Soprano Pipistrelle	1 detection- not seen

22:03	54.005710 -7.375670	Soprano Pipistrelle	3 detections - not seen
22:05	54.006118 -7.375772	Nathusius's Pipistrelle	2 detections - not seen
22:06	54.006118 -7.375772	Soprano Pipistrelle	1 faint detection - not seen

All Bat species recorded during these Bat surveys are Annex IV species under the EU Habitats Directive and all have a Favourable Status in Ireland. It should be noted that these detections are Bat passes and are indicative of levels of activity, rather than an actual count of Bats. *Pipistrellus* species tend to forage as they commute and will be observed flying up and down a treeline or hedgerow before moving on in the landscape. The timestamps of recordings showed that Bats were active in the western sections of the study area and absent from the northern and eastern sections of the study area and did not appear less active in the brightly lit area of the site entrance on Loreto Road. The eastern and northern sections of the site are on ground which is elevated and exposed; it is likely foraging Bats find insect prey in greater abundance in the lower, sheltered, more western sections of the site, hence the lack of Bat recordings from the higher ground.

Table 13 Total Bat passes (calls) recorded on 10th September 2024

Location	Total Calls	% Total
Common Pipistrelle	7	17.5
Soprano Pipistrelle	17	42.5
Nathusius's Pipistrelle	4	10
Brown Long-Eared Bat	2	5
Leisler's Bat	2	5
Myotis sp.	8	20
Total	40	100

Soprano Pipistrelle, Common Pipistrelle & Nathusius's Pipistrelle

Soprano Pipistrelle dominated Bat activity with 42.5% of registrations, Common Pipistrelle 17.5% and Nathusius's Pipistrelle with totals Bat calls of 17, 7 and 4 respectively. All three Pipistrelle species start summer roost emergences at 20-30 minutes after sunset (Roche & Torsney, 2022). The first Soprano Pipistrelle recorded on site was at 30 minutes after sunset with Common Pipistrelle and Nathusius's Pipistrelle arriving 46 and 53 minutes after sunset respectively. It is likely Soprano Pipistrelles are roosting nearby or within the site, the late arrival of the other two species on site does not indicate roosting on site. Although the buildings are outside the study site boundary, any roost adjacent to a development could be affected by the construction and operational phases of the development. The presence of any roosts in the buildings could not be confirmed.

Leisler's Bats

Two Leisler's Bat calls were detected during the surveys and accounted for 5% of Bat registrations. These large and relatively high-flying species tend not to follow landscape features in flight. They are a relatively early emerging species, which emerge an average of 18 minutes after sunset (Jones & Rydell, 1994). The first recording of Leisler's Bats was a faint call at 20:22, 25 minutes after sunset. The time of this first detection and lack of direct observation of these Bats during the survey indicate that the individuals recorded are not roosting near the study site.

***Myotis* sp.**

The echolocation pulses of the three *Myotis* species Bat that occur in Ireland (Daubenton's, Natterer's & Whiskered Bats) can be difficult to separate to species due to similarities in call types. Where uncertain, these are classified as *Myotis* sp. Eight *Myotis* sp. calls accounting for 20% of Bat registrations was recorded during the survey. Emergence times for *Myotis* species varies from 28 to 60 minutes for Daubenton's and whiskered Bats (Roche & Torsney, 2022) and in the case of Natterer's Bat - 'very late'. Based on the late arrival time of the *Myotis* Bats at 58 minutes after sunset there is no indication whether the individuals are roosting nearby.

Brown long-eared Bat

This is a species strongly associated with broadleaved woodland in Ireland (Roche *et al.*, 2014) and accounted for 5 % of Bat registrations. It generally has a low rate of detectability during Bat activity surveys, as they have very quiet calls, which may not be picked up by a device if the Bat is more than 5 m from the surveyor. This species was recorded in trees north of the residential building.

Preliminary Daytime Roost Inspections – Buildings

The vacant house is in overall good condition but has been subject to recent vandalism with several broken windows. The interior was inaccessible to survey. Potential roost features (PRFs) were limited to missing slates on the north-western corner of the slate roof. No signs of Bats were noted on the building exterior. The building is considered to have medium to high potential for supporting a Bat roost. Photographs of the buildings are presented in the Appendix. The barn has several open windows on the western (front) elevation and an open barn door on the northern elevation allowing Bats potential entry to the building interior. The middle and southern sections of the ground floor were inaccessible. No signs of Bats noted on the building exterior or interior and no suitable roosting crevices noted in the interior, however, the upper floor has a large upper roof space which is impractical to survey. The building is considered to have medium to high potential for supporting a Bat roost. The outhouses are open and draughty and lack the structural elements which would provide suitable roosting areas for Bats. While the structures offer some potential Bat roosting features, such as wooden rafters and joists that may favour species such as brown long-eared Bats *Plecotus auritus*, the open structures allow excessive daylight illumination and draughts into much of the outhouse interiors. The structures are considered to have low potential for supporting Bat roosts. Swallow's nests were noted on the southern gable of the house and in the barn.

Bat Emergence Surveys

A Pipistrelle Bat roost was identified in the roof of the vacant house during the previous survey of the site 7th of September 2021, (Flynn Furney, 2022). An infra-red camera was deployed to record any Bat emergences from the roost identified in the 2021 survey on the west corner of the roof on the front elevation. A second camera was deployed on the barn building's front elevation where several access points for Bat entry were identified. The results of the surveys undertaken (dusk emergence watches using infra-red cameras) recorded no Bats emerging from any of the building on the night of survey.

5.2.4 Amphibians and Reptiles

Common Frog (*Rana temporaria*) was observed at various locations around the site, particularly in areas of long grass. No evidence of breeding activity of Frog (*Rana temporaria*) or Smooth Newt (*Lissotriton vulgaris*) was found within the survey area due to the time of the survey however, the drainage ditch at the north of the south has potential as a breeding habitat. No Common (or Viviparous) Lizard (*Zootoca vivipara*) were recorded within the site. The location of the Common Frogs recorded on site are outlined below.

Table 14 Records of Common Frog on-site

Location of Common Frog On-site (ITM)
641153.02,806169.12
640988.272,806310.876

5.2.5 Protected Invertebrates

The Marsh Fritillary butterfly (*Euphydryis aurinia*) is Ireland's only Habitats Directive Annex II insect species. In Ireland, the species relies solely on Devil's-Bit Scabious as its larval food plant. No stands of Devil's-Bit Scabious were recorded within or surrounding the proposed development site. No larval webs can therefore occur on site.

