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Kildare County Council - Inspection Purposes Only

CHAPTER 5

BIODIVERSITY

5.0 BIODIVERSITY

5.1 INTRODUCTION

DNV was commissioned by Cozone Ventures Ltd (a D/RES company) to prepare this Biodiversity Chapter of an Environmental Impact Assessment Report (EIAR) as part of an application for Proposed Large-scale Residential Development (LRD) Railpark Lands, Maynooth, County Kildare, hereafter referred to as 'Proposed Development' or 'Site', when referring to the application Site area. This report is part submitted as part of the Stage LRD Opinion submission.

A separate stand-alone Appropriate Assessment (AA) Screening Report is also included in the planning application documentation. Under Article 6(3) of the Habitats Directive a screening for '*appropriate assessment*' of projects must be carried out to determine if significant effects are likely to arise to 'European sites' or 'Natura 2000 sites'.

This Biodiversity Chapter details the Ecological Impact Assessment (EclA) of the Proposed Development and assesses the potential effects of the Proposed Development on habitats and species; particularly those protected by national and international legislation or considered to be of particular nature conservation importance on or adjacent to the Site. This chapter will describe the ecology of the Site, with emphasis on habitats, flora and fauna, and will assesses the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The chapter follows Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2024) and supplemented by the National Roads Authority (2009) guidelines for Assessment of Ecological Impacts of National Road Schemes.

The purpose of this chapter is to:

- Set out the methodologies used to inform the assessment.
- Identify Key Ecological Receptors (KERs) within the Zone of Influence (ZOI).
- Assess the impacts from the Proposed Development on the KERs and the resulting significant effects.
- Set out measures to avoid or mitigate negative impacts.
- Assess the residual effects after the incorporation of agreed avoidance or mitigation measures to ensure legal compliance.
- Set out agreed measures to offset significant residual effects.
- Set out opportunities for ecological enhancement.

5.1.1 Quality Assurance and Competence

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. CS authored a first draft of this report. SC completed final versions. The report was reviewed by AC and approved by MP. The Preliminary Ecological Appraisal (PEA) walkover survey was conducted by SH and KC. The first winter bird survey was conducted by TR and CS and the second and third by CS. Trail cameras were deployed by LG and collected by KM.

SC has a B.Sc. (Hons) in Botany from the University of Galway and over 3 years' experience as an Ecological Consultant. SC has extensive experience surveying bats, birds, mammals, plants, habitats, reptiles, amphibians, and invasive species. SC is also experienced in obtaining bat derogation licences from the National Parks and Wildlife Service (NPWS) and holds a bat disturbance licence (DER/BAT 2024-107). SC's experience in ecological report writing includes but is not limited to Appropriate Assessment (AA) Screenings and Natura Impact Statements (NIS), Ecological Impact Assessments (EclA), Bat Reports, Constraints Reports, Invasive Species Management Plans (ISMP), and EIAR chapters.

CS is a Consultant Ecologist with DNV and has a B.Sc. (Hons) in Zoology from University of Aberdeen and a M.Sc. in Biodiversity and Conservation from Trinity College Dublin. CS and has experience in conducting assessments of environmental statements, ecological surveys and mitigation for major planning applications such as wind farms and large-scale residential developments, as well as practical field experience including habitat surveys and ornithological surveys. CS has broad understanding of ecological legislation, best practice methodologies for ecological surveys and mitigation measures, and legal compliance for planning conditions.

SH has a B.Sc. (Hons) in Zoology and a Ph.D. in Marine Ecology from University College Dublin, and a wealth of experience in desktop research, bioinformatics analyses, literature review and reporting, as well as practical field and laboratory experience including habitat mapping, invasive species surveys, terrestrial fauna surveys (incl. mammal presence and bat activity surveys), freshwater and marine fish surveys and environmental DNA analysis. SH has prepared several AA Screenings and NIS and EclAs. Additionally, SH has authored and supported the preparations of several Biodiversity Chapters for Environmental Impact Assessment Reports.

KC has BSc in Zoology and an MSc in Applied Environmental Science from University College Dublin. KC's experience includes desktop research, report writing, animal behaviour surveys, invasive species surveys, vegetation surveys, bat emergence surveys, genetic/haplotype mapping and habitat mapping. KC has experience in assessing terrestrial, freshwater, coastal and tropical environments. KC has contributed to the preparation of AA Screenings.

TR has a B.Sc. in Environmental and Natural Resource Management (Hons) and a Post-Graduate Diploma in Environmental Management with GIS. TR is an experienced Ecologist who has specialised in ornithology and terrestrial mammals with over 8 years' experience in ecological consultancy along with a lifetime of personal interest and experience in wildlife management. TR has extensive field experience with further experience and competencies in desktop research, preparing AA Screening Reports, EclAs, Bird Activity Reports and detailed Species-Specific Maps. His ability to deal with and understand a range of species, survey methods and habitats is excellent, having an in-depth knowledge and understanding of EU and Irish legislation.

SO'D holds an honours degree in Zoology from University College Dublin and a Masters in Advanced Wildlife Conservation in Practice from the University of the West of England, Bristol. SO'D has experience in habitat survey and assessment in a range of terrestrial, freshwater and coastal environments, surveys for protected species including bats, otter, newts, freshwater pearl mussel, crayfish and badger as well as surveys for invasive flora species. In his role as an ecologist, SO'D advises clients and contractors in relation to appropriate mitigation strategies for protected species, such as bats, badger and amphibians and, where required, applies on behalf of the client for necessary derogation licenses. SO'D is also experienced in providing ecological services at the construction phase of development to ensure

compliance with relevant planning conditions. Throughout his career as an ecologist, SO'D has been project manager and lead author on a range of projects including tourism, industrial, residential and renewable energy developments as well as multiple large scale, national infrastructure projects.

LG has a B.Sc. in Zoology (Hons) and a M.Sc. (Hons) in Wildlife Conservation and Management from University College Dublin. LG is a Senior Ecologist with 5 years of experience in Ecological Consultancy and is experienced in desktop research, literature scoping-review, and report writing, as well as practical field experience (e.g., Bat surveys, habitat surveys, invasive species surveys, wintering bird surveys, large mammals, fresh water macro-invertebrates etc.). LG is experienced in compiling Biodiversity Chapters of EIARs, Ecological Impact Assessments (EclA), Appropriate Assessment (AA) screening and NIS reports, and in the overall assessment of potential impacts to ecological receptors from a range of developments. LG is also a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

AC reviewed this Biodiversity Chapter and is an Ecologist with DNV. AC is a skilled general ecologist with six years' experience; she is an Associate member of CIEEM (ACIEEM) with an MSc in Ecological Management and Conservation Biology from Queen's University Belfast. AC has a wealth of experience authoring and reviewing countless Screenings for Appropriate Assessment (AA), Natura Impact Statements (NIS), Ecological Impact Assessments (EclA) and Biodiversity Chapters for Environmental Impact Assessment Reports (EIAR). Subsequently, she is very familiar with the process of ecological assessment and the relevant legislation. She is knowledgeable in a range of survey techniques, including bats, mammals (particularly badger and otter), birds, amphibians, invasive species and habitat surveys. MP approved this report as part of the quality assurance process. MP has 16 years' experience in ecological consultancy and is a full member of CIEEM. He holds a BSc (Hons) in Land Use and Environmental Management and PGDip in Ecological Management and Conservation Biology from Queen's University Belfast. MP has significant experience in all forms of ecological assessment, including EIA reports, AA/NIS, EclAs and all field surveys including PEA walkover surveys and species-specific surveys.

5.1.2 Legislative Context

An EclA is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2024). When an EclA is undertaken as part of an EIA process (in the form of an EIAR Biodiversity Chapter) it is subject to the EIA Regulations (under the Planning and Development Regulations 2001-2023). An EclA is not a statutory requirement, however it is a best practice evaluation process. The EclA detailed within this Biodiversity Chapter is provided to assist the Competent Authority with its decision making in respect of the Proposed Development.

There is a number of pieces of legislation, regulations and policies specific to ecology which underpin this assessment. These may be applicable at a European, National or Local level. Legislation at the International level relevant to the Proposed Development are listed below:

- *Council Directive 92/43/EEC* on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter the 'Habitats Directive'.
- *Directive 2009/147/EEC*, hereafter the 'Birds Directive'.
- *Directive 2011/92/EU*, hereafter the 'EIA Directive'.
- EU Regulation 1143/2014, on Invasive Alien Species.

- Convention on the Conservation of European Wildlife and Natural Habitats 1982, hereafter the 'Bern Convention'
- The Convention on the Conservation of Migratory Species of Wild Animals 1983, hereafter the 'Bonn Convention'.
- *Ramsar Convention on Wetlands* 1971, hereafter referred to as 'Ramsar'.
- Water Framework Directive 2000/60/EC, hereafter the 'WFD'.

National legislation and policy relevant to the Proposed Development are listed below:

- Wildlife Act 1976, as amended in 2000.
- Flora (Protection) Order 2022
- The Planning and Development Act 2000.
- National Biodiversity Plan 2023 - 2030.

Additionally, Natural Heritage Areas (NHAs) are designations under the Wildlife Acts to protect habitats, species, or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Special Areas of Conservation (SAC) and/or Special Protection Area (SPA) sites. Although many NHA designations are not yet fully in force under this legislation (referred to as 'proposed NHAs' or pNHAs), they are offered protection in the meantime under planning policy which normally requires that planning authorities give recognition to their ecological value.

Local plans and policies relevant to the Proposed Development are listed below:

- Kildare County Council Development Plan 2023 - 2029.
- Kildare Biodiversity Action Plan 2009 - 2025
- Maynooth and Environs Joint Local Area Plan 2025-2031

Further details on legislation and policy relevant to the Proposed Development are detailed in Appendix 5.1.

5.1.3 Consultation

Consultation was undertaken between the client and Kildare County Council through the various preapplication stages with regard to the Proposed Development.

5.2 STUDY METHODOLOGY

This study has been undertaken to support the Proposed Development planning application and assesses the potential impacts that the Proposed Development may have on the ecology of the Site and its environs. Where potential for a risk to the environment is identified, mitigation measures are proposed on the basis that by deploying these mitigation measures the risk is eliminated or reduced to an insignificant level.

This section details the steps and methodology employed to undertake an ecological impact assessment of the Proposed Development.

5.2.1 Scope Of the Development

The specific objectives of the study were to:

- Undertake a baseline ecological survey of the site and evaluate the nature conservation importance of the Site.
- Identify and assess the direct, indirect, and cumulative ecological implications or impacts of the project during its lifetime.
- Where possible, proposed mitigation measures to remove or reduce those impacts at the Design, Construction and Operational Phases.

5.2.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the Site's natural environment. The desk study, completed in July and December 2024, and updated in July 2025 relied on the following sources:

- Information on species records¹ and distributions, obtained from the National Biodiversity Data Centre (NBDC) at maps.biodiversityireland.ie.
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at gis.epa.ie.
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at www.gsi.ie.
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the NPWS at www.npws.ie.
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland.
- Information on the existence of permitted development, or developments awaiting decision, in the vicinity of the Proposed Development from the National Planning Application Database available at: housinggov.ie/maps.arcgis.com.
- Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team.

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in References.

5.2.3 Zone Of Influence (Zoi)

The ZOI for a project is the area over which ecological features may be affected by changes as a result of the Proposed Development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2024). The ZOI will vary with different ecological features, depending on their sensitivities to an environmental change.

Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

¹ The Site of the Proposed Development lies within the 10km grid square N93, the 2km grid square N93N and the 1km grid squares N9436 and N9437. Records from the last 20 years from available datasets are given in the relevant sections of this report.

“The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km).”

5.2.4 Identification Of Relevant Designated Sites

To determine the ZOI of the Proposed Development for designated sites, reference was made to the OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management (OPR, 2021), a practice note produced by the Office of the Planning Regulator, Dublin. This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a planning authority should take in screening for AA, the methodology is also readily applied in the preparation of a Biodiversity chapter such as this to identify all relevant designated sites potentially linked to the Proposed Development.

As noted above, the most recent guidance advises against the use of arbitrary distances that serve as precautionary ZOI (e.g., 15km), and instead recommends the application of the Source-Pathway-Receptor (S-P-R) model in the identification of designated sites, stating that *“This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance”*. Although this statement refers to European sites, it is also applicable to other designated sites.

Thus, the methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details.
- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects.
 - Water catchment data from the EPA (www.epa.ie) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
 - Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.
 - Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
 - Consideration of potential indirect pathways, e.g., impacts to flight paths, *ex-situ* habitats, etc.
- Review of Ireland’s designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources.
 - European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (www.npws.ie).
 - Ramsar sites from the Irish Ramsar Wetland Committee (<https://irishwetlands.ie/irish-sites/>).
 - Other internationally designated sites e.g., UNESCO Biospheres.
- Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

5.2.5 Field Survey Work

A PEA of the Site was carried out by an DNV Ecologist on the 17th of July 2024. The purpose of this survey was to provide a preliminary baseline report and an accurate scope of further ecological investigations that required to manage and mitigate ecological constraints associated with the Proposed Development. Following the PEA walkover survey results, a suite of targeted species surveys was deemed necessary for the Site to make a complete assessment of baseline biodiversity at the Site.

5.2.5.1 Habitat Surveying, Mapping and Evaluation

Habitats were surveyed as part of the PEA walkover survey. Habitats were categorised according to the Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000) to Level 1. The habitat mapping exercise had regard to the 'Best Practice Guidance for Habitat Survey and Mapping' (Smith *et al.*, 2010) published by the Heritage Council. Habitat categories, characteristic plant species and other ecological features and resources were recorded on field sheets. Habitats within the surrounding area of the Proposed Development were classified based on views from the site and satellite imagery where necessary (Google Earth, Digital Globe and OSI).

5.2.5.2 Invasive Species Surveys

The Site was assessed for the presence of invasive plant species during the PEA survey undertaken on the 17th of July 2024, with a particular focus on those listed on the First Schedule of S.I. No. 374/2024, and their location and extent recorded.

5.2.5.3 Bat Surveys

In view of their sensitive status across Europe, all species of bat have been listed on Annex IV of the EC Habitats Directive and some, such as the lesser horseshoe bat (*Rhinolophus hipposideros*), are given further protection and listed on Annex II of this Directive. The obligations of the Habitats Directive have been transposed into Irish law and combined with the Wildlife Acts 1976 to 2018, ensure that individual bats and their breeding sites and resting places are fully protected. This has important implications for those who own or manage sites where bats occur.

All bat species are protected under the Wildlife Acts which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of development.

5.2.5.3.1 Preliminary Bat Roost Assessment (PBRA)

A daytime inspection of the Site was undertaken on the as part of the PEA walkover survey in July 2024. The aim of the inspection was to search for indication of the presence of roosting bats, and to assess the habitat for its ability to support commuting and foraging bats. Buildings and trees (where present) on Site were visually assessed from the ground with the aid of a torch and binoculars. The roost inspection comprised a detailed inspection of structures and trees on Site. These were subject to exterior and interior inspections (where possible) to search for evidence of bat use. This includes live and dead specimens, droppings, feeding remains, oil staining and noise (Collins, 2023). Buildings were assessed for cracks and crevices, or entry points to the roof that might support roosting bats, while trees were searched for Potential Roosting Features (PRFs) such as hollow trunks, knot holes, peeling bark, splits, cracks, and

crevices (Collins, 2023, Andrews, 2018). Collins (2023) recommends that structures and trees are assessed for their ability to support roosting bats under separate categorisations using professional judgement and sub-categories as presented in Table 1 (Collins, 2023):

- Negligible - No suitable features observed, however, a small element of uncertainty remains.
- Low - A structure with one or more roost features as used by individual bats opportunistically at any time of year.
- Moderate - A structure with one or more roost features that could be used by bats on a regular basis or by a larger number of bats.
- High - A structure with one or more roost features that are obviously suitable for use by a larger number of bats on a regular basis, and potentially for longer periods of time. These features have the potential to support high conservation status roosts.

Trees are categorized separately accordingly to Table of Collins (2023). These classifications are:

- NONE - Either no PRFs in the tree or highly unlikely to be any.
- FAR - Further assessment required to establish if PRFs are present in the tree.
- PRF - A tree with at least one PRF present.

Where a tree contains at least one PRF, each PRF is further assessed according to Table 6. (Collins 2023). PRFs are scored as either:

- PRF-I - PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats.
- PRF-M - PRF is suitable for multiple bats and may therefore be used by a maternity colony.

For trees with PRF-I only, no further surveys may be required, but appropriate compensation for all PRF-I must be designed and incorporated in advance of impacts along with a Precautionary Working Method Statement (PWMS). As the Site increases in suitability for roosting bats e.g., PRF-Ms present, the survey effort increases accordingly. A PRF-M will require a detailed inspection, such as aerial inspection, conducted over three survey visits, a minimum of three weeks apart, which should be carried out between May and September with at least two in the period May to August. Where features are inaccessible by ladder, climbing, or Mobile Elevating Work Platform (MEWP), or too extensive for a PRF inspection, the aerial inspection should be replaced with emergence surveys carried out between May and September with Night Vision Aids (NVA) where possible or otherwise surveyed using Advanced Licence Bat Survey Techniques (ALBST), such as trapping, tagging, and radio-tracking to inform of the importance of a roost.

5.2.5.3.2 Preliminary Bat Habitat Suitability Assessment

A Bat Habitat Suitability Assessment was carried out in conjunction with the PBRA and walkover survey on the 17th of July 2024. This assessment evaluated the habitats present on Site and in the wider area for bat foraging and commuting suitability. Habitat suitability is assessed qualitatively from Negligible to High:

- Negligible - No suitable foraging or commuting habitats on Site
- Low - Suitable but isolated habitats that could be used by small numbers of commuting and/or foraging bats, such as poorly connected gappy hedgerows, lone trees, unvegetated streams, etc.

- Moderate - Suitable continuous habitat connected to the wider landscape that could be used by commuting and/or foraging bats, such as treelines, scrub, grassland, water, etc.
- High - Continuous high-quality habitat that is well-connected to the wider landscape, and is likely used regularly by commuting and/or foraging bats, such as river valleys, broadleaved woodland, woodland edge, grazed parkland, etc.

5.2.5.3.3 3 Bat Landscape Suitability

The Bat Conservation Ireland Landscape Suitability Model (Lundy *et al.*, 2011) provides a habitat suitability index for bat species across Ireland. The model divides the country into 1 km grid squares and ranks the habitat within the squares according to its suitability for various bat species. The scores are divided into five qualitative categories of suitability, namely:

- 0.0000000- 1000000: Low
- 1000001 - 233300: Low - Medium
- 233301 - 28.111099: Medium
- 28.111100 - 344401: Medium - High
- 34440- 58.555599: High

5.2.5.3.4 Bat Activity Transect Surveys

The Site was walked by two ecologists to record bat foraging habitat and commuting routes. The surveys started approximately 15 minutes before sunset and continued for a minimum of 1.5 hours after sunset, along a predesigned transect route with regular point counts, as presented in Figure 5.1 The surveyors were equipped with a Elekon Batlogger M detector, a powerful L.E.D. torch and head torches and were undertaken to best practice guidance (Collins, 2023 and Marnell *et al.*, 2022) during times of suitable weather conditions, as detailed in Table 5.1 below.

Table 5.1: Times and weather conditions for the Bat Transect survey carried out on Site.

Date	Sunset	Survey Type	Survey Start time	Temp (°C)	Cloud Cover (oktas)	Wind Speed (Beaufort)	Rainfall (mm)
09/10/2024	18:47	Bat activity transect	18:32	10	8	3	0
14/05/2025	21:16	Bat activity transect	21:01	10	7	2	0
17/06/2025	21:57	Bat activity transect	21:42	15	8	2	0

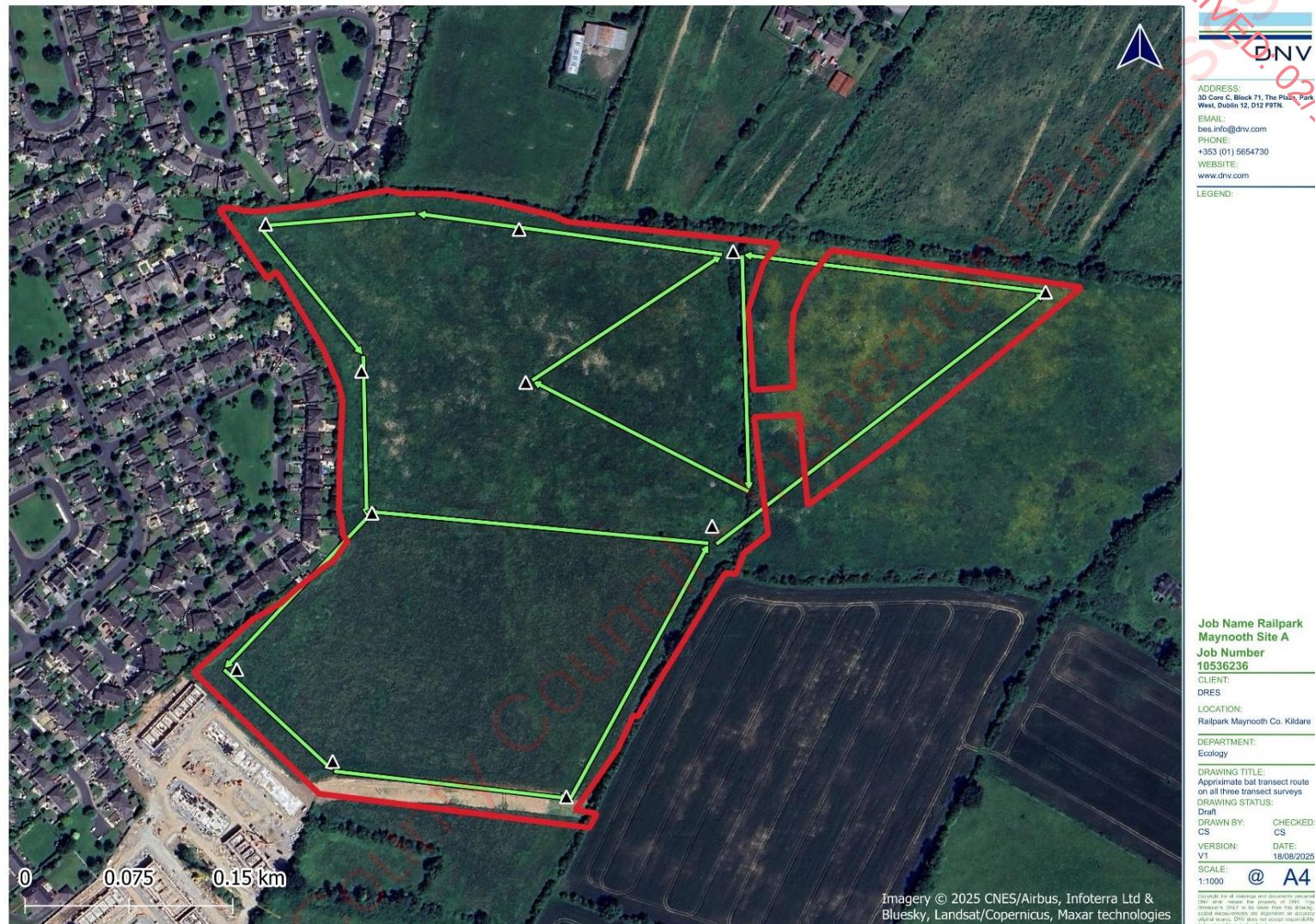
5.2.5.3.5 Data Analysis

Species were identified from recordings using Elekon's BatExplorer software (Version 2.2.6.0). Bat data

was analysed and species assigned to each record with reference to species identification guides such as Russ (2012).

Each record i.e., a sequence of bat calls/pulses, is noted as a bat pass to indicate the level of bat activity for each species recorded. Each bat pass does not correlate to an individual bat but is representative of bat activity levels. Some bats such as *Pipistrelle* species may continuously fly around a habitat or feature, therefore, it is possible that a series of bat passes within a similar time frame is representative of an individual bat. On the other hand, Leisler's bats (*Nyctalus leisleri*) tend to travel through an area quickly, and as such, an individual sequence or bat pass is more likely to be indicative of individual bats.

Figure 5.1: Approximate bat transect route and point count locations for all surveys.



5.2.5.4 Bird Surveys

The survey methodology employed was based on that recommended in standard literature used by for example the British Trust for Ornithology (BTO) (Gillings *et al.*, 2007, Bibby *et al.*, 1999 and Gilbert *et al.*, 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group (2025). During the surveys, the Site was walked slowly, approaching all habitat within and adjacent to the Proposed Development and scanning and listening for birds. The locations of birds seen and heard were mapped using standard BTO codes and activity symbols.

5.2.5.4.1 Bird Scoping Surveys

A scoping bird survey was carried out as part of the PEA walkover survey on the 17th of July 2024 to inform whether the Site is suitable for breeding and/or wintering bird species therefore requiring further bird surveys. Due to the results of the bird scoping survey, both breeding bird surveys and winter bird surveys are scheduled for this Site.

5.2.5.4.2 Breeding Bird Survey

To inform an evaluation of the on-site habitats for bird species, three breeding bird survey visits were carried out. All survey visits to the Site were completed in the early morning, commencing at or near dawn and lasted approximately 2-3 hours. Survey dates and weather conditions are presented below.

Table 5.2: Dates, Duration and Weather Conditions During the Breeding Bird Surveys at the Proposed Development Site.

Date	Approx. Duration (Hrs)	Weather Conditions	
		Start	End
11 th April 2025	3	Good visibility, 2 Oktas, Dry sunny day with low wind (1 Beaufort). Temperature 11 °C	Good visibility, 2 Oktas, Dry sunny day with low wind (1 Beaufort). Temperature 11 °C
28 th May 2025	3	Good visibility, 3 Oktas, Dry, low wind (1 Beaufort). Temperature 15 °C	Good visibility, 3 Oktas, Dry, low wind (1 Beaufort). Temperature 15 °C
16 th June 2025	3	Good visibility, 2 Oktas, Dry sunny day with low wind (2 Beaufort). Temperature 18 °C	Good visibility, 2 Oktas, Dry sunny day with low wind (2 Beaufort). Temperature 18 °C

5.2.5.4.3 Wintering Bird Survey

To inform an evaluation of the on-site habitats for wintering bird species, four survey visits were undertaken between November 2024 and February 2025. The surveys were carried out in suitable weather conditions and within daylight hours. The transect routes were reversed during each visit in order to reduce the potential for time bias. Details of dates, weather conditions and timings are presented in .

Table 5.3.

Table 5.3: Dates, Duration and Weather Conditions During the Wintering Bird Surveys at the Proposed Development Site.

Weather			
Date	Duration (Hrs)	Start	End
20/11/2024	2hrs 10mins	Good visibility, 4 Oktas, Dry sunny day with low wind (1 Beaufort). Temperature 5 °C	Good visibility, 4 Oktas, Dry sunny day with low wind 1 Beaufort). Temperature increased to 6°C by midday.
17/12/2024	2hrs 20mins	Good Visibility, Light occasional showers, wind speed 5 Beaufort and gusty, temperature 11°C	Good Visibility, Light occasional showers, wind speed died down however was still gusty, temperature 11°C
17/01/ 2025	2hrs 20mins	Good Visibility, Dry, Wind speed 5 Beaufort and gusty, temperature 8°C	Good Visibility, Dry, Wind speed 5 Beaufort and gusty, temperature 8°C
25/02/2025	1hrs 30mins	Good Visibility 2 Oktas, Dry, Wind speed 1 Beaufort, temperature 10°C	Good Visibility 2 Oktas, Dry, Wind speed 1 Beaufort, temperature 10°C

5.2.5.5 Mammal Surveys (excl. bats)

A general fauna survey of the Site was carried out as part of the PEA walkover survey on the 17th of July 2024. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. Furthermore, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and the National Road Authority (NRA, 2005). This survey considers protected or notable fauna that may occur within the Site or in the adjacent lands, but for which no historical records from the relevant grid square(s) exist or no targeted surveys were carried out.

5.2.5.5.1 Badger Surveys

Due to the results of the PEA walkover survey, an additional targeted survey of the Site was carried out on the 5th of December 2024 and a survey of the field parcel to the north of the Site was carried out on the 17th of January 2025 when the vegetation was sparse and therefore more accessible for survey. A trail camera was deployed from the 16th to the 24th July 2025 (8 days). A systematic search for signs of badgers (*Meles meles*) was conducted within the Site and a 50m buffer surrounding the Site where possible. Furthermore, any incidental observations of evidence for badgers were recorded whenever on Site. The surveys followed standard guidelines (Harris, Cresswell & Jeffries, 1989 and NRA, 2005) and included a thorough search for setts or for signs of badger activity, including tracks, latrines, hairs and snuffle holes.

The 50m survey buffer surrounding the Site had limited access due to residential areas to the west of the Site, and heavy machinery at work within the active crop fields to the east, however the field parcels to the north of the Site were closely inspected for evidence of badger presence.

5.2.5.6 Other Fauna

A general fauna survey of the Site was carried out in conjunction with the PEA walkover survey on the 17th July 2024. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area, such as amphibians, reptiles and invertebrates, etc.

5.2.6 Ecological Assessment

This EcIA has been undertaken following the methodology set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2024). with reference to the NRA ‘Guidelines for Assessment of Ecological Impacts of National Road Schemes’ (NRA, 2009) and the Environmental Protection Agency (EPA) ‘Guidelines on the information to be contained in Environmental Impact Assessment Reports’ (EPA, 2022) and BS 42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013).

The evaluation of significant effects should be based on available scientific evidence. Based on the precautionary principle, if the available information is not sufficient, then a significant effect may be assumed likely to occur.

5.2.6.1 Evaluation of Ecological Features

The value of the ecological features - the habitats and species present or potentially present was determined using the ecological evaluation guidance provided in the NRA’s Ecological Assessment Guidelines (NRA, 2009). This evaluation scheme, with values ranging from locally important to internationally important, seeks to provide value ratings for habitats and species present that are considered ecological receptors of impacts that may ensue from a proposal.

As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (KERs). The ecological features identified within the Site of the Proposed Development, and the wider area are evaluated based on their value. These values are detailed in Table 5.4 below. Based on best practice (CIEEM, 2024), any features considered to be less than of local value are not assessed within this EcIA.

Table 5.4: Description of values for ecological resources based on geographic hierarchy of importance (NRA, 2009b).

Importance	Criteria
International Importance	‘European Site’ including SACs, Site of Community Importance (SCI), SPAs or proposed SACs. Proposed Special Protection Area (pSPA). - Site that fulfils the criteria for designation as a ‘European Site’ (see Annex III of the Habitats Directive, as amended). Features essential to maintaining the coherence of the Natura 2000 Network

	Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive. /or Species of animal and plants listed in Annex II and/or IV of the Habitats Directive Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). Biosphere Reserve (UNESCO Man & The Biosphere Programme) Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). Biogenetic Reserve under the Council of Europe. European Diploma Site under the Council of Europe. Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance	Site designated or proposed as a Natural Heritage Area (NHA). Statutory Nature Reserve. Refuge for Fauna and Flora protected under the Wildlife Acts. National Park. Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA), Statutory Nature Reserve, Refuge for Fauna and Flora protected under the Wildlife Act/or a National Park. Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species protected under the Wildlife Acts./or Species listed on the relevant Red Data list. Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive
County Importance	Area of Special Amenity. Area subject to a Tree Preservation Order. Area of High Amenity, or equivalent, designated under the County Development Plan. Resident or regularly occurring populations (assessed to be important at the County level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive. Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. Species protected under the Wildlife Acts./or Species listed on the relevant Red Data list. Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance.

	County important populations of species. or viable areas of semi-natural habitats. or natural heritage features identified in the National or Local BAP. if this has been prepared. Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared. Resident or regularly occurring populations (assessed to be important at the Local level) of the following: Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive. Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. Species protected under the Wildlife Acts /or o Species listed on the relevant Red Data list. Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. Sites or features containing non-native species that is of some importance in maintaining habitat links.

5.2.6.2 Impact Assessment Criteria

As per the NRA guidelines, impact assessment is only undertaken of KERs. The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the EPA Guideline (EPA, 2022), presented below. These guidelines set out a number of parameters that should be considered when determining which elements of the Proposed Development could constitute impact or sources of impacts. These include

- Positive, neutral or negative effect.
- Significance.
- Extent.
- Probability.
- Duration.
- Timing.
- Frequency.
- Reversibility.

The impact assessment process considers both direct and indirect impacts: direct ecological impacts are changes that are directly attributable to a defined action, e.g. the physical loss of habitat. Indirect

ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or feature, e.g., the creation of roads which cause hydrological changes, which, in the absence of mitigation, could lead to an adverse effect of a sensitive habitat.

Identification of a risk does not constitute a prediction that it will occur, or that it will create or cause significant impact. However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the ecological receptor.

5.2.6.3 Criteria used to Define Quality of Effects

In line with the draft EPA Guidelines (EPA 2022), the following terms are defined when evaluating and quantifying the quality, significance, extent/context, probability and duration/frequency of effects.

Table 5.5: Definition Of Quality, Significance, Extent/Context, Probability And Duration/Frequency of Effects.

Term	Definition
Quality of Effects	
Positive	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative/Adverse	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance).
Significance of Effects	
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics. No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Extent and Context of Effects	
Extent	Describe the size of the area, the number of sites and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Probability of Effects	
Likely	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.

Unlikely	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Duration and Frequency of Effects	
Momentary	Effects lasting from seconds to minutes.
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year.
Short-term	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years.
Reversible	Effects that can be undone, for example through remediation or restoration.
Frequency	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly - or hourly, daily, weekly, monthly, annually).

5.2.6.4 Assessment of Cumulative Impacts and Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Cumulative effects can occur where a Proposed Development results in individually insignificant impacts that, when considered in combination with impacts of other proposed or permitted plans and projects, can result in significant effects.

Relevant plans and policies were reviewed to identify any potential for negative cumulative impacts with the Proposed Development. Additionally, existing planning permissions from the past five years (from 2018 onwards) within the ZOI of the Proposed Development were reviewed, with particular focus on potential cumulative impacts on the identified KERs. Long-term developments were also considered where applicable.

5.2.6.5 Avoidance, Mitigation, Compensation and Enhancement Measures

Where potentially significant effects have been identified, the mitigation hierarchy has been applied, as recommended in the CIEEM Guidelines. The mitigation hierarchy sets out a sequential approach beginning with the avoidance of impacts where possible, the application of mitigation measures to minimise unavoidable impacts and then compensation for any remaining impacts. Once avoidance and mitigation measures have been applied residual effects are then identified along with any necessary compensation measures, and incorporation of opportunities for enhancement. When seeking mitigation or compensation solutions, efforts should be consistent with the geographical scale at which an effect is significant. For example, mitigation and compensation for effects on a species population significant at a

county scale should ensure no net loss of the population at a county scale. The relative geographical scale at which the effect is significant will have a bearing on the required outcome which must be achieved.

It is important for the EclA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- Avoidance is used where an impact has been avoided, e.g., through changes in scheme design. In practice, avoidance measures are typically implemented during the design stage via discussions and re-design (e.g., avoiding a sensitive habitat by relocating a building). Avoidance measures are therefore rarely reported within an EclA, which focuses on assessing the final design.
- Mitigation is used to refer to measures to reduce or remedy a specific negative impact in situ.
- Compensation describes measures taken to offset residual effects, i.e. where mitigation in situ is not possible.
- Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

5.3 THE EXISTING RECEIVING ENVIRONMENT (BASELINE SITUATION)

5.3.1 Hydrology

The Site of the Proposed Development is within the Liffey and Dublin Bay catchment (Catchment I.D 09) and the Liffey_SC_080 sub catchment (Subcatchment I.D. 09_5) (EPA, 2025).

The closest waterbody is the Royal Canal (IE_09_AWB_RCMLE) which lies approximately 428m north of the Site. The WFD ecological potential status of the Grand Canal for the 2016-2021 period was classed as 'Good' (EPA, 2025). The Royal Canal flows west to east and eventually discharges into the Liffey Estuary Lower (IE_EA_090_0300), 22.59km east of the Site, which flows into Dublin Bay (IE_EA_090_0000) approx. 30km east of the Site. The Liffey Estuary Lower has a status of 'Moderate' and is projected to be 'At Risk' of not achieving its WFD objectives (EPA, 2025).

The Maynooth stream is 469m northwest of the Site within the town of Maynooth. The Maynooth stream flows northwards into the Lyreen 09 (IE_EA_09L020100), and then the Rye Water (IE_EA_09R010600), which flows west to east and lies 1.3km north of the Site. The Rye water flows into the River Liffey (IE_EA_09L011900) approx. 5.7km east of the Site, which also eventually flows into the Dublin Bay. The WFD ecological potential status of the Rye Water for the 2016-2021 period was classed as 'Moderate' but it is projected to be 'At Risk' of not achieving its WFD objectives (EPA, 2025). The Liffey has a 'Good' status and its risk of achieving its WFD objectives is under review (EPA, 2025).

The EPA water quality monitoring data for the stations on the Rye water and Liffey located closest to the Site is summarised in Table 5.6. The reported Q-value results indicate that water quality in the Lyreen and Rye Water in the vicinity of the Site is "Poor" and "Moderate". The EPA data indicates that macroinvertebrates were the main drivers of Q value for the water course for the period 2016-2022 (EPA, 2025).

Table 5.6: EPA monitoring stations and assigned Q values.

EPA Monitoring Station name	Station Code	Location from Site	Distance from Site	Assigned value	Q
~200m d/s Mill Street Bridge	RS09L020050	Northwest downstream	1.04km	3 "Poor"	
Just u/s Rye Water confl	RS09L020100	Northwest downstream	1.44km	3 "Poor"	
Kildare Br	RS09R010400	North downstream	1.37km	3-4 "Moderate"	
Sandfords Bridge	RS09R010500	Northeast downstream	2.74km	3-4 "Moderate"	
Br in Leixlip	RS09R010600	East downstream	5.54km	3-4 "Moderate"	

The Waterbody Status for river, groundwater, transitional and coastal water bodies relevant to the Site as recorded by the EPA (2023) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 5.7.

Table 5.7: Hydrology summary table.

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3 rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
The Royal Canal Main Line (Liffey and Dublin Bay)	IE_09_AWB_RCMLE	North	0.43	Good	Review	No hydrological connection to the Site
Maynooth stream (Lyreen 09)	IE_EA_09L020100	North-west	0.47	Poor	At Risk	Downstream of the surface water drainage network
Rye Water	IE_EA_09R010600	North	1.3	Moderate	At Risk	Downstream of the surface water drainage network
Liffey	IE_EA_09L011900	East	5.7	Moderate	At Risk	Downstream of the Site drainage network
Transitional Water bodies						

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3 rd cycle Risk Status	Hydraulic Connection to the Site
Liffey Estuary Lower	IE_EA_090_0300	East	22.59	Moderate	At Risk	Downstream of the Site drainage network
Coastal Waterbodies						
Dublin Bay	IE_EA_090_0000	East	30	Good	Not at Risk	Downstream of the Site drainage network
Groundwater Bodies						
Dublin	IE_EA_G_008	N/A	N/A	Good	Review	Underlying groundwater-body

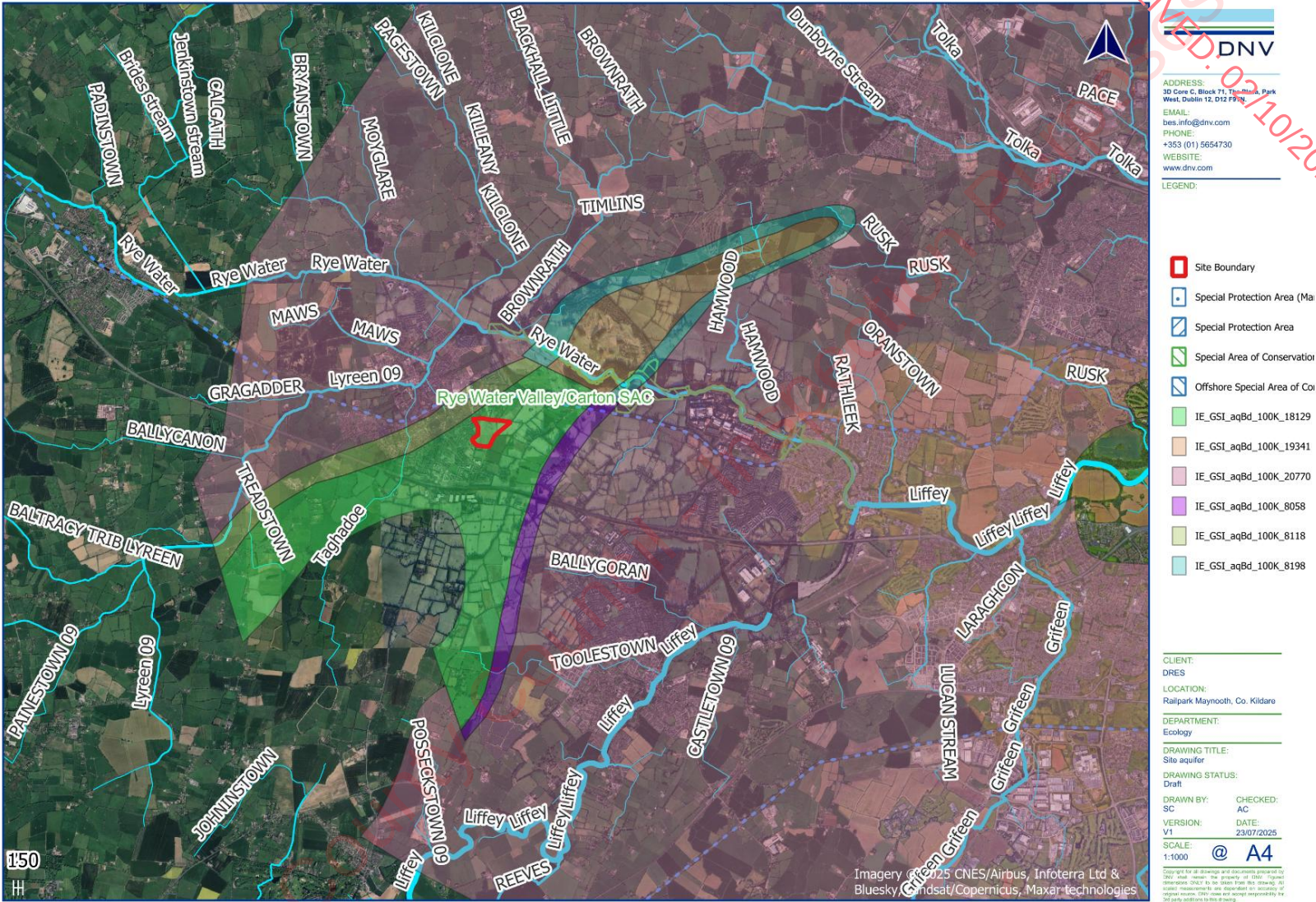
5.3.2 Geology and Hydrogeology

5.3.2.1 Aquifer

The underlying geology of the site comprises Waulsortian Limestone (GSI, 2025). This is described as “*Massive, unbedded limestone and mudstone*”. Unbedded limestone is a bedrock that is comprised of one large mass, as opposed to bedded limestone which contains many layers and hence has fissures and crevices through which water can pass more easily.