5.2.6 Invasive Species

Ireland is a signatory of a number of international treaties and conventions, including the Convention on Biological Diversity and most notably Regulation (EU) 1143/2014 on the prevention and management of the introduction and spread of invasive alien species (The IAS Regulation). Such legal instruments require the Irish Government to address issues of invasive alien species. This has been implemented through national legislation via the Wildlife Acts 1976 and 2000 (as amended) and further regulated through the European Union (Invasive Alien Species) Regulations 2024. These regulations outline the legal implications associated with alien invasive species and the steps required for early eradication,

management and containment. Article 17 in particular sets out restrictions on particular species of national concern, which are listed in the First Schedule of the regulations.

Under Article 17 of the Regulations, it is an offence to:

- Plant, disperse, allow dispersal or cause the spread of invasive species.
- Keep the plants in possession for the purpose of sale, breeding, reproduction, propagation, distribution, introduction or release.
- Keep anything from which the plant can be reproduced, or propagated from, without a granted licence.

A search of records for invasive non-native species on the National Biodiversity Data Centre was carried out as part of this project. **Table 15** shows the First Schedule and Non-First Schedule invasive species recorded on the NBDC database within 1 km of the works. None of these species were recorded within the footprint of the proposed works and none of the below species were recorded during the field survey.

Table 15 Invasive species recorded on the NBDC within 1km of the works area

Invasive Species	Invasiveness	First Schedule	Recorded on Site
Canadian Goose (<i>Branta canadensis</i>)	High	Yes	Within 10 km, exact location not given
Canadian Waterweed (<i>Elodea canadensis</i>)	High	Yes	Within 10 km, exact location not given
Japanese Knotweed (<i>Fallopia japonica</i>)	High	Yes	No
Winter Heliotrope (<i>Petasites fragrans</i>)	Low-Medium	No	No
Common Garden Snail (<i>Cornu aspersum</i>)	Medium	No	Within 10 km, exact location not given
Jenkins' Spire Snail (<i>Potamopyrgus antipodarum</i>)	Medium	No	No

Fallow Deer (<i>Dama dama</i>)		Yes	No
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No First Schedule invasive species were recorded on-site. However, several non-First Schedule species were observed. The exact location of these invasive species can be seen below.

Table 16 Location of invasive species on-site

Invasive Species Recorded On-Site	Invasiveness	Location (ITM)
Montbretia (<i>Crocsmia X crocosmiflora</i>)	Low risk of impact (NBDC, 2024)	641090.406,806665.429
Hollyberry Cotoneaster (<i>Cotoneaster Bullatus</i>)	Not assessed by NBDC (2024)	641256.59,806152.73
		641135.527,806162.602
Franchet's Cotoneaster (<i>Cotoneaster franchetii</i>)	Not assessed by NBDC (2024)	641116.757,806156.715

6 Impact Assessment

6.1 Impact Assessment of the Proposed Development

The potential impacts on the habitats and species within and surrounding the proposed development site is provided below.

6.1.1 Impact Assessment: Habitats

The potential impacts on the habitats identified within and surrounding the proposed development site is provided in table below.

Table 17 Impact Assessment: Habitats

Impact Assessment: Habitats

Ecological Feature	Evaluation	Nature of Impact	Significance	Duration & Likelihood
Habitats within the Proposed Development Site				
Drainage Ditch (FW4)	High Local	Potential alteration of this habitat area	Minor Adverse	Permanent/ Almost certain
Hedgerows (WL1)	High Local	Loss and alteration to some of this habitat area	Minor Adverse	Permanent/ Almost certain
Treelines (WL2)	High Local	Loss and alteration to some of this habitat area	Minor Adverse	Permanent/ Almost certain
Improved Agricultural Grassland (GA1)	Low Local	Loss and alteration to some of this habitat area	Negligible	Permanent/ Almost certain
Spoil and Bare Ground (ED2)	Low Local	Loss and alteration to this habitat area	Negligible	Permanent/ Almost certain
Recolonising Bare Ground (ED3)	Low Local	Loss and alteration to this habitat area	Negligible	Permanent/ Almost certain
Habitats surrounding the Proposed Development Site				
Buildings and Artificial Surfaces (BL3)	Low local	Loss or alteration to some of this habitat	Negligible	Permanent/ Almost certain
Oak-Ash-Hazel Woodland (WN2)	High Local	No loss or alteration of this habitat	Negligible	Permanent/ Almost certain

(Mixed) Broadleaved Woodland (WD1)	Moderate Local	No loss or alteration of this habitat	Negligible	Permanent/ Almost certain
Other Artificial Lake and Ponds (FL8)	Low Local	No loss or alteration of this habitat	Negligible	Permanent/ Almost certain
Scrub (WS1)	Low Local	No loss or alteration of this habitat	Negligible	Permanent/ Almost certain
Treelines(WL2)	High Local	No loss or alteration of this habitat	Negligible	Permanent/ Almost certain

6.1.2 Impact Assessment: Fauna

The potential impacts on the fauna within and surrounding the proposed development site is provided in the table below.

Table 18 Impact Assessment: Fauna

Impact Assessment: Fauna			
Species/Group	Nature of Impact	Significance	Duration & Likelihood
Protected Terrestrial Mammals	- Loss of foraging habitat - Fragmentation of commuting habitat - Disturbance to sett due to proximity to proposed development	Minor adverse	Permanent/ Likely
Birds	- Disturbance to nesting habitat during works - Increased anthropogenic	Minor adverse	Permanent/ Likely

	disturbance locally		
Bats	• Impacts of lighting in a previously unlit area • Increased anthropogenic disturbance locally • Impacts to commuting and foraging	Minor adverse	Permanent/ Likely
Amphibians	• Alteration of breeding site • Loss of foraging area	Minor adverse	Permanent/ likely
Protected Invertebrates	• No impacts predicted	N/A	N/A

6.1.3 Cumulative and In-combination Impacts

Cavan County Council's online planning portal (<https://www.eplanning.ie/CavanCC/searchtypes>) was searched for planning applications within this area. Planning permission has been granted in the area for numerous other developments, mostly residential developments and road projects. Some of these include:

1. **Planning no. 01599:** Proposal to build 11 fully serviced two-storey houses, including site development works such as access roads, drainage systems, effluent treatment, water mains, and public lighting.
2. **Planning no. 21601:** Plan to construct a three-storey Medical Centre with extended access roads, parking spaces, drop-off areas, bicycle spaces, and connections to public foul drainage and water systems. A Natura Impact Statement (NIS) was submitted as part of this application.
3. **Planning no. 08618:** A large residential development, comprising 197 units (a mix of apartments, duplexes, terraced, semi-detached, and detached houses), 381 parking spaces, a creche, and 16 serviced sites. The project includes new vehicular access points, footpaths, cycleways, landscaping, and infrastructure works, such as water supply, drainage, and a pumping station.