The unbedded limestone aquifer beneath the Site is classified as “*Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones*” (GSI, 2025) indicating low regional permeability with limited groundwater movement except where localised fracturing occurs. Neither the Rye Water Valley/Carton SAC nor any other European site overlies the same aquifer unit (**Figure 5.2**).

Figure 5.2: Site aquifer and European sites



5.3.2.2 Groundwater Body

The site lies within the Dublin groundwater body (IE_EA_G_008) a large hydrogeological unit delineated by the EPA for the purposes of monitoring, management and protection under the WFD (EPA, 2025). Groundwater bodies are broader management units that may encompass multiple aquifer types of varying productivity and permeability.

Unlike aquifers, which describe the physical and hydraulic characteristics of specific rock units deep below the surface, groundwater bodies are delineated on the basis of catchment-scale groundwater flow patterns, topography, pressure gradients, recharge areas, and discharge points. While the aquifer underlying the Site is not shared with any nearby European sites, the groundwater body extends over a broad region and includes the Rye Water Valley/Carton SAC, indicating that the site and SAC are part of the same regional groundwater system. Additionally, groundwater vulnerability at the Site is classed as “High” (GSI, 2025).

5.3.3 Designated Sites

All European sites potentially linked to the Proposed Development were identified and fully assessed in the AA Screening Report (Stage 1 AA) and NIS. These accompany this submission under separate cover. Sites not assessed via that report such as NHAs, pNHAs and other nationally or internationally designated sites are assessed further in this report.

The AA Screening identified one European site to be at risk of potential significant impacts as a result of the Proposed Development, namely the Rye Water Valley/Carton SAC (001398) located downstream of the surface water drainage proposed at the Site. The Rye Water Valley/Carton SAC (001398) was therefore screened in during the Stage 1 AA screening. Accordingly, an NIS was prepared. The NIS assessed the potential impacts of the Proposed Development on the Rye Water Valley/Carton SAC in full, and concluded the following:

A summary of the NIS conclusion is given below.

“This Natura Impact Statement details the findings of the Stage 2 Appropriate Assessment conducted to further examine the potential direct and indirect impacts of the Proposed Development planning application at Railpark Lands, Maynooth, Co. Kildare, on the following European Sites:

- *Rye Water Valley/Carton SAC (001398).*

The above sites were identified by a screening exercise that assessed likely significant effects of a range of impacts that have the potential to arise from the Proposed Development. The Appropriate Assessment investigated the potential direct and indirect effects of the proposed works, both during construction/infill and operation, on the integrity and qualifying interests of the above European Site, alone and in combination with other plans and projects, taking into account the site's structure, function and conservation objectives.

Where potentially significant effects were identified, a range of mitigation and avoidance measures have been suggested to avoid them. This NIS has concluded that, once the avoidance and mitigation measures are implemented as proposed, the Proposed Development will not have an adverse effect on the integrity of the above European site(s), individually or in combination with other plans and projects.

Where applicable, a suite of monitoring surveys have been proposed to confirm the efficacy of said measures in relation to ensuring no adverse impacts on the habitats of the relevant European sites have occurred.

As a result of the complete, precise and definitive findings in of this NIS, it has been concluded, beyond reasonable scientific doubt, that the Proposed Development will have no significant adverse effects on the QIs, SCIs and on the integrity and extent of Rye Water Valley/Cartron SAC (001398).

Accordingly, the Proposed Development will not adversely affect the integrity of any relevant European site.” (DNV, 2025).

5.3.4 Other Designated Sites

The Rye Water Valley/Cartron pNHA (00138) overlaps with Rye Water Valley/Cartron SAC. As detailed above, Rye Water Valley/Cartron SAC was screened in and an NIS has been prepared. The NIS mitigations will also suitably mitigate for this site due to their overlapping boundaries. The Rye Water Valley/Cartron pNHA (00138) will therefore not be considered further within this report.

Additionally, the following non-European designated sites overlap with the South Dublin Bay SAC and North Dublin Bay SAC in Dublin Bay, for which the pathway from the Proposed Development has been assessed and ruled out due to distance (over 20 km) as part of the AA Screening. As such, these designated sites in Dublin Bay can also be ruled out:

Dublin Bay UNESCO Biosphere.

Sandymount Strand/Tolka Estuary (832) and North Bull Island (406).

South Dublin Bay pNHA (000210).

North Dublin Bay pNHA (000206).

Dolphins Docks pNHA (000201).

The Royal Canal pNHA (002103) lies approximately 400m north of the Proposed Development and shares a ground waterbody and aquifer. The Royal Canal is a closed water system, and is primarily fed by Lough Owel and is concrete lined. As such, it won't be affected by groundwater. The only groundwater dependent part is a small section called 'the Deep Sinking' which is near Blanchardstown. Liffey Valley pNHA is downstream of the Rye Water Valley and as such is unlikely to be affected by any source pollutants due to significant distance and dilution buffers implemented by this stage. Similarly, Grand Canal pNHA is buffered from the Site by numerous watercourses such as the River Liffey which have been assessed separately, and so groundwater would be intercepted before reaching this NHA. As such, no pathway exists.

5.3.5 S-P-R links to Designated Sites

5.3.5.1 Direct Pathways

5.3.5.1.1 Hydrological Pathways

The Royal Canal pNHA (002103) is located approx. 419m north of the Site, however there is no hydrological connection from the Site to this NHA. The intervening distance of over 400m, consisting of greenfield sites and hedgerows, is sufficient to rule out any direct surface water run-off from the Site to

the designated site. There are no known drains from the Site to the Royal Canal pNHA (002103) designated site.

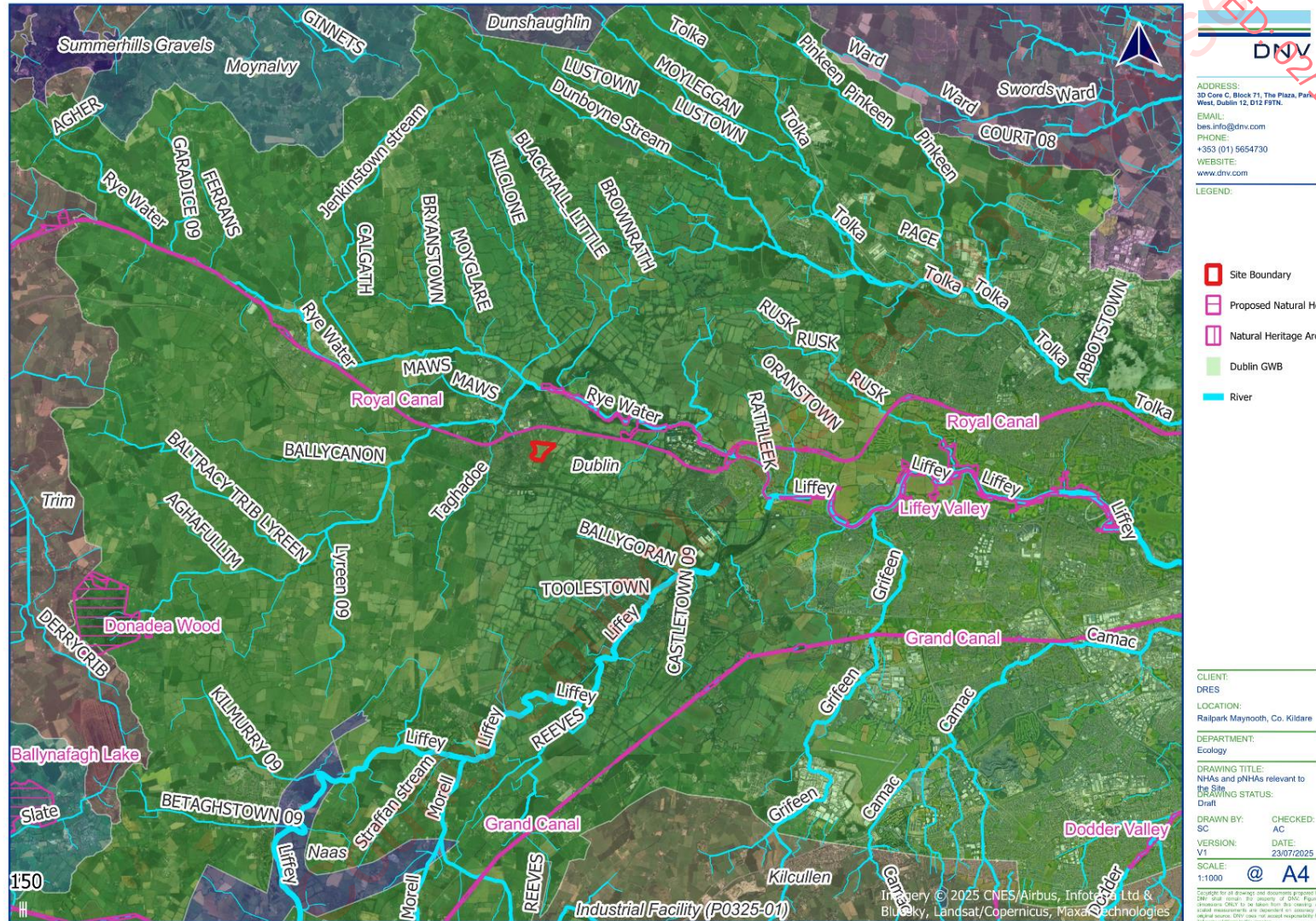
5.3.5.1.2 **Hydrogeological Pathways**

During groundworks and other construction activities, the ground will be exposed and any potential accidental discharges to ground could potentially migrate vertically downward to the underlying bedrock aquifer and laterally within the aquifer to any European designated sites in the same ground water body at the Site. As mentioned above, the groundwater underlying the Site is highly susceptible to contamination from human activities.

The 'Dublin GWB: Summary of Initial Characterisation' document (GSI, 2025) states *"The general groundwater flow direction in this aquifer is towards the coast and also towards the River Liffey and Dublin City. This aquifer is not expected to maintain regional groundwater flow paths. Groundwater circulation from recharge to discharge points will more commonly take place over a distance of less than a kilometre. The majority of groundwater flow will be a rapid flow in to upper weathered zone but flow in conduits is commonly recorded at depths of 30 to 50 m b.g.l.. The aquifer is not considered to have any primary porosity and flow will be through fractures, some of which will have been enlarged by karstification and dolomitisation. The fissured nature and the moderate permeability of the bedrock close to the surface imply that water will move at high velocities"*.

This indicates that the groundwater flow direction is southward and eastwards towards Dublin, the River Liffey and the coast. The Royal Canal pNHA (002103) is approx. 425m north of the Site, however as mentioned above, it is concrete lined and fed primarily from Lough Owel and as such, potential impacts can be ruled out as there is no viable pathway. Donadea wood NHA also shares the same groundwater body, however it is over 10km to the west, the opposite direction in which the groundwater generally flows. As such, impacts can be ruled out (**Figure 5.3**).

Figure 5.3: Non European sites with potential pathways to the Proposed Development.



5.3.5.1.3 Air and Land Pathways

The likely ZOI via air and land pathways is considered to be limited to surrounding areas within approx. 200-300m from the Site boundary for any noise and dust sources, depending on prevailing weather conditions. Additionally, light spill is considered to be limited to areas within the Site and habitats immediately adjacent to the boundaries.

As the closest designated site is over 400m from the Site of the Proposed Development, air and land pathways can be ruled out at this stage of the development.

5.3.6 Indirect Pathways

No indirect pathways to any nationally or internationally designated sites (excl. SACs/SPAs) were identified.

5.3.7 Relevant Designated Sites

A designated site will only be at risk from likely significant effects where an S-P-R link of note exists between the Proposed Development and the designated site. All designated sites considered as part of the S-P-R method (excl. European sites) are listed in Table 5.8 and **Figure 5.3**. Those sites with notable S-P-R links to the Proposed Development are assessed further in this report as KERs of 'National Importance' (pNHAs and NHAs) or 'International Importance' (SACs/SPAs, UNESCO sites, Ramsar sites, etc.).

Table 5.8: Designated sites of Conservation Importance within the Precautionary Zone of Influence of the Proposed Development.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
Internationally Designated Sites			
Dublin Bay UNESCO Biosphere	> 20 river km	In 1981, UNESCO recognised the importance of Dublin Bay by designating North Bull Island as a Biosphere because of its rare and internationally important habitats and species of wildlife. To support sustainable development, UNESCO's concept of a Biosphere has evolved to include not just areas of ecological value but also the areas around them and the communities that live and work within these areas. There have since been additional	None - Hydrological pathway assessed by proxy in AA Screening and deemed insignificant due to distance (see AA Screening for details)

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
		international and national designations, covering much of Dublin Bay, to ensure the protection of its water quality and biodiversity. To fulfil these broader management aims for the ecosystem, the Biosphere was expanded in 201 The Biosphere now covers Dublin Bay, reflecting its significant environmental, economic, cultural and tourism importance, and extends to over 300km². Over 300,000 people live within the newly enlarged Biosphere.	
Sandymount Strand / Tolka Estuary Ramsar Site (832)		An intertidal system supporting a large bed of eelgrass (<i>Zostera noltii</i>) with extensive areas of sandflats. The site is important for various species of waterbirds, supporting internationally important numbers of Brent Geese and large numbers of roosting gulls and terns. Various species of annalids, bivalves and small gastropods occur. Bait-digging is a regular activity on the sandy flats.	
North Bull Island Ramsar Site (406)		A small island built up over 200 years against a harbour wall and the adjoining foreshore of sandy beaches, saltmarshes and mudflats. The site is unique in Ireland because it supports well-developed saltmarsh and dune systems displaying all stages of development from the earliest phase of colonization to full maturity. The site supports five protected or threatened plant	

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
		species and nationally important populations of three insect species. The area is important for nesting <i>Sterna albifrons</i> (80 pairs, or about 30% of the Irish population) and for numerous species of wintering waterbirds. Human activities include bait digging.	
Proposed Natural Heritage Areas			
South Dublin Bay pNHA (000210)	> 20 river km	None available, assumed to overlap with South Dublin Bay SAC (NPWS 2013c): Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 <i>Salicornia</i> and other annuals colonising mud and sand 2110 Embryonic shifting dunes	
North Dublin Bay pNHA (000206)	> 20 river km	None available, assumed to overlap with North Dublin Bay SAC (NPWS 2013d): Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 <i>Salicornia</i> and other annuals colonising mud and sand 1330 Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) 1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 2110 Embryonic shifting dunes	None - Hydrological pathway assessed by proxy in AA Screening and deemed insignificant due to distance (see AA Screening for details)

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
		2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes) 2190 Humid dune slacks 1395 <i>Petalophyllum ralfsii</i> (Petalwort)	
Dolphins Docks pNHA (000201)	> 20 river km	None available, assumed to overlap with South Dublin Bay and River Tolka Estuary SPA. [A046] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [wintering] [A130] Oystercatcher (<i>Haematopus ostralegus</i>) [wintering] [A137] Ringed Plover (<i>Charadrius hiaticula</i>) [wintering] [A140] Grey Plover (<i>Pluvialis squatarola</i>) [wintering] [A143] Knot (<i>Calidris canutus</i>) [wintering] [A144] Sanderling (<i>Calidris alba</i>) [wintering] [A149] Dunlin (<i>Calidris alpina</i>) [wintering] [A157] Bar-tailed Godwit (<i>Limosa lapponica</i>) [wintering] [A162] Redshank (<i>Tringa totanus</i>) [wintering] [A179] Black-headed Gull (<i>Croicocephalus ridibundus</i>) [wintering] [A192] Roseate Tern (<i>Sterna dougallii</i>) [passage] [A193] Common Tern (<i>Sterna hirundo</i>) [breeding] [A194] Arctic Tern (<i>Sterna paradisaea</i>) [passage] Wetlands & Waterbirds [A999]	

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
Rye Water Valley/Carton pNHA (00138)	1.2 km N	None available, assumed to overlap with Rye Water Valley/Carton SAC (2021, SDF 2019): [7220] <i>Petrifying</i> springs with tufa formation (Cratoneurion) [1014] <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1016] <i>Vertigo moulinsiana</i> (Desmoulin's Whorl Snail)	Hydrological pathway via surface water drainage network during the construction phase. Hydrogeological pathway during construction phase. Outside the ZOI for air and land pathways (see AA Screening and NIS for details (DNV, 2025))
Royal Canal pNHA (002103)	419m N	Site Synopsis (NPWS 2009): The Royal Canal is a man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. There is a branch line from Kilashee to Longford Town. The canal pNHA comprises the central channel and the banks on either side of it. The main water supply is from Lough Owel (also an NHA) via a feeder channel into the canal at Mullingar. A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland. The hedgerow, although diverse, is dominated by Hawthorn (<i>Crataegus monogyna</i>). On the limestone soils of the midlands Spindle (<i>Euonymus europaeus</i>) and Guelder-rose (<i>Viburnum opulus</i>) are present. The vegetation of the towpath is usually dominated by grass species. Crested Dog's-tail (<i>Cynosurus cristatus</i>), Quaking Grass (<i>Briza media</i>) and Sweet	Hydrogeological pathway during construction phase.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
		Vernal-grass (<i>Anthoxanthum odoratum</i>) are typical species of the calcareous grasslands of the midlands. Where the canal was built through a bog, soil (usually calcareous) was brought in to make the banks. The contrast between the calcicolous species of the towpath and the calcifuge species of the bog is very striking. Otter spraints are found along the towpath, particularly where the canal passes over a river or stream. The Rare and legally protected Opposite-leaved Pondweed (<i>Groenlandia densa</i>) (Flora Protection Order 1987) is present at one site in Dublin, between Locks 4 and <i>Tolypella intricata</i> (a stonewort listed in the Red Data Book as being Vulnerable) is also in the Royal Canal in Dublin, the only site in Ireland where it is now found. The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods. remnants may remain or regeneration may have occurred.	

5.3.8 Habitats

The habitats present within the Site, as recorded in the survey area during the field survey, are described in this section and summarised below. Site photographs of these habitats are included in Appendix 5.2 and a map of the habitats is presented in **Figure 5.4**.

The Site consists of the following habitats:

- Improved grassland (GA1)
- Dry Calcareous and neutral grassland (GS1)
- Hedgerow (WL1)
- Tree Line (WL2)

5.3.8.1 Improved Agricultural Grassland (GA1)

The majority of the site is dominated by tall, ranked species-poor grassland that has grown to seed head with little or no evidence of recent grazing.

Species include common couch (*Elymus repens*), cocks-foot (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), and bent grasses (*Agrostis spp.*). There were relatively low forbs in within this habitat. Creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), patches of dock (*Rumex spp.*), thistles (*Cirsium arvense*, *C. vulgare*) and nettle (*Urtica dioica*) were scattered throughout, increasing in diversity as this habitat transitions to a more semi-natural habitat along the field margins, as described below. The field parcel in the northeastern part of the Site contained horses.

5.3.8.2 Dry Calcareous and neutral grassland (GS1)

Along the field margins there was a more diverse composition of grasses and forbs however overall relatively species poor for this habitat.. Species included white clover (*Trifolium repens*), red clover (*Trifolium pratense*), ribwort plantain (*Plantago lanceolata*), common mouse-ear (*Cerastium fontanum*), lesser stitchwort (*Stellaria graminea*), dandelion (*Taraxacum spp.*), creeping buttercup, Yorkshire fog, bush vetch (*Vicia sepium*), common hogweed (*Heracleum sphondylium*) and common ragwort (*Senecio jacobaea*).