Demolition of an existing two-storey house is also part of the plan.

4. **Planning no. 19236:** A two-phase plan to build a fully serviced, 160-bed, two-storey nursing home, with upgrades to the site entrance, access roads, parking, and the installation of a pumping station connected to public drainage and water services. An NIS was submitted for this project.
5. **Planning no. 23138:** Revised plans for the nursing home development, reducing the number of beds from 160 to 112, with corresponding adjustments to the building layout and associated works.

7 Discussion of Impact Assessment

7.1 Impacts on Habitats

Impacts upon habitats types within the proposed development footprint are considered of *Minor adverse* or of lesser significance, given the conservation value, scale and likelihood of the impacts predicted from the construction and operation of the proposed development. *Negligible* impacts of a permanent duration are predicted to result from the loss of the Improved Agricultural Grassland, Spoil and Bare Ground, Recolonising Bare Ground. These habitat types will be converted into built land and amenity grassland. *Negligible* impacts of a permanent duration are predicted for Drainage Ditch habitat as this habitat will not be significantly altered for the construction of the proposed housing development. *Minor adverse* impacts of a permanent duration are predicted for Hedgerow and Treeline habitats as these habitat will be lost or altered for the construction of the proposed housing development.

Negligible impacts of a permanent duration are predicted for the Buildings and Artificial Surfaces, Oak-Ash-Hazel Woodland, (Mixed) Broadleaved Woodland, Other Artificial Lakes and Ponds, Scrub and Treeline habitats outside of the footprint of the proposed development. These habitats will not be impacted by the proposed development as they will not be intersected by the development.

However, the presence of invasive species on site could potentially impact all habitats that will be retained on site by spreading and outcompeting native species, if not properly managed at the

construction phase of the project.

The overall impact significance of the proposed development upon these habitats (taken as a whole) can therefore be considered to be *Minor Adverse* or lower. Measures to mitigate any impacts as defined here are given in the following section.

7.2 Impacts on Fauna

Impacts upon fauna within the proposed development footprint are considered of *Minor Adverse* or of lesser significance, given the habitat types being affected and the scale and likelihood of the impacts predicted from the construction and operation of the proposed development. *Minor Adverse* impacts are predicted on mammalian species due to the presence of an active Badger sett in the Oak-Ash-Hazel woodland and the loss of foraging/commuting habitat for badgers. Possible impacts of *Minor Adverse* significance are predicted on bird species. This is due to the loss of some feeding and foraging areas that will occur from the development of Improved Agricultural Grassland habitat, and a loss of nesting habitat due to the loss of some sections of hedgerows and treelines. Additionally, the increased human presence at the site will lead to greater disturbance in the area.

The proposed development site is used as a foraging and commuting habitat for local Bat populations. The level of Bat activity and the number of Bat encounters is considered medium for the site as a whole. The greatest Bat activity was recorded along treelines, hedgerows and the group of buildings. Bat activity is considered medium for a predominantly grassland site and indicates that the proposed development site is of local importance for local Bat populations. The proposed development will result in the loss of ca. 200 m of treelines. The trees as a whole are considered to have low significance for potential Bat roosts (PBRs). An absence of mature veteran trees with roost potential was noted as was the high proportion of Ash trees have an uncertain future in Ireland due to the widespread and terminal effects of Ash die-back disease (*Hymenoscyphus fraxineus*). The loss of treelines within the site footprint will result in impacts on commuting and foraging Bats, however, it is not expected that these impacts will be significant as the treelines are poorly connected with the wider landscape and particularly in view of the fact that the hedgerows that form the boundary of the overall site will be retained.

The surveyed buildings are outside the footprint of the proposed development (located ca. 50 m west) and not expected to be affected by the construction and operational phases of the development works. A detailed inspection was undertaken of the building exteriors and interiors (where possible) to search for signs of Bats. No signs of Bats were observed but potential roost features (PRFs) were noted in the buildings. The buildings are considered to have varying levels of suitability from roosting Bats with low suitability in the outhouses and medium to high suitability in the vacant house and barn (Collins 2023).

Lighting can severely impact on Bat roosting behaviour, foraging behaviour and commuting behaviour with knock-on effects on accessing feeding areas. Many species of Bats forage along dark corridors like rivers and hedgerows and are known to stay clear of well-lit areas. Lighting in the new development could impact upon Bats' home ranges. Bat vision is an important sense during dusk and dawn as Bats begin to move to and from the roosting sites. Excessive luminance particularly around roosting sites can lead to Bats becoming disorientated and can also lead to abandonment of roosts. On review it is our professional opinion that given that the proposed development is on the edge of an existing lit area, impacts to Bats due to lighting of the operational phase of the proposed development is considered to be *Minor Adverse* as they would result in 'a minor impact on legally protected species but no significant habitat loss or reduction in favourable conservation status'.

Amphibians often use ditches and drains as breeding sites. As a drainage ditch on the northern boundary of the site provides suitable breeding habitat for frogs, there is potential for frogs to be impacted by the proposed development. The impacts are considered *Minor Adverse*, as the works could result in 'a minor impact on legally protected species without significant habitat loss or reduction in favourable conservation status'. Amphibians could be affected by increased human disturbance and anthropogenic activity on the site. Additionally, there will be a loss of shelter and foraging grounds due to the loss of improved agricultural grassland habitat. Other potential impacts include vegetation removal, damage to spawn from pollutants during the construction phase (such as oils and chemicals), and water quality degradation due to siltation.

The overall impact significance of the proposed development upon fauna (taken as a whole) can therefore be considered to be *Minor Adverse* or lower. Measures to mitigate any impacts as defined here are given

in the following section.

8 Impact Mitigation

Mitigation measures to address the potential impacts from the proposed development on habitats and fauna within and surrounding the proposed developed (as required) are provided below.

8.1 Mitigation Measures: Habitats

Table 19 Mitigation Measures for Habitats

Ecological Feature	Nature of Impact	Recommended Mitigation Measures
Habitats within and around the Proposed Development Site		
All Habitats	Spread of invasive species	Montbretia According to DAFM (2020), it may take several years to fully eradicate Montbretia from a site. While chemical and non-chemical approaches can be taken to eradicate Montbretia, the most effective way to treat the invasive is to remove the plant just before full flowering occurs in summer time. Montbretia can spread vegetatively and can regenerate from small rhizomes. Therefore, care should be taken to avoid the spread of rhizomes on shoes, clothes or machinery and equipment. Invasive Cotoneaster species found within the footprint of the works should also be managed. Similarly, chemical and non-chemical approaches can be taken to manage Cotoneaster species. However, the Cotoneaster on-site should be managed physically by removing the whole plant including the whole root system between October and March when there are no berries and the plant is less likely to reproduce vegetatively. All invasive species managed on-site should be disposed of properly to

		prevent spread on-site. No Cherry Laurel (<i>Prunus laurocerasus</i>) will be part of any planting plans. Cherry Laurel is a high-impact invasive species with comparable impacts to <i>Rhododendron ponticum</i> (a First Schedule species) and the immediate ban of its sale in Ireland has been recommended by the Citizen's Assembly on Biodiversity Loss. Any new hedging will incorporate native or naturalised plants only. Appropriate replacements for Cherry Laurel include Wild Privet (<i>Ligustrum vulgare</i>), Beech, and Portuguese Laurel (<i>Prunus lusitanica angustifolium</i>).
Hedgerows & Treelines	Root damage	• All sections of hedgerows and treelines to be retained will be fenced off at a distance of 5 m from the outset of works and will remain fenced for the duration of construction to avoid damage to the trunk, branches or root systems of the trees. • Temporary fencing will be erected at a sufficient distance from trees and hedges to enclose the Root Protection Areas (RPAs) of the larger trees that are not within the works areas (National Roads Authority, 2005- 2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5 m above ground level for single-stemmed trees). • Soil or any other materials, vehicles or plant will not be stored within the Root Protection Area for retained trees or within 5 m of hedgerows. • New planting scheme, including trees, to align with development plan requirements for replacement ratio (three new trees for every one tree lost) to ensure no net loss of vegetation cover overall over the lifetime of the scheme. New trees to be native species only. Any hedges or trees planted as part of the landscape plans should be native species only.

Oak-Ash-Hazel Woodland	To be retained	- This woodland will be fenced off at the outset of works and for the duration of construction to avoid damage to the trunk, branches or root systems of the trees. - Temporary fencing will be erected at a sufficient distance from trees to enclose the Root Protection Areas (RPAs) of the larger trees that are not within the works areas (National Roads Authority, 2005-2011). In general, the RPA covers an area equivalent to a circle with a radius 12 times the stem diameter (measured at 1.5m above ground level for single-stemmed trees). - The mature healthy Ash tree in this woodland at approx. 641154.09,806603.26 ITM will be retained
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8.2 Mitigation Measures: Fauna

Table 20 Mitigation Measures for Fauna

Species/ Group	Nature of Impact	Recommended Mitigation Measures
Mammals	Loss of foraging area	- All hedgerows within the development outline that will be removed must be cleared under supervision of a suitably qualified ecologist due to the presence of an active Badger sett in the Oak-Ash-Hazel Woodland. - Badger sett tunnel systems can extend up to c. 20 m from sett entrances. Therefore, no heavy machinery will be used within 30 m of badger setts (unless carried out under license); lighter machinery (generally wheeled vehicles) will not be used within 20 m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10 m of sett

		entrances. • During the breeding season (December to June inclusive), none of the above works will be undertaken within 50 m of active setts nor blasting or pile driving within 150 m of active setts. • Following consultation with the NPWS and Badger experts, works closer to active setts may take place during the breeding season provided appropriate mitigation measures are in place, e.g. sett screening, restricted working hours, etc. • All affected Badger setts should be clearly marked, and the extent of bounds prohibited for vehicles clearly marked by fencing and signage. Bunting is an option on a temporary basis. Hazard tape is inadequate as it is prone to deterioration and damage by wind or cattle etc. Heras fencing with signage indicating that there is a sett nearby is ideal. • All contractors/operators on site should be made fully aware of the procedures pertaining to each sett on site. • Construction activities within the vicinity of affected setts may only commence once these setts have been evacuated and destroyed under license from the NPWS. Where affected setts do not require destruction, construction works may commence once recommended alternative mitigation measures to address the Badger issues have been complied with. • In almost all circumstances, works close to Badger setts may only be conducted under the supervision of a qualified expert under license from the NPWS. • Post and rail fencing incorporating landscape planting would be the most beneficial outer boundary, allowing for the free movement of mammals and avoiding any hinderance to movement and foraging.
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		Any planting of trees to include Elder (<i>Sambucus nigra</i>) which are important components of Badgers' diets.
Birds	Loss of feeding/ foraging area	- All clearance of tall vegetation (woody or herbaceous) to facilitate construction works will be undertaken outside of the breeding bird season (1st March to 31st August, inclusive), - Where this seasonal constraint cannot be adhered to, the area of proposed clearance will be checked for nesting birds by a suitably qualified project ecologist. If birds are encountered, clearance works will be suspended in the relevant areas until nesting has finished; - Landscape planting is to include native seed/fruit bearing plants and flowering plants attractive to invertebrates. - Landscape planting to be guided by recommendations given in All-Ireland Pollinator Plan.
Bats	Loss of feeding/ foraging area	- Landscape planting is to include native seed/fruit bearing plants and flowering plants attractive to invertebrates. There is opportunity to expand habitat corridors on site through the planting of native shrubs and trees. - Night-flowering plants (e.g. honeysuckle <i>Lonicera periclymenum</i>) and strong-smelling plants should be included within the planting plan to attract night pollinators for Bats. - The boundary hedges should be enhanced and maintained with replacement native tree planting wherever gaps occur. - Gaps in the hedgerows should be planted as part of the development; many Bats will avoid even small gaps in treelines and hedgerows that are used for commuting and foraging. It is important to ensure connectivity is maintained as much as possible between foraging areas. This helps maintain the broader green infrastructure network. This allows small