5.3.8.3 Hedgerows and Tree lines (WL1, WL2)

There are hedgerows and tree lines along all the boundaries at the Site, and one internal hedgerow that divides the northern aspect of the Site into two land parcels. At the base of the hedgerows, the grassland habitat transitions to bramble (*Rubus fruticosus*) with patches of nettle among other common tall ruderal and scrub species typically found at field margins and hedgerow bases.

The following information has been provided from the PEA Site survey results and the Arboriculturist Tree Schedule by Charles McCorkell Arboricultural Consultancy (2024):

5.3.8.3.1 Western boundary

This hedgerow is dominated by hawthorn (*Crataegus monogyna*) and bramble, with frequent elder (*Sambucus nigra*), hazel (*Corylus avellana*), and one silver birch (*Betula pendula*) at the north of the hedgerow. There are some non-native species growing along this boundary including three groups of

Leyland cypress (*Cupressocyparis leylandii*), and an area at the northwest corner of the site where a cherry laurel (*Prunus laurocerasus*), and deodar (*Cedrus deodara*) are present.

Cherry laurel is not listed on the First Schedule of S.I. No. 374/2024, however, is a non-native species that exhibits invasive characteristics. This species is listed as a 'High' impact invasive species in the assessment of non-native species in Ireland by Kelly, O' Flynn and Maguire (2013), therefore its removal is recommended.

5.3.8.3.2 Eastern Boundary

This boundary consists of hawthorn, bramble, ash (*Fraxinus excelsior*), dog-rose (*Rosa canina*), elder, blackthorn (*Prunus spinosa*), and common Ivy (*Hedera helix*) growing on some of the trees. There are four mature ash trees present along this boundary. Evidence of ash dieback is also noted on all four of the trees recorded.

5.3.8.3.3 Southern Boundary

Most of the southern boundary is a barbed wire fence. There is a small hedgerow just south of the Site boundary, approximately 100m length dominated by hawthorn. Other species include elder, bramble, dog-rose and a singular mature ash tree with ivy. The ground flora beneath this hedgerow consists of herb-robert (*Geranium robertianum*), nettle, dock and cleavers (*Galium aparine*). There is a ditch along the bottom of this hedgerow which was dry at the time of the survey.

5.3.8.3.4 Northern Boundary

This hedgerow is also dominated by hawthorn. Other species include elder, bramble, dog-rose and 17 ash trees growing along this hedgerow boundary. The majority of the ash trees along the northern boundary had ash dieback infection and ivy growth.

5.3.8.3.5 Internal Hedgerow

This hedgerow is dominated by hawthorn. Other species include elder, blackthorn bramble and dog-rose. There are three mature ash trees along this boundary with ivy and ash dieback.

Figure 5.4: Habitat map



5.3.9 Species And Species Groups

5.3.9.1 Flora

5.3.9.1.1 Rare and Protected Flora

Species records available from the National Biodiversity Data Centre (NBDC) online database for the 10 km grid square (N93), 2km grid squares and the 1km grid squares were studied for the presence of rare or protected flora species. The NBDC datasets for the 2km grid squares and the 1km grid squares yielded no records. This database contained no records of protected flora within the last 20 years, however, several regionally extinct or vulnerable plant species occurred within the 10km Grid Square (N93) shown in Table 5.9 below.

Table 5.9: Records of Rare or Protected Flora for the Surrounding 10km (N93) Grid Squares Associated with the Site from the NBDC.

Name	Date of last record	Database	Conservation status
Common Gromwell (Lithospermum officinale)	02/05/2019	Vascular plants: Online Atlas of Vascular Plants 201Onwards	Near threatened
Corncockle (Agrostemma githago)	12/07/2021	Vascular plants: Online Atlas of Vascular Plants 201Onwards	Waiting list
Greater Knapweed (Centaurea scabiosa)	31/07/2024	Vascular plants: Online Atlas of Vascular Plants 201Onwards	Near threatened
Green Figwort (Scrophularia umbrosa)	22/04/2024	Vascular plants: Online Atlas of Vascular Plants 201Onwards	Endangered
Meadow Crane's-bill (Geranium pratense)	26/06/2024	Vascular plants: Online Atlas of Vascular Plants 201Onwards	Vulnerable
Upright Brome (Bromopsis erecta)	25/08/2012	Vascular plants: Online Atlas of Vascular Plants 201Onwards	Near threatened
Fountain Feather-moss (Amblystegium tenax)	09/03/2011	Bryophytes of Ireland	Near threatened

5.3.9.1.2 Invasive species

There is one species of flora considered to be invasive within the 2km and 1km grid squares which encompass the Site of the Proposed Development. Japanese knotweed (*Reynoutria japonica*) is listed under the first schedule of S.I. 374/2024 and considered high impact.

Table 5.10: Records of Invasive Flora for the Surrounding 10km (N93) Grid Squares Associated with the site from the NBDC.

Name	Grid square	Date of last record	Database	Legal Status
Japanese Knotweed (<i>Reynoutria japonica</i>)	N9437 N93N	16/08/2023	Vascular plants: Online Atlas of Vascular Plants 2010 onwards	High Impact Invasive Species Regulation S.I. 477 (Ireland)

One high impact invasive species was found within the Site boundary during the PEA walk over surveys carried out on the 17th of July 2024, namely cherry laurel (*Prunus laurocerasus*). This was found along the western boundary hedgerow and tree line. There were records of cherry laurel within the NBDC database for the 10km grid square, however no records of this exist for the 2km or 1km grid squares which encompass the Site of the Proposed Development. This is not a first schedule species.

5.3.9.2 Bats

5.3.9.2.1 Desk Study Results

Two bats were recorded in the 2km and 1km grid squares, namely common pipistrelle (*Pipistrellus pipistrellus*) and Daubenton's bat (*Myotis daubentonii*) as seen in Table 5.11 below.

Table 5.11: Records of bats for the surrounding grid squares associated with the Site from the NBDC.

Species	Grid Square	Date of Last Record	Database	Designation
Brown Long-eared Bat (<i>Plecotus auritus</i>)	N9436 N93N N9437	26/05/2021	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Daubenton's Bat (<i>Myotis daubentonii</i>)	N93	04/09/2021	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Leisler's Bat (<i>Nyctalus leisleri</i>)	N93	11/08/2022	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Natterer's Bat (<i>Myotis nattereri</i>)	N93	14/09/2018	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	N93	26/05/2019	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	N9437 N93N	11/08/2022	National Bat Database of Ireland	EU Habitats Directive - Annex IV

	N93			Wildlife Act 1976 (as amended)
Whiskered Bat (Myotis mystacinus)	N93	22/07/2008	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Act 1976 (as amended)

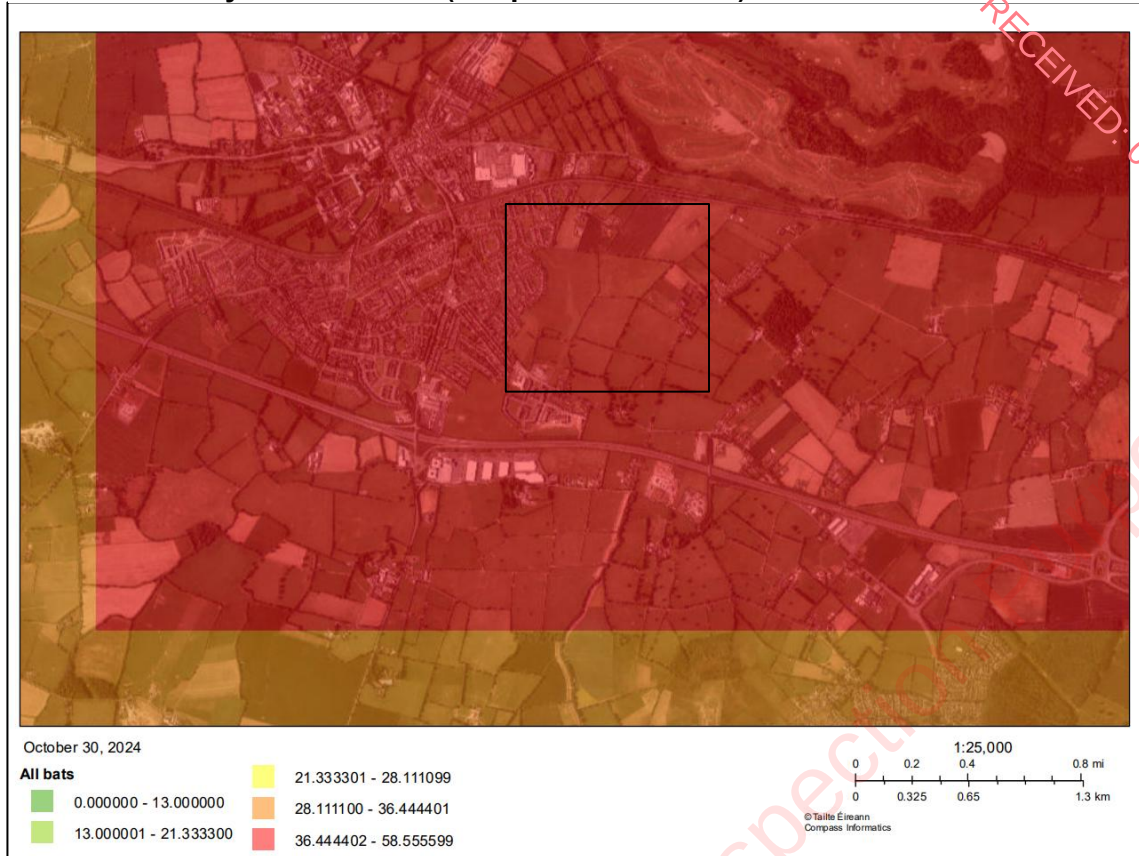
A total of seven bat species have been recorded within the 10km (N93) grid square which encompasses the Site (Table 5.12).

The Proposed Development Site (Figure 5.5) is located in an area with an overall High (39) suitability for bats in general. The suitability index for specific bat species is presented in Table 5.12. The landscape suitability index is high for six species of bats; soprano Pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*) and the Leisler's bat (*Nyctalus leisleri*), Daubenton's bat (*Myotis daubentonii*) and natterer's bat (*Myotis nattereri*).

Table 5.12: Landscape Suitability Index for Individual Bat Species Within The 2km Grid Square (Source: NBDC). Those Species That Have Been Recorded in the NBDC Database Within the N93 10km Grid Square Are Highlighted In Green.

Bat Species	Suitability Index (2km Grid Square)
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	49 (High)
Brown Longed-eared bat (<i>Plecotus auritus</i>)	51 (High)
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	56 (High)
Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>)	0 (Low)
Leisler's bat (<i>Nyctalus leisleri</i>)	54 (High)
Whiskered bat (<i>Myotis mystacinus</i>)	28 (Medium)
Daubenton's bat (<i>Myotis daubentonii</i>)	47 (High)
Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	21 (Medium)
Natterer's bat (<i>Myotis nattereri</i>)	45 (High)

Figure 5.5: Bat Landscape Suitability Model (All bats) surrounding the Proposed Development Site indicated by the black box (Adapted from NBDC).



5.3.9.2.2 Field Survey Results

5.3.9.2.2.1 Bat Roost Assessment and Habitat Suitability

During the Site visit on the 17th of July 2024, a PBRA was conducted on all trees within the Site. No buildings occur within the Site of the Proposed Development. The ground-based PBRA found that the trees present at the Site fall under the BCT categories of NONE or PRF-I, therefore the Site holds limited potential to support singular opportunistic bat roosts.

There was one ash tree to the east of the Site which was classified as PRF-M. This tree was outside of the Site boundary, however, is still a consideration for the Proposed Development due to potential impacts to roosting bats by artificial light spill and disturbance during both Construction and Operational Phases.

The linear hedgerow and tree line features along the boundaries of the Site were assessed as providing 'Moderate' habitat suitability for foraging and commuting bats.

The Site is likely to be currently exposed to very low ambient light levels near the residential housing at the western boundary, however, the majority of the Site is likely to be undisturbed by artificial lighting and is well connected to the surrounding landscapes, which consist of agricultural fields to the east and Maynooth town to the west. There are small parcels of woodland in the wider landscape.

5.3.9.2.2.2 Bat Activity Transect Surveys

To inform the assessment of potential impacts on bat species, a total of three bat activity surveys were conducted across the Proposed Development site during the 2024 and 2025 bat activity season.

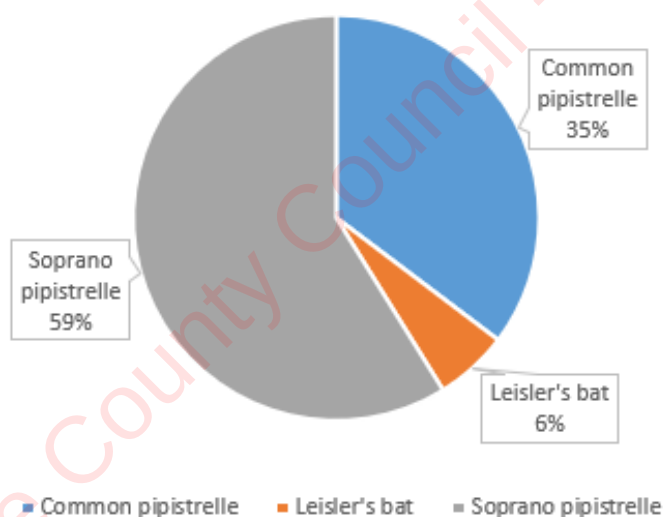
These comprised a dusk activity survey on 9 October 2024, followed by two transect surveys on 14 May 2025 and 17 June 2025, respectively. Surveys were undertaken in accordance with best practice guidance (Collins, 2023). Transects were designed to ensure representative spatial coverage of suitable bat habitat features across the Site, and each survey commenced 15 minutes prior to local sunset to capture the peak emergence and activity period.

A total of 160 bat passes were recorded across the three transects surveyed. Activity levels varied notably between transects, with Transect 3 (17 June 2025) recording the highest number of detections (159), suggesting a significant concentration of bat activity during this period. In contrast, Transect 2 (14 May 2025) yielded just 4 bat passes, while Transect 1 (9 October 2024) recorded 17 bat passes, indicating comparatively lower levels of bat activity in the earlier and later parts of the season.

5.3.9.2.2.2.1 Transect 1 - 9th October 2024

During the first transect survey, a total of 17 bat passes were recorded. The most frequently detected species was soprano pipistrelle (*Pipistrellus pygmaeus*), accounting for 59% of the total activity (n = 10). Common pipistrelle (*Pipistrellus pipistrellus*) was also recorded, comprising 35% of passes (n = 6). A single pass of Leisler's bat (*Nyctalus leisleri*) was detected, representing 6% of total activity. This level of activity is relatively low. A map displaying the location of detections is shown in Figure 5.9.

Figure 5.6: Bat species recorded on transect 1.



5.3.9.2.2.2.2 Transect 2 - 14th May 2025

A total of 4 bat passes were recorded during the second transect. Activity was evenly split between common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*), each comprising 50% of detections (n = 2 per species). No other species were recorded. This level of activity is considered very low. A map displaying the location of detections is shown in Figure 5.10.

Figure 5.7: Bat species recorded on transect 2.



5.3.9.2.2.2.3 Transect 3 - 17th June 2025

A total of 159 bat passes were recorded, representing a significant increase in activity compared to earlier surveys. Leisler's bat (*Nyctalus leisleri*) was the most frequently recorded species, accounting for 75% of detections (n = 119). Common pipistrelle (*Pipistrellus pipistrellus*) comprised 17% (n = 27), while soprano pipistrelle (*Pipistrellus pygmaeus*) made up the remaining 8% (n = 13). The higher activity level associated with Leisler's bat suggests peak-season importance for this species. A map displaying the location of detections is shown in Figure 5.11.

Figure 5.8: Bat detections on transect 3.

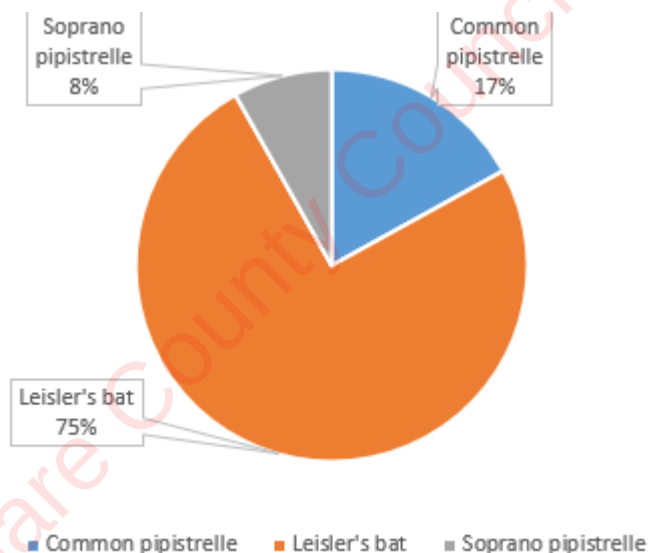


Figure 5.9: Bat detection locations on transect 1.

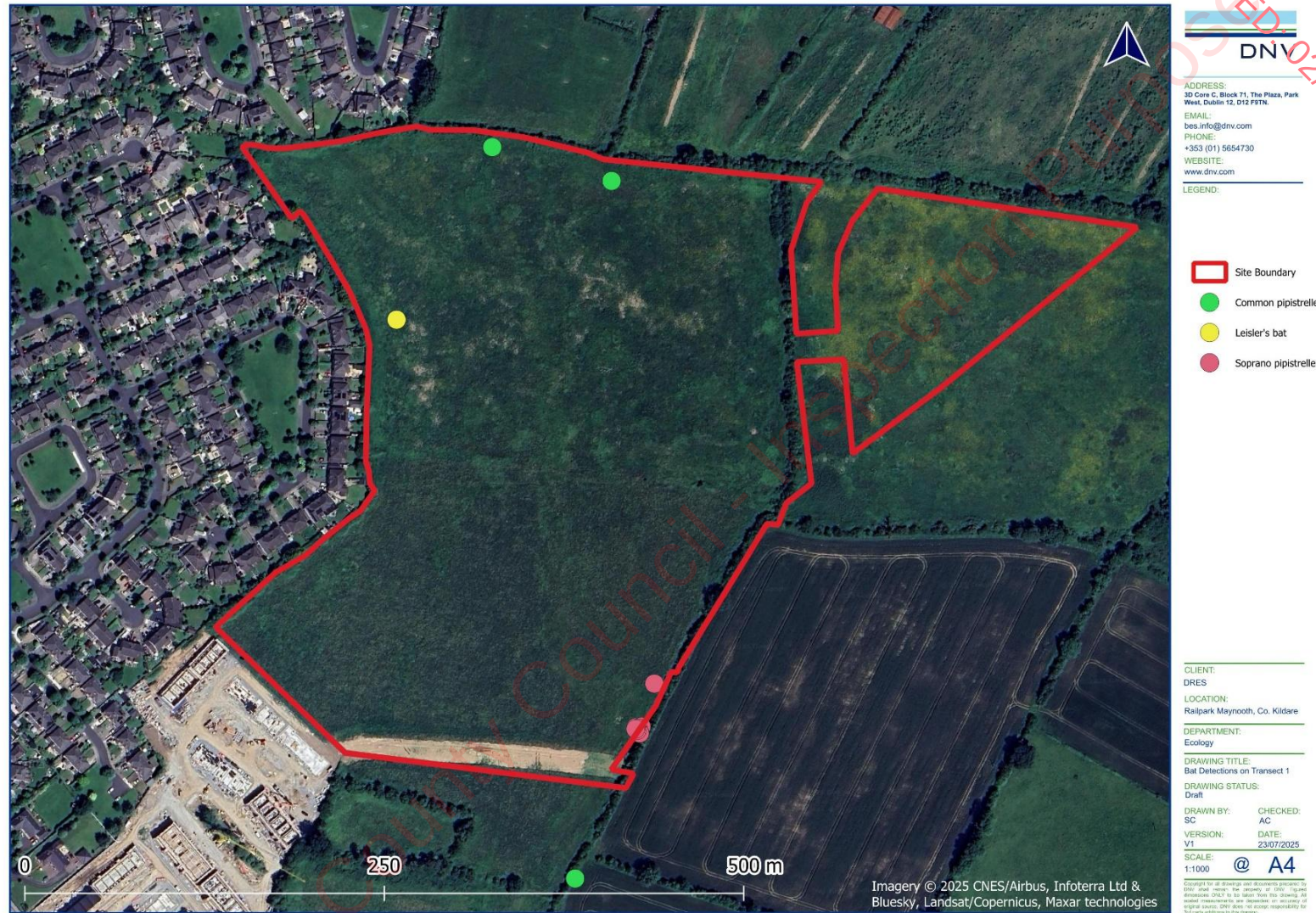


Figure 5.10. Bat detection locations on transect 2.



Figure 5.11: Bat detection locations on transect



5.3.9.3 Birds

5.3.9.3.1 Desk study Results

A total of 51 bird species have been recorded within the N93 10 km grid square. Of these, 18 are red listed birds and 33 are amber listed birds as identified on the Birds of Conservation Concern in Ireland (BoCCI) (Gilbert *et al.* 2021). Details of amber and red listed species are detailed in Table 5.13

Table 5.13: Details of amber and red listed bird species within the 10km (N93), 2km grid square (N93N) and the 1km Grid squares (N9436 and N9437).