		fragmented blocks of habitat to operate as one bigger block (Gunnell <i>et al.</i> , 2012).
	Loss of roosts	• Prior to any tree removal, a Bat assessment of the trees will need to be undertaken by a suitably qualified specialist to determine their potential for Bat roosts. This assessment is required to provide detailed mitigation measures in relation to tree felling and planting. • Planting will be required to mitigate for tree removal and landscaping plans will be required for planting with similar native species. • A Bat expert should survey all trees due for removal prior to construction works commencing once there is a consensus on what trees are to be removed. • Any trees with high PRFs, e.g. with crevices, hollows, etc., should be removed while a Bat specialist is present to deal with any Bats found. • Any Bats discovered during works can be retained in a box until dusk and released on-site. This can only be undertaken by a specialist with an NPWS handling licence. • Trees proposed to be felled and identified with PRFs should be felled on mild days during the autumn months of September to November or Spring months of February and March (felling during the spring or autumn months avoids the periods when the Bats are most active). • Any Ivy-covered trees which require felling should be pushed over and left to lie for 24 hours after felling to allow any Bats hidden beneath the ivy cover to escape.

		• The erection of Bat boxes will be required to mitigate for the loss of trees. The number of Bat boxes is calculated according to the number of trees to be felled and their PBR value. • Bat box locations (exact trees for erection of Bat boxes) should be undertaken by Bat specialist prior to construction works being undertaken. • The wooded area in the north-west section of the overall site would have trees appropriate for a Bat box scheme. Bat boxes should be inspected by a licenced Bat ecologist at yearly intervals to monitor uptake of boxes and supervise relocation of boxes if not utilised by Bats within 2 years of installation. • The buildings outside of the footprint of the proposed development are considered to have varying levels of suitability from roosting Bats with low suitability in the outhouses and medium to high suitability in the vacant house and barn (Collins 2023). Any alterations to the vacant house should be preceded by interior and exterior surveys of the building followed by dusk Bat emergence surveys. • As the house is a confirmed Bat roost (7th September 2021) and afforded legal protection, the inspections must be carried out by a licenced Bat ecologist. The presence or absence of any other roosts in the other buildings could not be confirmed. • Any alterations to the barn or outhouses will be preceded by interior and exterior surveys of the buildings followed by dusk Bat emergence surveys. Surveys will be undertaken during May to September with at least three surveys recommended during this period.
	Potential disturbance	• All luminaires will lack UV elements or emit light as far towards the red end of the visible spectrum as possible, when

	disruption from lighting	manufactured. Metal halide or compact fluorescent sources should not be used as these produce high amounts of UV light. • LED luminaires will be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability. • A warm white light source (2700 Kelvin or lower) will be adopted to reduce blue light component. • Light sources will feature peak wavelengths higher than 550 nm to avoid the component of light most disturbing to Bats (Stone, 2012). • Column heights will be carefully considered to minimise light spill and glare visibility. Losses in ground illumination can be balanced with increased numbers of columns that below a certain height, the issue of upward light reflectance arises, as with bollards • Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - See ILP GN01 • Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt. • The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues. • Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and
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		direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.
Amphibians	Disruption to breeding habitat	• Area of works to be strictly delineated and drainage ditches to be maintained where possible. • Silt fencing should be used to prevent water quality degradation. • The drainage ditch which exists to the northern boundary of the site should be monitored during the breeding season for signs of spawn.
	Loss of feeding/foraging area	• Areas of long grassland will be retained or recreated to provide shelter and a feeding/foraging area for amphibians, which should be guided by the All-Ireland Pollinator Plan. A wetland feature, such as a pond, can be created to enhance the breeding habitat potential of the site.

8.3 Residual Impacts after Mitigation

Residual impacts after mitigation are:

- Permanent loss of Improved agricultural grassland, recolonising bare ground, spoil and bare ground habitat. These habitats are of low, local significance.
- Permanent loss of some feeding and foraging areas for birds, bats, mammals and amphibians will also result. However, these habitat areas are widely represented in the immediate area surrounding the area proposed for development.

Following the implementation of the mitigation measures set out in Sections 8.1 and 8.2, the significance

of any residual impacts may be described as *Negligible*.

9 Conclusion

Ecological surveys were carried out within and surrounding the proposed development site in August 2024. Surveys included those for mammals, invertebrates, birds, bats, habitats and invasive species. An extensive desktop survey was carried out which used available data from suitable sources which included online databases (e.g. National Parks and Wildlife Service and National Biodiversity Data Centre).

Habitat types recorded were typical of urban areas. No habitats listed in Annex I of the Habitats Directive were noted. No habitats of higher than *High Local* ecological value were found with the proposed development site. No ecologically sensitive habitats were noted within the proposed development site. The development will not result in the loss of an internationally, nationally, regionally important habitat areas.

Evidence of mammal activity, including an active Badger sett, was found outside the site boundary in the Oak-Ash-Hazel woodland. To mitigate this, hedgerow clearance must be supervised, and no heavy machinery will operate within 30 m of the sett, with strict distance restrictions for lighter work. Works are prohibited within 50 m during the badger breeding season (December to June). Setts must be clearly marked, and contractors informed of all procedures. Construction can only begin after Badger setts are safely evacuated or protected under NPWS guidance, with supervision by a qualified expert and appropriate mitigation measures.

A survey of bat habitat within and surrounding the study area found some potential bat roost habitat areas but these areas could not support a large number of roosting bats. A number of measures have been described to mitigate against any impacts on commuting, foraging or roosting bat populations during the construction and operation of this residential development.

One Annex II (Birds Directive) bird species was recorded flying above the site during field surveys of the site and surrounds. Mitigation measures have been drawn up to address any potential impacts to local bird populations. These include the limiting of works areas, and the protection of woody vegetation

during the bird nesting season and the creation/ enhancement of ecological corridors (hedgerows) on site.

Area of works should be strictly delineated and drainage ditches should be maintained to prevent the disruption of potential frog breeding sites.

Finally, it will be a condition of the contract between proponent and the Main Contractor that the Project Construction Management Plan (CMP) prepared for the project (and provided as part of the application under separate cover) will be implemented by the contractor and overseen by the project proponent. The Preliminary Construction Management Plan (PCMP) specifies how materials with the potential to adversely affect surface water quality, for example, fuel and oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks. The PCMP also specifies measures that will ensure that spill containment and clean-up equipment is provided and maintained during the construction phase of the development. Both the PCMP and the recommendations of this report will be incorporated into the larger Construction Environmental Management Plan (CEMP) for the development.

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Appendix

Appendix 1 NBDC records within 1km of the site of proposed housing development

Species name	Record count	Date of last record	Title of dataset	Designation
<i>Erpobdella</i>	4	09/09/2014	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Glossiphonia</i>	2	30/06/2010	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Helobdella</i>	2	30/06/2010	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Hirudinea</i>	1	09/09/2014	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Tubificidae</i>	5	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Barn Swallow (<i>Hirundo rustica</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	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 (<i>Pica pica</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	

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Blackcap (<i>Sylvia atricapilla</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	
Black-headed Gull (<i>Larus ridibundus</i>)	5	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Blue Tit (<i>Cyanistes caeruleus</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Bohemian Waxwing (<i>Bombycilla garrulus</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	
Canada Goose (<i>Branta canadensis</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Chaffinch (<i>Fringilla coelebs</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Coal Tit (<i>Parus ater</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Common Blackbird (<i>Turdus merula</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Common Bullfinch (<i>Pyrrhula pyrrhula</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	
Common Buzzard (<i>Buteo buteo</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	
Common Chiffchaff (<i>Phylloscopus collybita</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	
Common Coot (<i>Fulica atra</i>)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of

				Conservation Concern >> Birds of Conservation Concern - Amber List
Common Cuckoo (<i>Cuculus canorus</i>)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	
Common Grasshopper Warbler (<i>Locustella naevia</i>)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kestrel (<i>Falco tinnunculus</i>)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Kingfisher (<i>Alcedo atthis</i>)	2	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	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 (<i>Carduelis cannabina</i>)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Moorhen (<i>Gallinula chloropus</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	
Common Pheasant (<i>Phasianus colchicus</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species

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Common Pochard (<i>Aythya ferina</i>)	2	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	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 (<i>Corvus corax</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	
Common Snipe (<i>Gallinago gallinago</i>)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Starling (<i>Sturnus vulgaris</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Swift (<i>Apus apus</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Common Whitethroat (<i>Sylvia communis</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	
Common Wood Pigeon (<i>Columba palumbus</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species:

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				EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Corn Crane (<i>Crex crex</i>)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Eurasian Collared Dove (<i>Streptopelia decaocto</i>)	4	31/12/2011	Bird Atlas 2007 - 2011	
Eurasian Curlew (<i>Numenius arquata</i>)	2	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	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 (<i>Corvus monedula</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Eurasian Jay (<i>Garrulus glandarius</i>)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	
Eurasian Siskin (<i>Carduelis spinus</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	
Eurasian Sparrowhawk (<i>Accipiter nisus</i>)	4	31/12/2011	Bird Atlas 2007 - 2011	
Eurasian Teal (<i>Anas crecca</i>)	2	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	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 (<i>Certhia familiaris</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	
Eurasian Wigeon (<i>Anas penelope</i>)	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	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 (<i>Scolopax rusticola</i>)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
European Goldfinch (<i>Carduelis carduelis</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	
European Greenfinch (<i>Carduelis chloris</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	
European Robin (<i>Erithacus rubecula</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Fieldfare (<i>Turdus pilaris</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	
Goldcrest (<i>Regulus regulus</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	
Great Black-backed Gull (<i>Larus marinus</i>)	1	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern

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				Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Cormorant (<i>Phalacrocorax carbo</i>)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Crested Grebe (<i>Podiceps cristatus</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Great Tit (<i>Parus major</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Grey Heron (<i>Ardea cinerea</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	
Grey Wagtail (<i>Motacilla cinerea</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	
Hedge Accentor (<i>Prunella modularis</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Hen Harrier (<i>Circus cyaneus</i>)	1	17/09/2021	Birds of Ireland	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 (<i>Larus argentatus</i>)	2	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Hooded Crow (<i>Corvus cornix</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	

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House Martin (<i>Delichon urbicum</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
House Sparrow (<i>Passer domesticus</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Jack Snipe (<i>Lymnocyrtus minimus</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species
Lesser Black-backed Gull (<i>Larus fuscus</i>)	1	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Lesser Redpoll (<i>Carduelis cabaret</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	
Little Grebe (<i>Tachybaptus ruficollis</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Long-tailed Tit (<i>Aegithalos caudatus</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	
Mallard (<i>Anas platyrhynchos</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird

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				Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Meadow Pipit (<i>Anthus pratensis</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	
Merlin (<i>Falco columbarius</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mew Gull (<i>Larus canus</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Mistle Thrush (<i>Turdus viscivorus</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	
Mute Swan (<i>Cygnus olor</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Northern Lapwing (<i>Vanellus vanellus</i>)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Peregrine Falcon (<i>Falco peregrinus</i>)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species

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Redwing (<i>Turdus iliacus</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	
Reed Bunting (<i>Emberiza schoeniclus</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	
Rock Pigeon (<i>Columba livia</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Rook (<i>Corvus frugilegus</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	
Sand Martin (<i>Riparia riparia</i>)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Sedge Warbler (<i>Acrocephalus schoenobaenus</i>)	4	31/12/2011	Bird Atlas 2007 - 2011	
Sky Lark (<i>Alauda arvensis</i>)	2	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Song Thrush (<i>Turdus philomelos</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Spotted Flycatcher (<i>Muscicapa striata</i>)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Tufted Duck (<i>Aythya fuligula</i>)	2	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	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

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				Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Water Rail (<i>Rallus aquaticus</i>)	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
White Wagtail (<i>Motacilla alba</i>)	7	31/12/2011	Bird Atlas 2007 - 2011	
White-throated Dipper (<i>Cinclus cinclus</i>)	3	31/12/2011	Bird Atlas 2007 - 2011	
Whooper Swan (<i>Cygnus cygnus</i>)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Willow Warbler (<i>Phylloscopus trochilus</i>)	6	31/12/2011	Bird Atlas 2007 - 2011	
Winter Wren (<i>Troglodytes troglodytes</i>)	8	31/12/2011	Bird Atlas 2007 - 2011	
Yellowhammer (<i>Emberiza citrinella</i>)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Asellus	5	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	