Species	Date of record	BoCCI Status
Barn Owl (<i>Tyto alba</i>)	01/09/2021	Red
Barn Swallow (<i>Hirundo rustica</i>)	02/08/2022	Amber
Black Brant (<i>Branta bernicla</i> subsp. <i>nigricans</i>)	01/05/2004	Amber
Black-headed Gull (<i>Larus ridibundus</i>)	31/12/2011	Amber
Black-tailed Godwit (<i>Limosa limosa</i>)	19/08/2022	Red
Common Coot (<i>Fulica atra</i>)	29/12/2022	Amber
Common Goldeneye (<i>Bucephala clangula</i>)	23/10/2022	Red
Common Kestrel (<i>Falco tinnunculus</i>)	20/04/2018	Red
Common Kingfisher (<i>Alcedo atthis</i>)	31/12/2011	Amber
Common Linnet (<i>Carduelis cannabina</i>)	31/12/2011	Amber
Common Pochard (<i>Aythya ferina</i>)	23/03/2023	Red
Common Sandpiper (<i>Actitis hypoleucos</i>)	12/07/2022	Amber
Common Snipe (<i>Gallinago gallinago</i>)	29/12/2022	Red
Common Starling (<i>Sturnus vulgaris</i>)	13/05/2022	Amber
Common Swift (<i>Apus apus</i>)	08/07/2023	Red
Eurasian Oystercatcher (<i>Haematopus ostralegus</i>)	10/07/2022	Red
European Greenfinch (<i>Carduelis chloris</i>)	31/12/2011	Amber
Eurasian Teal (<i>Anas crecca</i>)	31/12/2011	Amber
Eurasian Tree Sparrow (<i>Passer montanus</i>)	31/12/2011	Amber
Eurasian Wigeon (<i>Anas penelope</i>)	11/09/2022	Amber
Eurasian Woodcock (<i>Scolopax rusticola</i>)	31/12/2011	Red
Garganey (<i>Anas querquedula</i>)	11/09/2022	Amber

Goldcrest (<i>Regulus regulus</i>)	21/01/2022	Amber
Great Cormorant (<i>Phalacrocorax carbo</i>)	21/04/2023	Amber
Great Crested Grebe (<i>Podiceps cristatus</i>)	16/04/2023	Amber
Grey Wagtail (<i>Motacilla cinerea</i>)	24/04/2023	Red
Greater Scaup (<i>Aythya marila</i>)	02/12/2022	Amber
Hen Harrier (<i>Circus cyaneus</i>)	24/06/2021	Amber
Herring Gull (<i>Larus argentatus</i>)	31/12/2011	Amber
House Martin (<i>Delichon urbicum</i>)	24/06/2020	Amber
House Sparrow (<i>Passer domesticus</i>)	09/12/2022	Amber
Lesser Black-backed Gull (<i>Larus fuscus</i>)	06/05/2020	Amber
Mallard (<i>Anas platyrhynchos</i>)	12/05/2023	Amber
Meadow Pipit (<i>Anthus pratensis</i>)	31/12/2011	Red
Merlin (<i>Falco columbarius</i>)	30/08/2019	Amber
Mew Gull (<i>Larus canus</i>)	02/08/2022	Amber
Mute Swan (<i>Cygnus olor</i>)	12/05/2023	Amber
Northern Lapwing (<i>Vanellus vanellus</i>)	22/04/2023	Red
Northern Pintail (<i>Anas acuta</i>)	24/11/2022	Amber
Northern Shoveler (<i>Anas clypeata</i>)	28/11/2022	Red
Red Kite (<i>Milvus milvus</i>)	16/11/2022	Red
Redwing (<i>Turdus iliacus</i>)	09/02/2022	Red
Ringed Plover (<i>Charadrius hiaticula</i>)	05/03/2023	Amber
Sand Martin (<i>Riparia riparia</i>)	11/07/2022	Amber
Sky Lark (<i>Alauda arvensis</i>)	24/06/2022	Amber
Spotted Flycatcher (<i>Muscicapa striata</i>)	31/12/2011	Amber
Stock Pigeon (<i>Columba oenas</i>)	31/12/2011	Red
Tufted Duck (<i>Aythya fuligula</i>)	31/12/2011	Amber
Willow Warbler (<i>Phylloscopus trochilus</i>)	31/12/2011	Amber
Wood Sandpiper (<i>Tringa glareola</i>)	18/07/2022	Amber
Yellowhammer (<i>Emberiza citrinella</i>)	23/08/2017	Red

5.3.9.3.2 Field Survey Results

5.3.9.3.3 Bird Scoping Survey

A total of twelve bird species were observed at the Site during the PEA walkover survey on the 17th of July 2024, with four of these species red listed in Birds of Conservation Concern in Ireland 2020-2026 (Gilbert *et al.*, 2021), namely yellowhammer (*Emberiza citronella*), meadow pipit (*Anthus pratensis*), common swift (*Apus apus*) and snipe (*Gallinago gallinago*) and two of these species amber listed, namely swallow (*Hirundo rustica*) and house martin (*Delichon urbicum*). These species can be seen in Table 5.14 below. As a result of the presence of these birds during the scoping survey, further wintering and breeding bird surveys were conducted to record the activity of these birds on Site. It was noted that snipe are not breeding on Site as discussed below.

Table 5.14:. Bird species recorded during PEA on the 17th of July 2024.

Species	BoCCI Status
Robin (<i>Erithacus rubecula</i>)	Green
Magpie (<i>Pica pica</i>)	Green
Hooded Crow (<i>Corvus corone</i>)	Green
Swallow (<i>Hirundo rustica</i>)	Amber
Common swift (<i>Apus apus</i>)	Red
Yellowhammer (<i>Emberiza citronella</i>)	Red
House Martin (<i>Delichon urbicum</i>)	Amber
Meadow Pipit (<i>Anthus pratensis</i>)	Red
Buzzard (<i>Buteo buteo</i>)	Green
Common Snipe (<i>Gallinago gallinago</i>)	Red

Incidental recordings:

During the autumn bat transect surveys, snipe was also observed within the grassland at the Site, and a long-eared owl (*Asio otus*) was recorded at the Site. Due to the lack of suitable long-eared owl nesting habitat, an owl survey was not deemed necessary at the Site, however the tall grass provides highly suitable owl foraging habitat. It is likely that owl are foraging on Site but nesting elsewhere in the wider area.

5.3.9.3.4 Breeding Bird Surveys (BBS)

Breeding bird surveys carried out in 2025 recorded a total of 31 species across all three visits, comprising two Red-listed, nine Amber-listed and twenty Green-listed species under BoCCI. Of these, eight showed confirmed breeding, nine were probable breeders, and five were possible breeders, while nine species were considered non-breeding or fly-overs.

The breeding bird community appeared stable across the season, with no notable gains or losses. Most breeding activity was concentrated in boundary features such as hedgerows, treelines and scrub, which supported the majority of confirmed and probable breeders. Meadow Pipit was the only Red-listed species showing signs of probable breeding, while Snipe remained a non-breeding visitor.

5.3.9.3.4.1 BBS 1

Thirty-one species were recorded on the first breeding-bird survey of the Site. Two were Red-listed (Meadow Pipit, Snipe), nine Amber-listed and twenty Green-listed. Eight species showed confirmed breeding evidence. Nine were classed as probable breeders and five as possible breeders.

Table 5.15: Breeding bird records for the 11th April 2025.

Species	Scientific name	BoCCI Status	Breeding Activity
Blackbird	<i>Turdus merula</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Blackcap	<i>Sylvia atricapilla</i>	Green	Confirmed. Recently fledged young.
Blue Tit	<i>Cyanistes caeruleus</i>	Green	Confirmed. Recently fledged young.
Bullfinch	<i>Pyrrhula pyrrhula</i>	Green	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Buzzard	<i>Buteo buteo</i>	Green	Possible breeding. Species observed in breeding season in suitable nesting habitat
Chaffinch	<i>Fringilla coelebs</i>	Green	Probable. Pair observed in suitable nesting habitat in breeding season
Dunnock	<i>Prunella modularis</i>	Green	Probable. Pair observed in suitable nesting habitat in breeding season
Goldcrest	<i>Regulus regulus</i>	Amber	Possible breeding. Species observed in breeding season in suitable nesting habitat
Goldfinch	<i>Carduelis carduelis</i>	Green	Confirmed. Recently fledged young.
Great Tit	<i>Parus major</i>	Green	Confirmed. Recently fledged young.
Greenfinch	<i>Chloris chloris</i>	Amber	Non-breeding. No evidence of the species on the site on the first two surveys, and then a juvenile was seen in

			June. This is almost certainly a bird from elsewhere that has dispersed.
Hooded Crow	<i>Corvus cornix</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
House Martin	<i>Delichon urbicum</i>	Amber	Non-breeding. Flyovers and feeding over the Site.
House Sparrow	<i>Passer domesticus</i>	Amber	Confirmed. Recently fledged young.
Jackdaw	<i>Corvus monedula</i>	Green	Non-breeding. Flyover only.
Linnet	<i>Linaria cannabina</i>	Amber	Possible breeding. Species observed in breeding season in suitable nesting habitat
Magpie	<i>Pica pica</i>	Green	Non-breeder. Flyover only.
Meadow Pipit	<i>Anthus pratensis</i>	Red	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Reed Bunting	<i>Emberiza schoeniclus</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Robin	<i>Erithacus rubecula</i>	Green	Confirmed. Recently fledged young.
Rook	<i>Corvus frugilegus</i>	Green	Non-breeder. Flyover only.
Siskin	<i>Spinus spinus</i>	Green	Non-breeder. Flyover only.
Skylark	<i>Alauda arvensis</i>	Amber	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Snipe	<i>Gallinago gallinago</i>	Red	Non-breeder. Presumably a late wintering bird as no sign on the May and June surveys.
Song Thrush	<i>Turdus philomelos</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season

Sparrowhawk	<i>Accipiter nisus</i>	Green	Non-breeder. Flyover pair only. Female.
Starling	<i>Sturnus vulgaris</i>	Amber	Confirmed. Recently fledged young.
Swallow	<i>Hirundo rustica</i>	Amber	Non-breeder. Foraging over the Site.
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Woodpigeon	<i>Columba palumbus</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Wren	<i>Troglodytes troglodytes</i>	Green	Confirmed. Recently fledged young.

5.3.9.3.4.2 **BBS 2**

Twenty five species were recorded on the survey of the Site. None were Red-listed, six Amber-listed and the remaining Green-listed. Eight exhibited confirmed breeding evidence, nine were considered probable breeders, five possible breeders and nine were recorded as non-breeding or fly-overs.

Table 5.16: Breeding bird records for the 16th June 2025.

Species	Scientific name	BoCCI Status	Breeding Activity
Blackbird	<i>Turdus merula</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Blackcap	<i>Sylvia atricapilla</i>	Green	Confirmed. Recently fledged young.
Blue Tit	<i>Cyanistes caeruleus</i>	Green	Confirmed. Recently fledged young.
Buzzard	<i>Buteo buteo</i>	Green	Possible breeding. Species observed in breeding season in suitable nesting habitat
Chaffinch	<i>Fringilla coelebs</i>	Green	Probable. Pair observed in suitable nesting habitat in breeding season
Dunnock	<i>Prunella modularis</i>	Green	Probable. Pair observed in suitable nesting habitat in breeding season

Goldfinch	<i>Carduelis carduelis</i>	Green	Confirmed. Recently fledged young.
Great Tit	<i>Parus major</i>	Green	Confirmed. Recently fledged young.
Hooded Crow	<i>Corvus cornix</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season.
House Martin	<i>Delichon urbicum</i>	Amber	Non-breeding. Flyovers and feeding over the Site.
House Sparrow	<i>Passer domesticus</i>	Amber	Confirmed. Recently fledged young.
Jackdaw	<i>Corvus monedula</i>	Green	Non-breeding. Flyover only.
Linnet	<i>Linaria cannabina</i>	Amber	Possible breeding. Species observed in breeding season in suitable nesting habitat.
Magpie	<i>Pica pica</i>	Green	Non-breeder. Flyover only.
Reed Bunting	<i>Emberiza schoeniclus</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season.
Robin	<i>Erithacus rubecula</i>	Green	Confirmed. Recently fledged young.
Rook	<i>Corvus frugilegus</i>	Green	Non-breeder. Flyover only.
Siskin	<i>Spinus spinus</i>	Green	Non-breeder. Flyover only.
Song Thrush	<i>Turdus philomelos</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season.
Sparrowhawk	<i>Accipiter nisus</i>	Green	Non-breeder. Flyover pair only. Female.
Starling	<i>Sturnus vulgaris</i>	Amber	Confirmed. Recently fledged young.
Swallow	<i>Hirundo rustica</i>	Amber	Non-breeder. Foraging over the Site.
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat.

Woodpigeon	<i>Columba palumbus</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Wren	<i>Troglodytes troglodytes</i>	Green	Confirmed. Recently fledged young.

5.3.9.3.4.3 **BBS 3**

Twenty four species were recorded on the third breeding bird survey with only one red-listed, six Amber-listed, and the remaining Green-listed.

Table 5.17: Breeding bird records for the 28th May 2025.

Species	Scientific name	BoCCI Status	Breeding Activity
Blackbird	<i>Turdus merula</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Blackcap	<i>Sylvia atricapilla</i>	Green	Confirmed. Recently fledged young.
Blue Tit	<i>Cyanistes caeruleus</i>	Green	Confirmed. Recently fledged young.
Buzzard	<i>Buteo buteo</i>	Green	Possible breeding. Species observed in breeding season in suitable nesting habitat
Chaffinch	<i>Fringilla coelebs</i>	Green	Probable. Pair observed in suitable nesting habitat in breeding season
Dunnock	<i>Prunella modularis</i>	Green	Probable. Pair observed in suitable nesting habitat in breeding season
Goldcrest	<i>Regulus regulus</i>	Amber	Possible breeding. Species observed in breeding season in suitable nesting habitat
Goldfinch	<i>Carduelis carduelis</i>	Green	Confirmed. Recently fledged young.
Great Tit	<i>Parus major</i>	Green	Confirmed. Recently fledged young.
Hooded Crow	<i>Corvus cornix</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
House Martin	<i>Delichon urbicum</i>	Amber	Non-breeding. Flyovers and feeding over the Site.
House Sparrow	<i>Passer domesticus</i>	Amber	Confirmed. Recently fledged young.
Jackdaw	<i>Corvus monedula</i>	Green	Non-breeding. Flyover only.
Magpie	<i>Pica pica</i>	Green	Non-breeder. Flyover only.
Meadow Pipit	<i>Anthus pratensis</i>	Red	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Reed Bunting	<i>Emberiza schoeniclus</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Robin	<i>Erithacus rubecula</i>	Green	Confirmed. Recently fledged young.

Rook	<i>Corvus frugilegus</i>	Green	Non-breeder. Flyover only.
Skylark	<i>Alauda arvensis</i>	Amber	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Song Thrush	<i>Turdus philomelos</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Starling	<i>Sturnus vulgaris</i>	Amber	Confirmed. Recently fledged young.
Swallow	<i>Hirundo rustica</i>	Amber	Non-breeder. Foraging over the Site.
Woodpigeon	<i>Columba palumbus</i>	Green	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Wren	<i>Troglodytes troglodytes</i>	Green	Confirmed. Recently fledged young.

5.3.9.3.5 Winter Bird Surveys (WBS)

5.3.9.3.5.1 WBS 1

The majority of the birds recorded during the first winter transect were common passerines typical of the grassland and hedgerow habitat at the Site.

A buzzard was observed perched on a tree and was later seen flying across the eastern field parcel. Due to its presence throughout the entirety of the survey, it is deemed likely that the buzzard is residing in proximity to the Site and utilises the grasslands as foraging habitat.

During the survey, 27 different species were recorded. Three of these are Red-listed species of conservation concern, and six are Amber-listed. All birds recorded during the survey can be found in Table 5.18.

The lesser black back gull was recorded as a flyover and unlikely to utilise the Site due to lack of suitable habitat.

Table 5.18. Bird species recorded at the project Site and surrounding areas during winter bird surveys in 20th of November 2024.

Species	Scientific name	BoCCI Status	Observations
Buzzard	<i>Buteo buteo</i>	Green	Perched on Tree. Present in eastern field throughout survey. Calls heard.
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber	3 flying overhead.
Blackbird	<i>Turdus merula</i>	Green	Common in hedgerows at the Site.
Blue Tit	<i>Cyanistes caeruleus</i>	Green	Common in hedgerows at the Site.

Chaffinch	<i>Fringilla coelebs</i>	Green	Common in hedgerows at the Site Flock of approx. 25 observed foraging in grassland in centre of Site.
Dunnock	<i>Prunella modularis</i>	Green	Common in hedgerows at the Site.
Goldcrest	<i>Regulus regulus</i>	Amber	Heard singing. recorded in conifer trees to the northwest of the Site.
Goldfinch	<i>Carduelis carduelis</i>	Green	Common in hedgerows at the Site.
Great Tit	<i>Parus major</i>	Green	Common in hedgerows at the Site.
Hooded Crow	<i>Corvus cornix</i>	Green	Common at the Site.
House Sparrow	<i>Passer domesticus</i>	Amber	At housing to the northwest and west of Site.
Jackdaw	<i>Corvus monedula</i>	Green	Common in hedgerows at the Site. Flyovers.
Linnet (Common)	<i>Carduelis cannabina</i>	Amber	Perched on trees within hedgerows and the telephone wire bisecting the Site.
Magpie	<i>Pica pica</i>	Green	Common at the Site.
Meadow pipit	<i>Anthus pratensis</i>	Red	Flock seen foraging in the grassland in centre of the Site.
Mistle Thrush	<i>Turdus viscivorus</i>	Green	Observed in hedgerow at the Site and foraging in the grassland.
Pied wagtail	<i>Motacilla alba</i>	Green	At housing to the northwest and west of Site.
Redwing	<i>Turdus iliacus</i>	Red	Small group of 3 flying from tree to grassland at western boundary of Site.
Robin	<i>Erithacus rubecula</i>	Green	Common in hedgerows at the Site.

Rook	<i>Corvus frugilegus</i>	Green	Common in Site. Flyovers.
Skylark	<i>Alauda arvensis</i>	Amber	One Seen perched in tree along western boundary.
Song Thrush	<i>Turdus philomes</i>	Green	Common in hedgerows at the Site.
Starling	<i>Sturnus vulgaris</i>	Amber	Common in hedgerows at the Site. Flyovers. Seen perched on telephone wire.
Stonechat	<i>Saxicola rubicola</i>	Green	Two recorded in the grassland to the south of the Site.
Woodpigeon	<i>Columba palumbus</i>	Green	Common in hedgerows at the Site.
Wren	<i>Troglodytes troglodytes</i>	Green	Common in hedgerows at the Site.
Yellowhammer	<i>Emberiza citrinella</i>	Red	One seen foraging in the grassland in centre of the Site.

5.3.9.3.5.2 WBS 2

As in the previous survey, the majority of the birds recorded during the first winter transect were common passerines typical of the grassland and hedgerow habitat at the Site. There was a higher wind speed, with strong gusts at the start of the survey, which lead to a smaller total number of birds recorded during this survey.

A buzzard was seen flying in the crop field to the east of the Site, as well as several gull species flying overhead.

A snipe was also flushed from the grassland at the centre of the Site.

During the survey, 169 birds were recorded, comprising 23 species. Two are Red-listed species of conservation concern, and six are Amber-listed. All birds recorded during the survey can be found in Table 5.19.

Table 5.19: Bird species recorded at the project Site and surrounding areas during winter bird surveys in 17th of December 2024

Species	Scientific name	BoCCI Status	Observations
Black-headed Gull	<i>Larus ridibundus</i>	Amber	Flyover. One seen circling overhead throughout duration of the survey.

Buzzard	<i>Buteo buteo</i>	Green	Flying over crop field to the east of the Site.
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber	Flyovers.
Herring Gull	<i>Larus argentatus</i>	Amber	Flyovers.
Snipe	<i>Gallinago gallinago</i>	Red	Flushed from grassland.
Blackbird	<i>Turdus merula</i>	Green	Common in hedgerows at the Site.
Blue Tit	<i>Cyanistes caeruleus</i>	Green	Common in hedgerows at the Site.
Chaffinch	<i>Fringilla coelebs</i>	Green	Common in hedgerows at the Site.
Dunnock	<i>Prunella modularis</i>	Green	Common in hedgerows at the Site.
Goldcrest	<i>Regulus regulus</i>	Amber	Heard singing. recorded in conifer trees to the northwest of the Site.
Goldfinch	<i>Carduelis carduelis</i>	Green	Common in hedgerows at the Site.
Hooded Crow	<i>Corvus cornix</i>	Green	Common at the Site.
House Sparrow	<i>Passer domesticus</i>	Amber	At housing to the northwest and west of Site.
Jackdaw	<i>Corvus monedula</i>	Green	Common in hedgerows at the Site. Flyovers.
Meadow Pipit	<i>Anthus pratensis</i>	Red	Flushed from grassland at Site.
Mistle Thrush	<i>Turdus viscivorus</i>	Green	Observed in hedgerow at the Site and foraging in the grassland.
Magpie	<i>Pica pica</i>	Green	Common at the Site.
Robin	<i>Erithacus rubecula</i>	Green	Common in hedgerows at the Site.
Rook	<i>Corvus frugilegus</i>	Green	Common in Site. Flyovers
Song Thrush	<i>Turdus philomelos</i>	Green	Common in hedgerows at the Site.
Starling	<i>Sturnus vulgaris</i>	Amber	Common in hedgerows at the Site. Flyovers. Seen perched on telephone wire.
Woodpigeon	<i>Columba palumbus</i>	Green	Common in hedgerows at the Site.
Wren	<i>Troglodytes troglodytes</i>	Green	Common in hedgerows at the Site.

5.3.9.3.5.3 WBS 3

As in the previous surveys, the majority of the birds recorded during the first winter transect were common passerines typical of the grassland and hedgerow habitat at the Site. There was a similar wind speed in the third survey as seen in the second, with strong gusts at the start of the survey.

Three snipe were flushed from the grassland at the centre of the Site during this survey.

During the survey, 113 birds were recorded across 21 species. Two of these are Red-listed species of conservation concern, and six are Amber-listed. All birds recorded during the survey can be found in Table 5.20.

Table 5.20: Bird species recorded at the project Site and surrounding areas during winter bird survey in 17th of January 2025

Common Name	Latin Name	BoCCI Status	Observations
Black-headed Gull	<i>Larus ridibundus</i>	Amber	Flyover.
Herring Gull	<i>Larus argentatus</i>	Amber	Flyovers.
Snipe	<i>Gallinago gallinago</i>	Red	Three flushed from grassland.
Blackbird	<i>Turdus merula</i>	Green	Common in hedgerows at the Site.
Blue Tit	<i>Cyanistes caeruleus</i>	Green	Common in hedgerows at the Site.
Chaffinch	<i>Fringilla coelebs</i>	Green	Common in hedgerows at the Site.
Dunnock	<i>Prunella modularis</i>	Green	Common in hedgerows at the Site.
Great Tit	<i>Parus major</i>	Green	Common in hedgerows at the Site.
Goldfinch	<i>Carduelis carduelis</i>	Green	Common in hedgerows at the Site.
Hooded Crow	<i>Corvus cornix</i>	Green	Common at the Site.
House Sparrow	<i>Passer domesticus</i>	Amber	At housing to the northwest and west of Site.
Jackdaw	<i>Corvus monedula</i>	Green	Common in hedgerows at the Site. Flyovers.
Meadow Pipit	<i>Anthus pratensis</i>	Red	Flushed from grassland at Site.
Reed Bunting	<i>Emberiza schoeniclus</i>	Green	Three observed in hedgerow at the Site.
Magpie	<i>Pica pica</i>	Green	Common at the Site.
Robin	<i>Erithacus rubecula</i>	Green	Common in hedgerows at the Site.
Rook	<i>Corvus frugilegus</i>	Green	Common in Site. Flyovers

Song Thrush	<i>Turdus philomelos</i>	Green	Common in hedgerows at the Site.
Starling	<i>Sturnus vulgaris</i>	Amber	Common in hedgerows at the Site. Flyovers. Seen perched on telephone wire.
Stonechat	<i>Saxicola rubicola</i>	Green	Recorded in the grassland in the centre of the Site.
Woodpigeon	<i>Columba palumbus</i>	Green	Common in hedgerows at the Site.
Wren	<i>Troglodytes troglodytes</i>	Green	Common in hedgerows at the Site.

5.3.9.3.5.4 **WBS 4**

The final winter bird survey was undertaken in mild conditions with light south-westerly winds and intermittent cloud cover. The bird activity observed was broadly consistent with previous surveys, with a predominance of common resident passerines associated with hedgerow and grassland habitats across the Site.

No waders or waterfowl were recorded during this survey. Notably, no snipe were flushed from the central grassland, contrasting with earlier surveys where this species had been detected.

During the survey, 24 species were recorded, including two Red-listed species and five Amber-listed species. All recorded birds are listed in Table 5.21.

Table 5.21: Bird species recorded at the project Site and surrounding areas during winter bird survey in 25th February 2025.

Species	Latin name	BOCCI Status	Total
Buzzard	<i>Buteo buteo</i>	Green	1
Snipe	<i>Gallinago gallinago</i>	Red	2
Blackbird	<i>Turdus merula</i>	Green	3
Blue Tit	<i>Cyanistes caeruleus</i>	Green	3
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber	3
Chaffinch	<i>Fringilla coelebs</i>	Green	5
Coal Tit	<i>Parus ater</i>	Green	1
Dunnock	<i>Prunella modularis</i>	Green	5
Goldcrest	<i>Regulus regulus</i>	Amber	3
Goldfinch	<i>Carduelis carduelis</i>	Green	3
Great Tit	<i>Parus major</i>	Green	5
Hooded Crow	<i>Corvus cornix</i>	Green	8
House Sparrow	<i>Passer domesticus</i>	Amber	4
Jackdaw	<i>Corvus monedula</i>	Green	1
Magpie	<i>Pica pica</i>	Green	4
Meadow Pipit	<i>Anthus pratensis</i>	Red	16

Reed Bunting	<i>Emberiza schoeniclus</i>	Green	10
Robin	<i>Erithacus rubecula</i>	Green	5
Rook	<i>Corvus frugilegus</i>	Green	15
Skylark	<i>Alauda arvensis</i>	Amber	3
Song Thrush	<i>Turdus philomelos</i>	Green	1
Starling	<i>Sturnus vulgaris</i>	Amber	16
Woodpigeon	<i>Columba palumbus</i>	Green	28
Wren	<i>Troglodytes troglodytes</i>	Green	6

5.3.9.4 Mammals (excl. bats)

5.3.9.4.1 Desk Study Results

A total of 17 mammals were recorded within the 10km grid square (N93), ten of which were native terrestrial mammals, with nine of these species afforded legal protection under the Wildlife (Amendment) Act, 2000, namely badger (*Meles meles*), otter (*Lutra lutra*), Irish hare (*Lepus timidus subsp. Hibernicus*), Irish stoat (*Mustela erminea subsp. Hibernica*), pine marten (*Martes martes*), red deer (*Cervus elaphus*), hedgehog (*Erinaceus europaeus*), red squirrel (*Sciurus vulgaris*), and Eurasian pygmy shrew (*Sorex minutus*).

Badger, hedgehog and red fox were the only native mammal species recorded across the 10km (N93), 2km (N93N), and 1km (N9436 and N9437) grid squares. Pine marten was recorded across the 10km and 2km grid squares.

The remaining seven species are considered invasive, with brown rat (*Rattus norvegicus*), rabbit (*Oryctolagus cuniculus*), house mouse (*Mus musculus*), American mink (*Mustela vison*), eastern grey squirrel (*Sciurus carolinensis*), feral ferret (*Mustela furo*), and greater white-toothed shrew (*Crocidura russula*) recorded across the 10km (N93) grid square.

Table 5.22: Records of mammals for the surrounding grid squares associated with the Site from the NDBC.

Species	Grid Square	Date of Last Record	Database	Designation
Native species				
Eurasian Badger (<i>Meles meles</i>)	N9436 N93N N93	17/02/2013 17/02/2013 26/09/2018	Atlas of Mammals in Ireland 2010-2015 Atlas of Mammals in Ireland 2010-2015 Mammals of Ireland 2016-2025	Wildlife (Amendment) Act 2000 Berne Convention Appendix III
Eurasian Pygmy Shrew (<i>Sorex minutus</i>)	N93	17/01/2018	Mammals of Ireland 2016-2025	Wildlife (Amendment) Act 2000

Eurasian Red Squirrel (<i>Sciurus vulgaris</i>)	N93	22/04/2023	Mammals of Ireland 2016-2025	Wildlife (Amendment) Act 2000
European Otter (<i>Lutra lutra</i>)	N93	16/05/2018	Mammals of Ireland 2016-2025	EU Habitats Directive - Annex V Wildlife (Amendment) Act 2000
Pine Marten (<i>Martes martes</i>)	N93N N93	02/12/2020 09/06/2021	Atlas of Mammals in Ireland 2010-2015 Mammals of Ireland 2016-2025	EU Habitats Directive - Annex V Bern Convention Appendix III Wildlife (Amendment) Act 2000
West European Hedgehog (<i>Erinaceus europaeus</i>)	N9437 N93N N93	02/05/2022 02/05/2022 09/11/2023	Hedgehogs of Ireland Hedgehogs of Ireland Hedgehogs of Ireland	Wildlife (Amendment) Act 2000 Bern Convention Appendix III
Red Fox (<i>Vulpes vulpes</i>)	N9436 N9437 N93N N93	15/02/2015 02/07/2015 19/07/2018 06/10/2017	Atlas of Mammals in Ireland 2010-2015 Atlas of Mammals in Ireland 2010-2015 Mammals of Ireland 2016-2025 Mammals of Ireland 2016-2025	No legal protection
Irish Hare (<i>Lepus timidus subsp. hibernicus</i>)	N93	08/07/2023	Mammals of Ireland 2016-2025	Wildlife (Amendment) Act 2000
Irish Stoat (<i>Mustela erminea subsp. hibernica</i>)	N93	04/04/2023	Irish Stoats of Ireland	Wildlife (Amendment) Act 2000
Red Deer (<i>Cervus elaphus</i>)	N93	29/05/2018	Mammals of Ireland 2016-2025	Wildlife (Amendment) Act 2000
Non-native and Invasive Species				
Brown Rat (<i>Rattus norvegicus</i>)	N93	20/06/2014	Atlas of Mammals in Ireland 2010-2015	High Impact Invasive Species Regulation S.I. 477 (Ireland)
House Mouse (<i>Mus musculus</i>)	N93	30/09/2016	Mammals of Ireland 2016-2025	High Impact Invasive Species

American Mink (<i>Mustela vison</i>)	N93	14/04/2021	National Invasive Species Database	High Impact Invasive Species Regulation S.I. 477 (Ireland)
European Rabbit (<i>Oryctolagus cuniculus</i>)	N9436 N93N N9437	25/04/2023 25/04/2023 09/07/2013	Mammals of Ireland 2016-2025 Mammals of Ireland 2016-2025 Atlas of Mammals in Ireland 2010-2015	Medium Impact Invasive Species
Eastern Grey Squirrel (<i>Sciurus carolinensis</i>)	N93	13/12/2022	Mammals of Ireland 2016-2025	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Feral Ferret (<i>Mustela furo</i>)	N93	21/07/2012	National Feral Ferret (<i>Mustela putoris furo</i>) Database	High Impact Invasive Species
Greater White-toothed Shrew (<i>Crocidura russula</i>)	N93	09/06/2020	Mammals of Ireland 2016-2025	Medium Impact Invasive Species

5.3.9.4.1.1 **Field Survey Results**

During the mammal surveys on the 17th of July 2024 and 5th of December 2024, several mammal trails were observed along the hedgerows at the Site with mammal entry points through the hedgerow bases, in particular along the eastern and northern boundary of the Site. The entry points in the hedgerow were considered most likely fox due to their size and shape. Fox scat and hairs were also recorded at the Site and a fox was observed on trail cameras. Field mice were also recorded on trail cameras.

Small rodents such as mice and rats have been flushed from the tall grass on numerous visits. During the bat transect survey, these were observed using a thermal imaging scope and it was noted that there was a high number of rodent species active at night.

Figure 5.12: Fox recorded on Site.

Several dog droppings were also recorded indicating the Site is commonly used by dogwalkers. The Site is currently accessible to the public, and also next to school grounds and residential areas. Therefore, many of the trails and mammal indications can likely be attributed to dogs.

Suitable habitat for smaller, more timid mammal species such as hedgehog, hare, stoat, and pygmy shrew were recorded along the hedgerows bordering the Site, along with the dense grassland habitats. The eastern field parcel, just outside of the Site boundary contains a large log pile which is suitable hibernacula/refuge for small mammals. During the survey in December 2024, several small mammal burrows were found along the hedgerow banks in the eastern field parcel and along the northern boundary of the Site. These ranged from 8cm in diameter to 20cm, and many had evidence of recent digging. Rabbit droppings were found along the north of the Site and many warrens were recorded.

Dropings with insect exoskeletons were found along the northern section of the Site which resembled hedgehog scat.

Due to the lack of wooded habitat ecological corridors for larger mammal species, it is unlikely pine marten, red squirrel or deer species would utilise the Site. Additionally, it is considered unlikely that otter is present at the Site due to an absence of nearby watercourses.

5.3.9.4.2 Badger Surveys

A badger survey was carried out on the 5th of December 2024 to investigate the Site when the vegetation had died back, therefore minimising the limitations involved with the preliminary mammal surveys which were undertaken during the botanical growing season. An inspection of the field parcel to the north of the Site was also carried out on the 17th of January 2025, 17th June 2025, and the 16th of July 2025.

No badger setts were found within the Site boundary. A number of small burrows and warrens were found along the eastern boundary and the northern boundary of the Site within the hedgerow and dense vegetation. Most were too small to be badger setts (<20cm in diameter) and more likely due to rabbit and rodents. No spoil heaps, bedding or other evidence of badger was found.

The Site had several areas with suspected badger snuffle holes and a latrine recorded along the eastern boundary. These snuffle holes were found during all Site visits, indicating that badgers likely use the Site for foraging or commuting.

A small hole, suspected to be fox or badger, was found outside of the Site boundary on neighbouring lands to the north during the winter walkover. It consisted of a singular entrance and was 30cm wide and 25cm with a small spoil heap of excavated soil outside. This indicated that it could potentially be in use by badger. This potential sett was located along the base of the hedgerow to the north of the Site that will be retained throughout the development, but was within 50m of the construction footprint.

Two attempts to deploy a trail camera were carried out at this potential sett to confirm if badger were utilising it, following the first surveyors (CS) observation of it in December 2025. A different surveyor (EK) attempted to deploy a trail camera at the entrance on the 17th June 2025 but no active sett could be located. There was substantial overgrowth, and no visible entrances, snuffle holes, trails to or from any potential entrances, latrines, or other signs of badger activity. This indicated the suspected sett was either not a badger sett and possibly rabbit, or it was no longer in use.

A further survey visit was conducted on the 16th of July 2025 by DNV ecologist LG to confirm the status of this potential sett. This survey yielded similar results. There were no signs of badger in this area, no setts located, and no other signs of a burrow such as spoil heaps or trails in and out of a burrow/potential sett. This confirmed the burrow is either not that of badger and potentially fox or is no longer in use. Either result confirms badger are not breeding or resting at this location.

A trail camera was deployed on the 16th of July 2025 near the area where this burrow was initially observed within the hedgerow to the north of the Site. The camera was deployed from the 16th to the 24th July 2025. A badger was recorded on two occasions (16th and 24th July) entering the Site but was not recorded leaving. In addition, a fox was recorded numerous times. This indicates that badger are likely residing in lands to the north of the Site and utilise numerous points along the northern hedgerow to enter and exit the Site to forage.

Figure 5.13: Badger recorded commuting into the Site.



5.3.9.5 Amphibians

Both common frog (*Rana temporaria*) and smooth newt have (*Lissotriton vulgaris*) been recorded in the 10km (N93) and 2km (N93N) grid squares encompassing the Site of the Proposed Development.

Table 5.23: Records of amphibians for the surrounding grid squares associated with the Site from the NDBC.

Species	Grid Square	Date of Last Record	Database	Designation
Common Frog (<i>Rana temporaria</i>)	N9437 N93N	15/02/2023 15/02/2023	Amphibians and reptiles of Ireland	EU Habitats Directive Annex V

			Amphibians and reptiles of Ireland	Berne Convention Appendix III Wildlife (Amendment) Acts 2000
Smooth Newt (<i>Lissotriton vulgaris</i>)	N9437 N93N	28/06/2018 28/06/2018	Newt Survey 2010-2014 Newt Survey 2010-2014	Wildlife (Amendment) Acts 2000

During the walkover survey in July 2024, habitats on Site were checked for signs of amphibians. No ponds or other areas of standing or very slow-flowing water, which provide suitable breeding habitat for amphibians, were recorded at the Site. It is therefore presumed that the Site is not being utilised by breeding amphibians.

5.3.9.6 Common Lizard

No records of common lizard (*Zootoca vivipara*) exist for the relevant 10km grid square. There is some suitable habitat for this species within the Site of the Proposed Development along the hedgerow habitat. As no targeted surveys for common lizard were carried out and given that common lizard are less likely to be observed in the field, but are widespread throughout Ireland (NBDC, 2025), it is assumed under the precautionary principle that a locally important population of this species may be present at the Site.

5.3.9.7 Fish and other Aquatic species

There are no records of notable fish species within the relevant 10km grid square associated with the Site from the NBDC database. Additionally, there are no waterbodies within the Site of the Proposed Development that could support notable fish species such as salmonids or lampreys.

The Site drainage network during the Operational Phase of the Development connects to the Lyreen stream which ultimately flows into the Rye water therefore, fish and aquatic species are a consideration for this Proposed Development. In addition, records for White-clawed Crayfish (*Austropotamobius pallipes*) have been recorded in the Rye water river to the north.

5.3.9.8 Marsh Fritillary

The marsh fritillary (*Euphydryas aurinia*) butterfly is the only insect in Ireland that is listed on Annex II of the Habitats Directive, which makes it the only insect protected by law in Ireland. There are no records of marsh fritillary within the 10km grid square which encompass the Proposed Development. No individuals of this species or its associated food plant (devil's bit scabious (*Succisa pratensis*)), were recorded during the PEA walkover survey on the 17th of July 2024, nor on any other site visit. The majority of the Site improved and semi-improved grassland which is not considered likely to support devil's bit scabious or the marsh fritillary.

5.3.9.9 Other invertebrates

5.3.9.9.1 Desk Study Results

Gooden's nomad Bee (*Nomada goodeniana*), large red tailed bumble bee (*Bombus (Melanobombus) lapidarius*), megachile (*Megachile centuncularis*) and were recorded within the NBDC grid squares

encompassing the Site. These species are not protected, however are listed as ‘Endangered’ and ‘Near Threatened’ Conservation status in Ireland.

Table 5.24: Records of rare or invasive invertebrates for the surrounding grid squares associated with the Site from the NDBC.

Species	Grid Square	Date of Last Record	Database	Conservation Status
Gooden's Nomad Bee (<i>Nomada goodeniana</i>)	N93N	13/04/2024	Bees of Ireland	Endangered
Flatworm (Turbellaria) (<i>Arthurdendyus triangulatus</i>)	N9437 N93N	12/05/2019 12/05/2019	New Zealand Flatworm (<i>Arthurdendyus triangulatus</i>) Database New Zealand Flatworm (<i>Arthurdendyus triangulatus</i>) Database	High Impact Invasive Species
Large Red Tailed Bumble Bee (<i>Bombus</i> (Melanobombus) <i>lapidarius</i>)	N9436 N9437 N93N	19/07/2021 01/05/2024	Bees of Ireland Bees of Ireland	Near Threatened
Megachile (Megachile <i>centuncularis</i>)	N9437 N93N	29/05/2020	Bees of Ireland	Near Threatened
Harlequin Ladybird (<i>Harmonia axyridis</i>)	N437 N93N	15/06/2023	Ladybirds of Ireland)	High Impact Invasive Species Regulation S.I. 477 (Ireland)

5.3.9.9.1.1 **Field Survey Results**

During the PEA walkover survey on the 17th of July 2024, recordings of invertebrates observed during the survey are listed in Table . Solitary bee nests were also recorded along the western boundary of the Site which were could not be identified to species level in the field.

Table 5.25: Insect species recorded during the PEA (17th July 2024).

Species
Meadow Brown Butterfly (<i>Maniola jurtina</i>)
Ringlet Butterfly (<i>Aphantopus hyperantus</i>)
Small White Butterfly (<i>Pieris rapae</i>)
Small Blue Butterfly (<i>Cupido minimus</i>)
White Tailed Bumblebee (<i>Bombus lucorum</i>)
Crane Fly (<i>Tipula paludosa</i>)
7-spot Ladybird (<i>Coccinella magnifica</i>)

16-spot Ladybird (<i>Tytthaspis sedecimpunctata</i>)
Horsefly spp. (<i>Tabanus spp.</i>)
Common Wasp (<i>Vespula vulgaris</i>)
Common Green Bottle Fly (<i>Lucilia sericata</i>)
Common Red Soldier Beetle (<i>Rhagonycha fulva</i>)
Carder Bee (<i>Bombus pascuorum</i>)

5.3.10 Protected and/or Notable Species Unlikely to Occur at the Site

Other notable and/or rare species and species listed on Annex IV of the Habitats Directive that were considered but that are unlikely to occur at the Site include:

5.3.10.1 Flora

- Marsh Saxifrage (*Saxifraga hirculus*) - Known populations only in Co. Mayo.
- Killarney Fern (*Vandenboschia speciosa*) - Nearest known populations in Co. Wicklow, not recorded at the Site, no suitably sheltered and moist habitats available.
- Slender Naiad (*Najas flexilis*) - A clear water, lowland lake species. No suitable habitat available at the Site.