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Freshwater White-clawed Crayfish (<i>Austropotamobius pallipes</i>)	2	31/12/2020	General Biodiversity Records from Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
<i>Gammarus</i>	4	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Gammarus duebeni</i>	2	30/06/2010	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Hart's-tongue (<i>Phyllitis scolopendrium</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Male-fern (<i>Dryopteris filix-mas</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Soft Shield-fern (<i>Polystichum setiferum</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
<i>Planaria</i>	1	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Amphibious Bistort (<i>Persicaria amphibia</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Annual Pearlwort (<i>Sagina apetala</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Barren Brome (<i>Anisantha sterilis</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Beech (<i>Fagus sylvatica</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Bittersweet (<i>Solanum dulcamara</i>)	1	31/12/1999	BSBI tetrad data for Ireland	

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Branched Bur-reed (<i>Sparganium erectum</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Brooklime (<i>Veronica beccabunga</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Butterbur (<i>Petasites hybridus</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Canadian Waterweed (<i>Elodea canadensis</i>)	1	31/12/1999	BSBI tetrad data for Ireland	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Clustered Dock (<i>Rumex conglomeratus</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Common Club-rush (<i>Schoenoplectus lacustris</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Common Duckweed (<i>Lemna minor</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Common Reed (<i>Phragmites australis</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Common Sedge (<i>Carex nigra</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Common Spike-rush (<i>Eleocharis palustris</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Common Spotted-orchid (<i>Dactylorhiza fuchsii</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Creeping Cinquefoil (<i>Potentilla reptans</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Creeping-Jenny (<i>Lysimachia nummularia</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Enchanter's-nightshade (<i>Circaea lutetiana</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
False Fox-sedge (<i>Carex otrubae</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
False-brome (<i>Brachypodium sylvaticum</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	

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Fennel Pondweed (<i>Potamogeton pectinatus</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Fool's-water-cress (<i>Apium nodiflorum</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Goat Willow (<i>Salix caprea</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Ground-elder (<i>Aegopodium podagraria</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Hairy Sedge (<i>Carex hirta</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Hard Rush (<i>Juncus inflexus</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Horned Pondweed (<i>Zannichellia palustris</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Ivy-leaved Duckweed (<i>Lemna trisulca</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Ivy-leaved Toadflax (<i>Cymbalaria muralis</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Japanese Knotweed (<i>Fallopia japonica</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Lesser Pondweed (<i>Potamogeton pusillus</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Lesser Spearwort (<i>Ranunculus flammula</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Marsh Foxtail (<i>Alopecurus geniculatus</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Marsh Yellow-cress (<i>Rorippa palustris</i>)	2	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Marsh-bedstraw (<i>Galium palustre</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Marsh-marigold (<i>Caltha palustris</i>)	1	31/12/1999	BSBI tetrad data for Ireland	

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Meadow Buttercup (<i>Ranunculus acris</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Meadowsweet (<i>Filipendula ulmaria</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Petty Spurge (<i>Euphorbia peplus</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Pink Water-speedwell (<i>Veronica catenata</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Procumbent Pearlwort (<i>Sagina procumbens</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Ramsons (<i>Allium ursinum</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Reed Canary-grass (<i>Phalaris arundinacea</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
<i>Rorippa nasturtium-aquaticum</i> agg.	1	31/12/1999	BSBI tetrad data for Ireland	
Rosebay Willowherb (<i>Chamerion angustifolium</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Silverweed (<i>Potentilla anserina</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Small Toadflax (<i>Chaenorhinum minus</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Snowberry (<i>Symphoricarpos albus</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Soft-rush (<i>Juncus effusus</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Spiked Water-milfoil (<i>Myriophyllum spicatum</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Thale Cress (<i>Arabidopsis thaliana</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Thyme-leaved Speedwell (<i>Veronica serpyllifolia</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Water Forget-me-not (<i>Myosotis scorpioides</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Water Mint (<i>Mentha aquatica</i>)	1	31/12/1999	BSBI tetrad data for Ireland	

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Water-plantain (<i>Alisma plantago-aquatica</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Wilson's Honeysuckle (<i>Lonicera nitida</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Winter Heliotrope (<i>Petasites fragrans</i>)	2	21/12/2017	National Invasive Species Database	
Winter-cress (<i>Barbarea vulgaris</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Wood Avens (<i>Geum urbanum</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Wych Elm (<i>Ulmus glabra</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Yellow Water-lily (<i>Nuphar lutea</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Yorkshire-fog (<i>Holcus lanatus</i>)	1	27/06/2015	Irish Vascular Plant Data - Robert Northridge	
Water Horsetail (<i>Equisetum fluvatile</i>)	1	31/12/1999	BSBI tetrad data for Ireland	
Brimstone (<i>Gonepteryx rhamni</i>)	1	27/05/1977	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
Silver-washed Fritillary (<i>Argynnis paphia</i>)	1	10/08/2019	Butterflies of Ireland pre-2022	
Small Copper (<i>Lycaena phlaeas</i>)	1	10/08/2019	Butterflies of Ireland pre-2022	
Small Tortoiseshell (<i>Aglaia urticae</i>)	1	18/08/2012	Butterflies of Ireland pre-2022	
<i>Glossosomatidae</i>	1	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Limnephilidae</i>	1	09/09/2014	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	

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<i>Rhyacophila</i>	1	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Common Darter (<i>Sympetrum striolatum</i>)	1	31/12/1926	Dragonfly Ireland	
Common Earwig (<i>Forficula auricularia</i>)	1	28/08/2005	Grasshoppers, Crickets and Allied Insects (Orthoptera) of Ireland	
Hedgehog Flea (<i>Archaeopsylla erinacei subsp. erinacei</i>)	1	31/01/1900	Fleas (Siphonaptera) of Ireland	
Human Flea (<i>Pulex (Pulex) irritans</i>)	2	31/12/1996	Fleas (Siphonaptera) of Ireland	
<i>Ancistrocerus gazella</i>	1	24/08/1937	Wasps of Ireland	
Common Carder Bee (<i>Bombus (Thoracombeus) pascuorum</i>)	1	10/08/1975	Bee Records for Ireland (BWARS)	
<i>Baetis</i>	5	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Firethorn Leaf Miner (<i>Phyllonorycter leucographella</i>)	1	07/09/2014	Moths Ireland	
Bracken Bug (<i>Monalocoris (Monalocoris) filicis</i>)	1	31/10/1893	True Bugs (Heteroptera) of Ireland	
<i>Chironomidae</i>	3	05/09/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Dicranota</i>	1	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
<i>Simuliidae</i>	3	09/09/2014	A national macroinvertebrate dataset collected for the biomonitoring of	