5.3.10.2 Fauna

- Freshwater Pearl Mussel (*Margaritifera margaritifera*) - no pathways identified to any *M. margaritifera* sensitive areas.
- Natterjack Toad (*Epidalea calamita*) - Distribution restricted to few coastal sites.
- Kerry Slug (*Geomalacus maculosus*) - Distribution restricted to south and west of Ireland.

5.3.11 Evaluation Of Ecological Features

Habitats have been evaluated for their conservation importance, based on the NRA evaluation scheme (NRA, 2009b). Those selected as KERs are those which are evaluated to be of at least local importance (higher value).

Fauna that has the potential to utilise the Site and immediate area of the Proposed Development, or for which records exist in the wider area, have been evaluated for their conservation importance. This evaluation follows the Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009b).

Table 5.26 below summarises the evaluation rating assigned to each ecological feature and the rationale behind these evaluations is also provided.

Table 5.26. Evaluation Of Designated Sites, Habitats, Flora and Fauna Recorded Within the Site and the Surrounding Area. Those Identified as Key Ecological Receptors (KERS) Are Highlighted in Green.

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
DESIGNATED SITES			
Rye Water Valley/Carnton pNHA (00138)	National Importance	Hydrogeologically and hydrologically linked to the Proposed Development. Refer to AA screening for further details due to overlap with Rye Water Valley/Carnton SAC (001398)	Yes
Royal Canal pNHA (002103)	National Importance	Designated primarily for habitats and species along its banks such as hedgerows, tall herbs, calcareous grassland, reed fringe, open water, scrub, and woodland. Important flora and fauna associated with the NHA are species like Opposite-leaved Pondweed (<i>Groenlandia densa</i>), <i>Tolypella intricata</i> (a vulnerable stonewort) and otters.	No
HABITATS			
Improved Grassland (GA1)	Local Importance (Lower Value)	Habitat covers majority of Site, low species diversity habitat with some importance to local wildlife. Entirety will be lost to facilitate Proposed Development.	No
Dry Calcareous neutral grassland (GS1)	Local Importance (Lower Value)	Semi-natural habitat with low biodiversity. Likely to provide foraging and shelter opportunities to local wildlife within the Site in the absence of other such habitats. Entirety will be lost to facilitate Proposed Development.	No
Hedgerows (WL1)	Local Importance (Higher Value)	Semi-natural habitat with relatively high degree of naturalness and biodiversity in local context. Likely to be of importance to local wildlife and provides habitat connections to surrounding environment.	Yes
Treelines (WL2)	Local Importance (Higher Value)	Semi-natural habitat with relatively high degree of naturalness and biodiversity in local context. Likely to be of importance to locally occurring wildlife.	Yes
FLORA			
Rare Protected Flora &	Local Importance (Lower Value)	No rare or protected flora were recorded during the field surveys. Unlikely to be present in notable numbers/densities.	No

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
Invasive Species	Negligible value	One singular cherry laurel tree that provide little ecological value.	No
NATIVE FAUNA			
Bat Assemblage	Local Importance (Higher Value)	Bat surveys revealed low activity with the exception of mid-summer which saw an uptick in activity by Leisler's bats. The site is of local importance.	Yes
Wintering Bird Assemblage	Local Importance (Lower Value)	Surveys recorded limited use of the Site by wintering birds with only three Snipe flushed from central grassland. No significant numbers of waders or waterfowl were recorded. The assemblage is not considered a KER.	No
Breeding Bird Assemblage	Local Importance (Higher Value)	Surveys recorded a good variety of species, with confirmed breeding for multiple passerines including Amber- and Red-listed species. The assemblage is considered of local importance and constitutes a KER.	Yes
Badger	Local Importance (Higher Value)	No setts were found on Site or within 50m of the Site; however, there is evidence of badgers using the Site for foraging and commuting.	Yes
Otter	Local Importance (Lower Value)	No habitat to support this species and is highly unlikely to use the Site.	No
Pine Marten	Local Importance (Lower Value)	Very limited suitable habitat at the Site for these mammals. Unlikely to be regularly present.	No
Red Deer			
Fox	Local Importance (Lower Value)	Not legally protected in Ireland. This species is present at the Site.	No
Irish Hare	Local Importance (Higher Value)	Suitable habitats present for these small native mammals at the Site. Potentially present on occasion. The winter mammal survey found evidence of small mammals and suitable hibernation features.	Yes
Hedgehog			
Pygmy Shrew			
Irish Stoat			
Amphibians	Local Importance (Lower Value)	No suitable habitats recorded at the Site. Unlikely to be regularly present. Unlikely to support a breeding population.	No

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
Common Lizard	Local Importance (Higher Value)	Suitable habitats present at the Site. Presence cannot be ruled out.	Yes
Fish/Aquatic Species Assemblage	Local Importance (Higher Value)	The proposed drainage plans connect to the Rye Water which has protected fish and other aquatic species.	Yes
Marsh Fritillary	Local Importance (Lower Value)	No evidence of food plant or individuals of this species at the Site.	No

5.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

5.4.1 Site Location

The Proposed Development, is approx. 15.27 hectares (ha) at Railpark Lands, approximately 1.65km east of Maynooth town centre, south of the Dublin-Sligo railway line and the Royal canal. The site is situated west of the residential properties within the Rockfield development and northeast of the permitted residential development under Reg. Ref.: 21155 / ABP Ref: 312671-2(Phase 1) and Reg. Ref.: 21156 / ABP Ref: 312685-2(Phase 2), which is currently under construction. It is approximately 230 metres north of Maynooth Educate Together National School on Celbridge Road. The site is bordered by agricultural lands to the north and east.

5.4.2 Proposed Development Description

A ten-year planning permission is being sought for a proposed development comprising of 581 no. residential units, a neighbourhood centre and all associated development, on a site of approximately 15.27 hectares.

The residential component of the development consists of 185 no. apartment / duplex units and 396 no. houses to be provided as follows:

- 59 no. 2 bed two storey terraced houses
- 52 no. 3 bed two storey mid terrace houses
- 223 no. 3 bed two storey end terrace/semi-detached houses
- 58 no. 4 bed two storey semi-detached houses
- 4 no. 4 bed two storey detached house
- 185 no. duplex apartments / apartments (53 no. 1 beds, 151 no. 2 beds, 315 no. 3 beds, 62 no. 4 beds) in a series of 3 to part 6 storey duplex apartment / apartment blocks;
- All duplex apartments / apartment units to have balcony, terrace or private garden;

The proposed neighbourhood centre is arranged in a 5 storey block and a part 6 storey block with a new public plaza and includes a range of community and commercial uses, comprising a childcare facility (762 sq.m), café unit (74 sq.m), health centre (174 sq.m), pharmacy/shop (124 sq.m) and a convenience shop (166 sq.m). A total of 89 no. apartments units are proposed at upper levels of the neighbourhood centre.

A total of 888 no. car parking spaces are proposed, which includes 711 no. in-curtilage spaces for houses, 115 no. spaces for the duplex apartments / apartments, 14 no. for the commercial uses at the neighbourhood centre, 12 no. spaces for the staff of the childcare facility and 36 no. visitor spaces for residents. A total of 623 no. cycle spaces are proposed for residents, 42 no. spaces for the neighbourhood centre uses and 93 no. visitor cycle parking spaces.

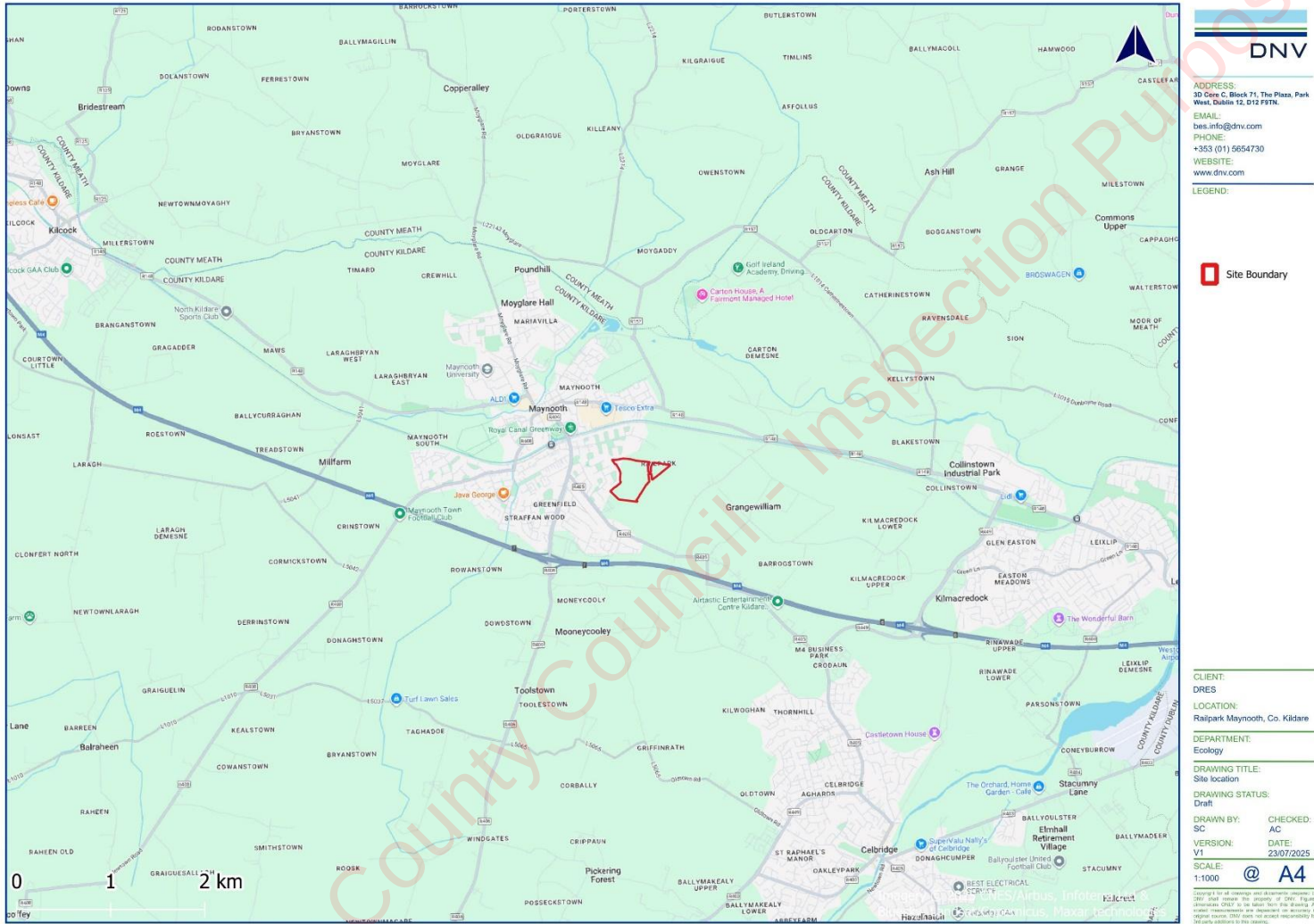
The proposal includes hard and soft landscaping, lighting, boundary treatments, communal open space, public open space including a Local Park and Pocket Parks, children's play areas and an ancillary play area for the childcare facility.

The proposed development provides for access from the permitted Maynooth Eastern Ring Road (MERR), including a new pedestrian/cyclist signalised crossing, associated internal roads, pedestrian and cycle paths and access points provided up to the application site boundary to provide for potential future connections to adjoining lands to the north and south, subject to agreement with the Planning Authority / adjacent landowner.

The development includes foul and surface water drainage, 6 no. ESB Substations, services and all associated and ancillary site works and development.

The proposed Site layout can be seen in 5.15 below

Figure 5.14: Site Location.



Chapter

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LEGEND

■	White
■	Black
■	Asian/Pacific Islander
■	American Indian/Alaska Native



5.4.2.1 Drainage And Water Supply

The following surface water and foul drainage information is extracted from the Engineering Report by Roughan & O'Donovan (ROD) (2025). It is proposed to provide new separate surface and foul drainage systems to serve the Proposed Development.

5.4.3 Surface Water

Drainage records obtained from Kildare County Council indicate that there are existing 900mm and 300mm diameter surface water gravity pipes that cross beneath the Development Site in a south to north direction. These pipes will require a localised diversion and all measures required by Kildare County Council to facilitate the diversion will be incorporated into the detailed design of the development.

A localised diversion of a 375mm diameter surface water outfall pipe from the Maynooth Eastern Ring Road Scheme will also be required.

The existing topography will allow for the Site to drain by gravity to the existing surface water pipe network located within the site and to the new surface water drainage infrastructure to be provided as part of the Maynooth Eastern Ring Road scheme.

It is proposed to construct a new surface water drainage system for the development to collect runoff and convey it to the outfall location. The Site will be served by a new network consisting of surface water pipes, surface water swales, permeable paving areas, tree pits and detention basins. The detention basins and lower sub-base levels of the permeable paving will provide for the attenuation storage requirements on site as a result of the residential development. Blue / Green roofs will also be provided on the roofs of the apartment blocks at the proposed neighbourhood centre.

5.4.3.1.1 Sustainable Drainage Systems

As part of the development, a number of different Sustainable Drainage Systems (SuDS) As part of the development, a Sustainable Drainage Systems (SuDS) management plan has been prepared by ROD (2025). The SuDS measures are proposed to minimise the impact on water quality and water quantity of the runoff and maximise the amenity and biodiversity opportunities within the site.

This is to ensure that the surface water run-off from the development does not exceed greenfield run-off in order to meet the requirements set by Kildare County Council policies on SuDS.

The proposed SuDS measures will include Source Control measures as part of a Management Train whereby the surface water is managed locally in small sub-catchments rather than being conveyed to and managed in large systems further down the catchment. The combination of the SuDS measures listed below will maximise the potential for surface water attenuation, reducing the impact on the existing surface water drainage network downstream. The proposed techniques will offer high level of treatment processes and nutrient removal of the runoff, particularly during the 'first flush'. Finally, the various measures will offer significant amenity and biodiversity opportunities compared to other drainage systems.

The following SuDS measures are to be incorporated as part of the development:

- Blue/green roof systems
- Vegetated detention basins with low flow channels.

- Vegetated swales
- Permeable paving
- Tree pits
- Flow control devices to limit discharge.

There will be regular maintenance and inspections of the operational SuDs measures, with remedial actions proposed should any issues arise with the functioning of the drainage systems.

5.4.3.1.2 Foul Drainage

There is an existing 300mm diameter foul drainage pipe that bisects the Site of the Proposed Development and also flows south to north. This sewer will require a localised diversion, and a diversion application will be lodged to Uisce Eireann. All measures required by Uisce Eireann to facilitate the diversion will be incorporated into the detailed design of the development.

It is also proposed to construct a new foul sewer network to serve the Proposed Development.

Foul discharge from the 272 units at the Site will discharge to the existing 300mm diameter foul sewer located within the Site and 309 units to the new foul infrastructure to be provided as part of the Maynooth Eastern Ring Road (MERR) Scheme.

A Confirmation of Feasibility Letter was received from Uisce Eireann in June 2024. Uisce Eireann have confirmed that a foul connection is feasible subject to upgrades on the wider receiving network.

These upgrades include:

- Upgrade works to increase the capacity of the wastewater network in Maynooth and accommodate the proposed connection for this development. This upgrade project (Maynooth Transfer Pipeline) is scheduled to be completed by Q2 2027 (this may be subject to change) and the proposed connection could be completed as soon as possibly practicable after this date.
- The east portion of the development proposes to connect to the MERR gravity network that then flows to a future strategic Wastewater Pumping Station (WWPS). Currently the scope of the MERR project is to deliver works within MERR only, therefore, the following infrastructure is required at Connection Application Stage:
 - Construction of new strategic WWPS and associated rising main to serve the entire area
 - Provision of 24-hour storage and telemetry link to the Maynooth Primary School
 - Completion of the MERR by third parties.
- Connection to the network from the east portion of the site draining to the strategic WWPS can be facilitated prior to completion of the upgraded project subject to construction and commissioning of the strategic WWPS and rising main being completed.
- Network upgrades may also be required based on connection uptake by other developments. These upgrades would consist of existing gravity sewer upsizing works. This requirement will be further determined at Connection Application stage.

Coordination with Uisce Éireann at connection application stage regarding the upgrades required to the wider foul network and timelines for delivery of Uisce Eireann schemes (new Uisce Eireann foul pumping station, foul rising main from Maynooth Eastern Ring Road to Maynooth and the Maynooth Transfer Maynooth Transfer Pipeline) is required to facilitate development of the wider Railpark Key Development Area lands. The measures required by Uisce Eireann to facilitate a foul connection will be incorporated into the detailed design of the development.

5.4.3.1.3 Landscape Plan

The proposed landscaping of the Site has been prepared by Áit Urbanism + Landscape (2025). The landscaping at the Site includes additional planting and augmentation of the boundary hedgerows, particularly in the northern and eastern boundary, and along the Maynooth Eastern Ring Road (MERR) road infrastructure.

There are three pocket parks proposed throughout the residential area, and several treelined streets and pathways that will traverse the Site. Additionally, there is a large park at the northern section of the Site with proposed buffer planting of hedges and trees.

The landscaping plans have also incorporated the SUDS designs and biodiversity enhancement features such as a dry swale, a rainbed, and several pond basin areas throughout the green spaces of the Proposed Development.

The landscape plan was overlaid onto QGIS software in order to map out lengths of hedgerow loss and replanting (Figure 5.17).

In total, the Proposed Development proposes the removal of approximately 108m of hedgerow. This will involve the removal of small, intermittent sections along the northern boundary to allow access to and from the Site. In addition to this loss of hedgerow from the Proposed Development, the MERR will require the loss of approximately 408m of hedgerow from the Proposed Development footprint. This involves the loss of a strip that traverses the southeastern boundary of the Site, and runs in a general northward direction.

By contrast, a conservative estimate of the Proposed Developments replanting schedule, estimates a replanting length of approximately 629m of hedgerow. This conservative estimate considers larger sections of hedgerow along key areas such as roads and open space and does not account for the additional smaller sections of hedgerow that will create boundary spaces between residential units. In addition, the Proposed Development proposes approximately 1,647m of treelines to be planted. This estimate accounts for streetscaped trees, and treelines proposed for planting around green open spaces. Lastly, there will be additional areas of woodlands planted throughout the site which also add to the replacement, but have not been calculated as they are not linear and provide more ecological value than a like for like basis.

Excluding smaller hedgerows, standalone trees, and pockets of woodland throughout the Site, and including the loss of hedgerow associated with the MERR, the Proposed Development results in a net gain of approximately 396m of hedgerow, and 1,647m of treelines.

Figure 5.16: Proposed loss and replanting schedule (Ait Landscape, 2025).