			Ireland's river network, 2007–2018 (EPA)	
Bearded Pawwort (<i>Barbilophozia barbata</i>)	1	31/12/1893	Bryophytes of Ireland	Threatened Species: Critically Endangered
Hill Notchwort (<i>Lophozia sudetica</i>)	1	31/12/1893	Bryophytes of Ireland	Threatened Species: Least concern
Sea Scalewort (<i>Frullania teneriffae</i>)	1	31/12/1893	Bryophytes of Ireland	Threatened Species: Least concern
Two-horned Pincerwort (<i>Cephalozia bicuspidata</i>)	1	31/10/1893	Bryophytes of Ireland	Threatened Species: Least concern
<i>Ancylus fluviatilis</i>	1	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Arion (<i>Carinarion</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Arion (<i>Kobeltia</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Brown Lipped Snail (<i>Cepaea</i> (<i>Cepaea</i>) <i>nemoralis</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
<i>Carychium</i>	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Cellar Snail (<i>Oxychilus</i> (<i>Oxychilus</i>) <i>cellarius</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Clear Glass Snail (<i>Aegopinella pura</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
<i>Cochlicopa</i>	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Common Bithynia (<i>Bithynia</i> (<i>Bithynia</i>) <i>tentaculata</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Common Bladder Snail (<i>Physa fontinalis</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	

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Common Chrysalis Snail (<i>Lauria (Lauria) cylindracea</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Common Garden Snail (<i>Cornu aspersum</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Dusky Slug (<i>Arion (Mesarion) subfuscus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Dwarf Pond Snail (<i>Galba (Galba) truncatula</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
<i>Euconulus</i>	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Field Slug (<i>Deroceras (Deroceras) agreste</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	Threatened Species: Data deficient
Flat Ramshorn (<i>Hippeutis complanatus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Flat Valve Snail (<i>Valvata (Valvata) cristata</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Great Pond Snail (<i>Lymnaea (Lymnaea) stagnalis</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Hairy Snail (<i>Trochulus (Trochulus) hispidus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Hedgehog Slug (<i>Arion (Kobeltia) intermedius</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Horny Orb Mussel (<i>Sphaerium corneum</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Jenkins' Spire Snail (<i>Potamopyrgus antipodarum</i>)	1	21/07/2017	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
Keeled Ramshorn (<i>Planorbis carinatus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Lake Limpet (<i>Acroloxus lacustris</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	

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Lymnaea (<i>Stagnicola</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Marsh Slug (<i>Deroceras</i> (<i>Deroceras</i>) <i>laeve</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Marsh Whorl Snail (<i>Vertigo</i> (<i>Vertigo</i>) <i>antivertigo</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
Moss Bladder Snail (<i>Aplexa</i> (<i>Aplexa</i>) <i>hypnorum</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
Nautilus Ramshorn (<i>Gyraulus</i> (<i>Armiger</i>) <i>crista</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Pellucid Glass Snail (<i>Vitrina</i> (<i>Vitrina</i>) <i>pellucida</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Pfeiffer's Amber Snail (<i>Oxyloma</i> (<i>Oxyloma</i>) <i>elegans</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
<i>Pisidium</i>	4	05/09/2013	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Rosy Pea Shell (<i>Pisidium</i> <i>milium</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Rounded Snail (<i>Discus</i> (<i>Gonyodiscus</i>) <i>rotundatus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Short-ended Pea Mussel (<i>Pisidium</i> <i>subtruncatum</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Smooth Glass Snail (<i>Aegopinella</i> (<i>Aegopinella</i>) <i>nitidula</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Smooth Jet Slug (<i>Milax</i> (<i>Milax</i>) <i>gagates</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
<i>Sphaerium</i>	1	15/08/2007	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	

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Strawberry Snail (<i>Trochulus (Trochulus) striolatus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Twisted Ramshorn (<i>Bathyomphalus contortus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Valve Snail (<i>Valvata (Cincinna) piscinalis</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
<i>Vitrea</i>	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Wandering Snail (<i>Radix balthica</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Whirlpool Ramshorn (<i>Anisus (Disculifer) vortex</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
White Ramshorn (<i>Gyraulus (Gyraulus) albus</i>)	1	31/12/1911	All Ireland Non-Marine Molluscan Database	
Common Bladder-moss (<i>Physcomitrium pyriforme</i>)	1	31/08/1941	Bryophytes of Ireland	Threatened Species: Least concern
Hair-pointed Grimmia (<i>Grimmia trichophylla</i>)	1	31/12/1908	Bryophytes of Ireland	Threatened Species: Data deficient Threatened Species: Least concern
Slender Haircap (<i>Polytrichum longisetum</i>)	1	31/12/1908	Bryophytes of Ireland	
Variable Crisp-moss (<i>Trichostomum brachydontium</i>)	1	31/12/1908	Bryophytes of Ireland	Threatened Species: Least concern
<i>Porifera</i>	1	09/09/2014	A national macroinvertebrate dataset collected for the biomonitoring of Ireland's river network, 2007–2018 (EPA)	
Common Pipistrelle (<i>Pipistrellus pipistrellus sensu stricto</i>)	1	19/06/2016	National Bat Database of Ireland	
Eurasian Badger (<i>Meles meles</i>)	1	31/12/2008	Badger Setts of Ireland Database	Protected Species: Wildlife Acts
Eurasian Red Squirrel (<i>Sciurus vulgaris</i>)	4	12/06/2014	Atlas of Mammals in Ireland 2010-2015	Protected Species: Wildlife Acts
Fallow Deer (<i>Dama dama</i>)	1	31/12/2008	Deer of Ireland Database	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact

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				Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) Protected Species: Wildlife Acts
Pine Marten (<i>Martes martes</i>)	4	27/06/2021	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	1	19/06/2016	National Bat Database of Ireland	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts

Appendix 2 Pictures of the site

Fig no.	Description	Image
1	Grassland, treelines and hedgerows on-site	

2	Existing buildings outside of the development footprint	
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3	Treeline to the south of the site		
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4	Treeline/ hedgerow to the south of the site		
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5	Grassland to the north-west of the site		
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6	Tree with high Bat potential at 641046.06,806455.34 ITM		
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7	Recolonising bare ground habitat		
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8	Drainage ditch to the north of the site with scrub in the background	
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