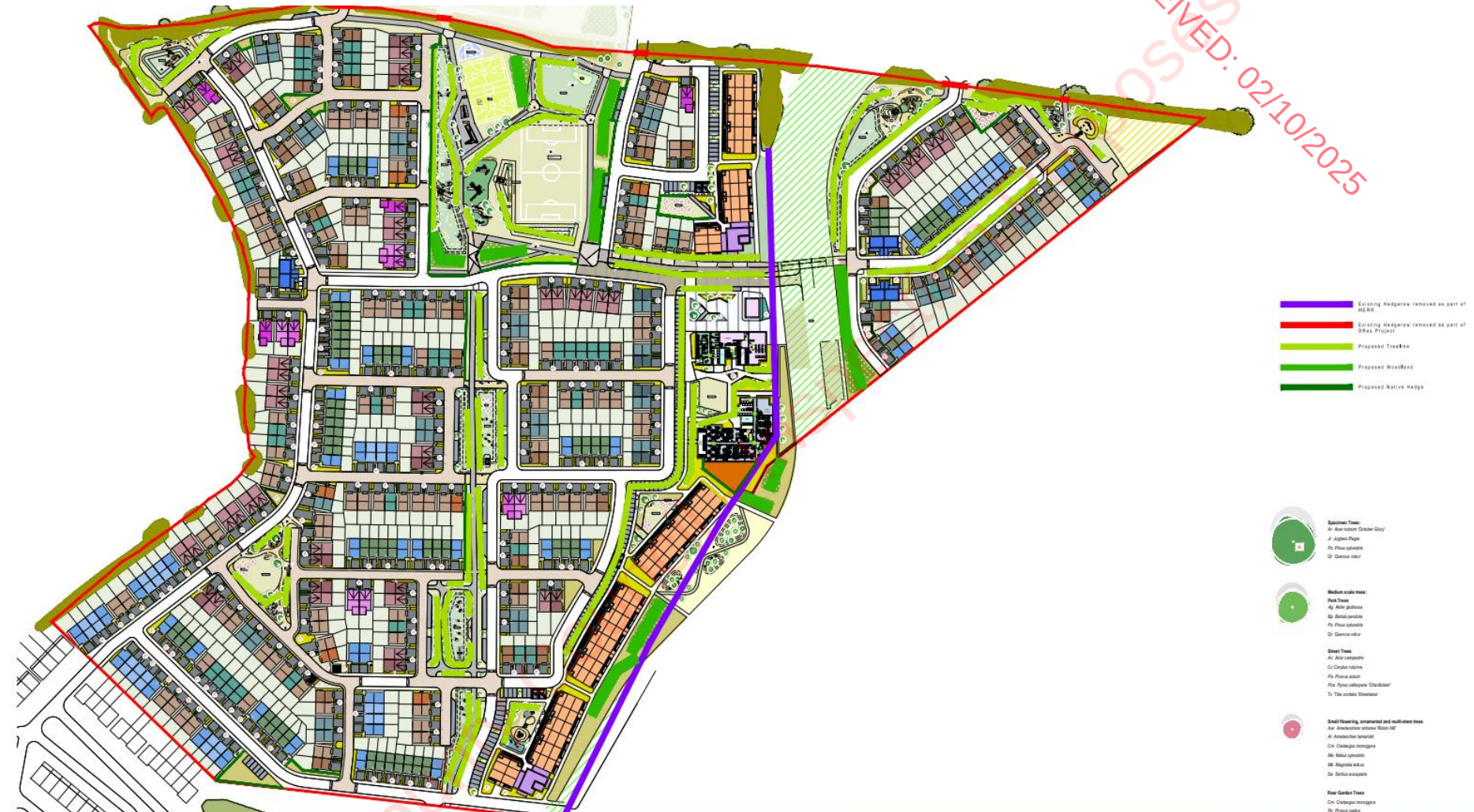
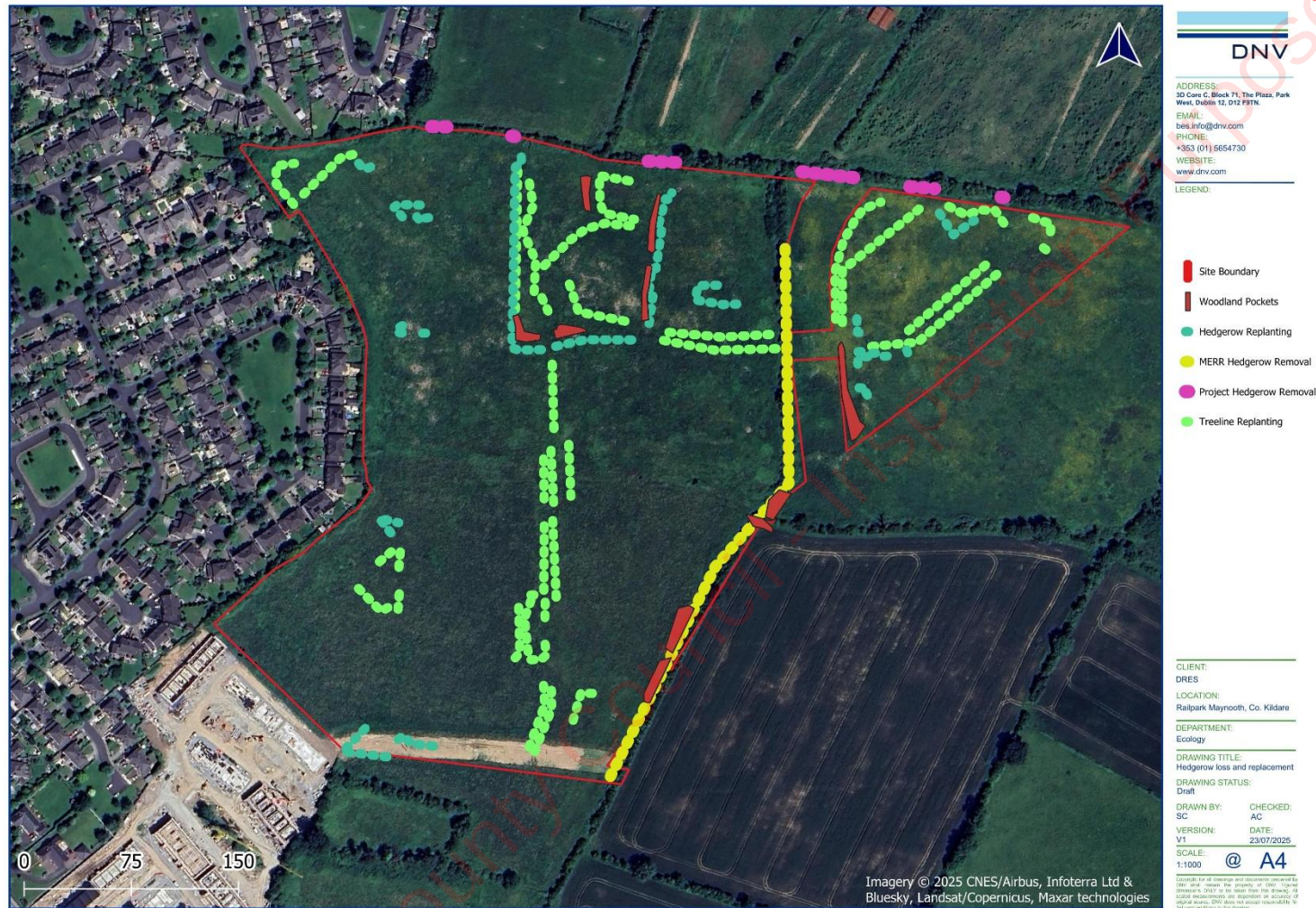


Figure 5.17: locations of proposed hedgerow replacement planting and removals.



5.4.3.1.4 Lighting Plan

The lighting plan has been prepared by Fallon Design Ltd Lighting. The following information has been extracted from Fallon Design M&E Engineering (2025) Public Lighting Report:

The lighting design will provide adequate illuminance for vehicular and pedestrian access using low energy LED lighting to minimise both energy consumption and lighting pollution to surrounding areas.

The lighting plan has included ecological impact in the design considerations including a inbuilt multistep dimming program which allows for night time hours to be dimmed by up to 25%, during the peak hours of nocturnal species foraging and commuting. The colour rendering of the selected light fitting is 2700k making the LED fittings a warmer light, helping to further minimize the impact on the local wildlife. Light spill will be controlled by a combination of directional lighting and luminaire optics design.

5.4.4 Description Of the Construction Phase

A draft Construction Environmental Management Plan (CEMP) has been prepared by ROD (2025) with details of the Construction Phase for the Site.

It is anticipated that the construction of the Proposed Development will last approximately 5 years in a series of 6 phases.

Except where otherwise agreed with Kildare County Council, working hours will be 07:00 - 19:00 Monday to Friday and 08:00 - 18:00 Saturday and closed on Sundays.

In advance of the commencement for construction the following will be implemented:

Pre-construction surveys.

The contractor will secure the Site.

Establishment of accommodation and welfare facilities for workers.

During construction the following will be implemented:

Dust, noise and vibrations control measures will be implemented to protect the surrounding residential areas and environment.

Acceptable excavation material will be reused, while unacceptable material will be transported off site to a licensed waste disposal facility.

Excavation and construction works will be carefully managed to ensure no contamination of watercourses as a result of the construction work.

Adherence to best practice in respect of protection of the watercourses during all stages of construction. Suitable surface water management. Any surface water encountered during this phase will be pumped to the foul sewerage network during periods of low flow in agreement with the relevant authorities or pumped to tankers and removed from site. In the event of an unexpected underground stream being encountered, this will be diverted in consultation with relevant agencies before excavation works continue.

Protection of existing buildings in the vicinity of the Site.

Focussed and controlled lighting during construction.

5.4.5 Description Of the Operational Phase

The Operational Phase of the Proposed Development will comprise of the occupancy of the completed residential development.

5.5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

5.5.1 Avoidance And Mitigation Embedded in Project Design

The Proposed Development includes several embedded design features that may act to avoid or mitigate negative impacts that would likely occur in the absence of these features. However, as opposed to typical mitigation measures, the implementation of these features is part of the overall design of the Proposed Development, and as such the impact assessments are performed with consideration of these features as integrated parts of the Proposed Development. All considered embedded design features that may act to mitigate negative impacts on local ecology and environment are listed in Table 5.27 below.

Table 5.27. Embedded design features and their potential to act to avoid or mitigate negative impacts on the local ecology and environment.

Embedded Design Feature	Avoidance / Mitigation Potential
SUDS: Permeable paving. Vegetated Attenuation basins with flow control device. Fuel interceptors.	The SUDS features included in the Project Design will ensure the surface water discharge from the Proposed Development is reduced to greenfield runoff rates. These features will be implemented as part of the surface water drainage design.
Landscape Design: Hedgerow and increased planting. SUDS pond basins	This will provide habitat for the biodiversity that currently exists on Site, and act to offset potential habitat loss due to vegetation removal.
Lighting Design: Public lighting will adhere to best practice guidance. Dimming program during peak hours of nocturnal species activity. Warm light of 2700k used. Light spill controlled through a combination of directional lighting and luminaire optics design. No floodlighting will be used.	The lighting design will reduce light spill into adjacent habitats to maintain dark corridors along the boundaries at the Site and reduce overall artificial lighting impacts to any nocturnal wildlife active within or adjacent to the Site during peak active times at night.

5.5.2 Construction Phase Impact Assessment

5.5.2.1 Impacts to Designated sites

The Rye Water Valley/Cartron pNHA (00138) is the only designated site aside from those suitably assessed under AA that contain a shared pathway to the Proposed Development via groundwater. The

Rye Water Valley/Cartron pNHA (00138) overlaps the Rye Water Valley/Cartron SAC (001398) and is designated for similar reasons. This site was fully assessed in the AA and NIS (DNV, 2025) accompanying this application, and as such, no further impacts are expected on either the pNHA or the SAC.

5.5.2.2 Impacts to Habitats and Flora

5.5.2.2.1 Hedgerows (WL1) and Tree lines (WL2)

The habitats listed as KERs within the site of the Proposed Development include Hedgerows (WL1) and Treelines (WL2).

The majority of hedgerows and treelines on Site will be retained as part of the Proposed Development. During the construction phase, retained hedgerows and treelines are vulnerable to damage by machinery. Roots, trunks and low branches may be impacted by machinery movement, ground compaction, or stockpiling of materials if protective measures are not implemented. The installation of services or excavation in proximity to root zones may further impair the health and structural integrity of these habitats, resulting in long-term degradation or loss of function.

In the absence of mitigation, this represents a **negative, permanent, and moderate** impact at a **local** scale.

The permanent removal of sections of small sections of hedgerow and treeline are required to facilitate the Proposed Development and associated infrastructure (including the MERR albeit under different planning application). This will result in a long-term reduction in habitat connectivity and structural diversity within the Site. In the absence of mitigation such as compensatory planting or habitat reinstatement, the Site's existing semi-natural hedgerow/treeline mosaic will be functionally diminished.

In the absence of mitigation, this represents a **negative, long-term, and moderate** impact at a **local** scale.

Additionally, the presence of invasive species on site could spread via machinery on Site, and could also impede on native species in these habitats and require removal.

In the absence of mitigation, this represents a **negative, long-term, and moderate** impact at a **local** scale.

5.5.2.3 Impacts on Fauna

5.5.2.3.1 Bats

Bats were recorded using the Site in relatively low numbers, with the exception of the increase in Leisler activity in June 2025. Activity was concentrated along hedgerows. During the Construction Phase, the most plausible impact to bats is the use of inappropriate security lighting at night, particularly if directed towards hedgerows. Artificial lighting can cause displacement from preferred foraging corridors and reduce habitat suitability, particularly for light-sensitive species such as pipistrelles. The impacts are lessened by the low numbers of bats present on Site and alternative equally suitable foraging habitat in the surrounding lands.

In the absence of mitigation, this represents a **negative, medium-term, and slight** impact at a **local** scale.

5.5.2.3.2 *Breeding Birds*

Breeding bird surveys confirmed that the Site supports a varied assemblage of common species, with nesting activity associated primarily with hedgerows, treelines, and open grassland areas.

During the Construction Phase, there is potential for disturbance to breeding birds due to clearance of vegetation, particularly if undertaken during the nesting season (March to August).

In the absence of mitigation, this represents a negative, short-term, and significant effect at a local scale.

Elevated noise levels and lighting associated with construction activity may also interfere with breeding behaviours by drowning out mating calls, or cause displacement from suitable nesting habitat by exposing nests.

In the absence of mitigation, this represents a negative, medium-term, and moderate impact at a local scale.

5.5.2.3.3 *Non-Volant Mammals (incl. badger)*

Mammals such as fox, badger and smaller species such as field mice and rats were recorded using the Site. No active badger setts were recorded within 50m of the Proposed Development, although badgers and fox were recorded foraging and commuting on Site. The Site may also support mammals not observed such as hedgehogs and Irish hare, given the presence of suitable grassland and hedgerow habitat and the precautionary principle is applied.

Construction activities may then lead to disturbance of these species through increased noise, lighting, and human presence.

In the absence of mitigation, this represents a negative, medium-term, and moderate impact at a local scale.

In the absence of mitigation, open trenches, netting, and exposed materials could pose a risk of entrapment or injury to mammals moving through the Site.

In the absence of mitigation, impacts on these KERs are likely to be **negative, medium term, and significant impact** at a **local** scale.

5.5.2.3.4 *Common Lizard*

While not recorded on Site, the precautionary principle is applied to assume at least small numbers of this species are present given the suitable habitat in the boundary features of the Site. There is a potential risk of injury or death to any lizards which may be present on the Site during vegetation clearance near the Site perimeter.

In the absence of mitigation, this represents a **negative, medium-term, and significant impact** at a local scale.

There is also the possibility that lizards could become entrapped in construction-related rubbish.

In the absence of mitigation, this represents a **negative, medium-term, and significant impact** at a local scale.

5.5.2.3.5 Fish and other aquatic species

There are no open watercourses within or adjacent to the Proposed Development Site. However, a connection exists between the Site and the Lyreen River via the surface water drainage network. During the Construction Phase, works will involve connection of the Site's SuDS infrastructure to this network, which may expose the drainage pipe temporarily.

If sediment-laden runoff or accidental chemical spills (e.g. fuels, oils, concrete washout) were to enter the exposed network during this period, it could be conveyed downstream into the Lyreen River, which supports protected aquatic species. As such, a pathway exists for indirect impacts via siltation or contamination during these limited works. Mitigation has been provided in the NIS to cover this potential impact pathway, and as such, no further impacts are expected once that mitigation is in place.

5.5.3 Operational Phase Impact Assessment

5.5.3.1 Impacts to Designated Sites

Any designated sites with identified pathways overlap with those assessed in the NIS. The NIS provides a full suite of mitigation to minimise these impacts and as such, no further potential impacts have been identified through this assessment.

5.5.3.2 Impacts to Habitats and Flora

During the Operational Phase, the permanent removal of sections of small sections of hedgerow and treeline are required to facilitate the Proposed Development and associated infrastructure (including the MERR albeit under different planning application). This will result in a long-term reduction in habitat connectivity and structural diversity within the Site. In the absence of mitigation such as compensatory planting or habitat reinstatement, the Site's existing semi-natural hedgerow/treeline mosaic will be functionally diminished.

Additionally, the presence of invasive species on site could spread and impede on native species in these habitats and require removal.

In the absence of mitigation, impacts on this KER are likely to be **negative, long-term, and moderate** at a **local scale**.

5.5.3.3 Impacts to Fauna

5.5.3.3.1 Bats

The Operational Phase of the Proposed Development will result in the permanent loss of 108m of internal hedgerow from the development itself, and an additional 125m from the MERR.

Bat surveys recorded very low overall activity across the Site, with the exception of increased use by Leisler's bat during a single summer survey. No significant activity by other bat species was recorded. As such, the hedgerows within the Site are not considered to represent key commuting corridors or core foraging habitat for a wider bat assemblage.

The loss of internal hedgerow habitat may marginally reduce foraging opportunities for Leisler's bat during the summer months. However, Leisler's bat is a species known to forage in open landscapes and is more tolerant of light exposure than other Irish bat species, usually emerging at sunset, while other species will typically emerge at dusk. Consequently, the impact of habitat loss and increased lighting from the operational development is not considered significant in this context.

In the absence of mitigation, impacts on this KER are likely to be **negative, long-term, and slight at a local scale**.

5.5.3.3.2 Breeding Birds

The Operational Phase of the Proposed Development will result in the permanent loss of breeding bird habitat due to the removal of hedgerows and grassland areas. These habitats currently provide nesting and foraging opportunities for a range of common passerine species. While the proposed landscaping will replace any lost hedgerows, it will not replace larger amounts of grassland habitats.

In the absence of mitigation, this is likely to represent a **negative, permanent, and significant impact at a local scale**.

5.5.3.3.3 Non-Volant Mammals (incl. badger)

During the Operational Phase, non-volant mammals such as badger, fox, and small mammal species (e.g. hedgehog, Irish hare) may experience minor displacement due to ongoing human activity, domestic pets, and loss of habitat features. The permanent removal of hedgerow and grassland cover reduces foraging opportunities and diminishes habitat connectivity across the landscape. However, these species are generally adaptable and are likely to persist within the surrounding landscape.

Furthermore, the majority of hedgerows on Site are being maintained, thereby largely maintaining connectivity and so this is not a significant impact. Badgers were recorded entering the Site on two occasions from the north, suggesting they are residing in lands to the north of the Site. The hedgerow through which they entered is being maintained, and as such, so is connectivity for commuting badger to their setts.

In the absence of mitigation, impacts on this KER as a result of displacement and a loss of commuting and foraging habitat are likely to be **negative, permanent, and slight at a local scale**.

5.5.3.3.4 Fish and Other Aquatic Species

During the Operational Phase, most surface water at the Proposed Development will infiltrate through the ground due to the use of SuDS features. Any excess is directed to the on-site drainage network and will be attenuated prior to discharge. Only minor volumes of untreated or bypassed surface water, if any, are likely to enter the receiving waters, such as the Lyreen River.

Additionally, no significant pollutants or contaminant sources are expected to be present on the Site during the Operational Phase that could lead to adverse impacts on water quality. As a result, the potential for impact on downstream aquatic species is considered **negligible**. In the absence of mitigation, impacts on this KER are likely to be **imperceptible**.

5.6 POTENTIAL CUMULATIVE IMPACTS

Cumulative Impacts can be defined as “impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project”. Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the accumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments and proposed developments was completed as part of this assessment. The following projects and plans were reviewed and considered for possible cumulative effects with the proposed development.

5.6.1 Relevant Plans and Policies

The following plans and policies were reviewed and considered for possible in-combination effects with the Proposed Development.

- Kildare County Development Plan 2023-2029
- Kildare County Biodiversity Action Plan 2021-2025

No specific projects or plans within the Kildare County Development Plan (CDP) 2023-2029 were identified that could act in-combination with the Proposed Development and cause adverse effects on the KERs identified in this report. Additionally, the CDP has directly addressed the protection, enhancement and incorporation of biodiversity through specific Policies and Objectives, as well as through its Development Management Standards (see Appendix 5.1 for details).

Therefore, on examination of the above it is considered that there are no means for the Proposed Development to act in-combination with any plans or projects that would cause any likely significant effects to nearby ecological sensitivities.

5.6.2 Existing Planning Permissions

There are several existing planning permissions on record in the area ranging from small-scale extensions and alterations to existing residential properties to some larger-scale developments.

The larger existing developments identified within 2km of the Site and along the same impact pathways (e.g., the Rye Water) as the Proposed Development are identified below in Table 5.28 and the potential for possible in-combination effects with the Proposed Development are assessed.

Table 5.28: Assessment of potential in-combination effects of the Proposed Development and other developments pending or granted permission in the last 5 years. Developments along the same impact pathways as Development. Location and distance given is relative to the Proposed Development.

Planning Reference	Planning Authority	Status	Location
21156	Kildare County Council	Granted in 2022	Railpark, Celbridge Road, Maynooth, Co. Kildare.
Development Description Development on this 1.99 ha site, approximately, at lands adjoining an existing residential development (Rockfield Court), Railpark, Celbridge Road, Maynooth, Co. Kildare. (This forms Phase of a residential masterplan for some 105 No. units in total on a wider c. 26 ha landholding under the Applicant's control). The proposed Phase II development will consist of: Construction of a residential development comprising 47 No. dwellings in total, consisting of 11 No. two-bedroom two storey houses and 10 No. three-bedroom three storey houses (21 No. houses in total) including rear private open spaces; 13 No. one bedroom apartments and 13 No. two-bedroom apartments (26 No. three storey duplex apartments in total), including balconies and a single storey crèche facility (c.261 sqm). The development will also include: new vehicular, cyclist and pedestrian access from Celbridge Road via currently undeveloped lands to the southwest (Phase 1); a new pedestrian footpath and bicycle track along the site frontage to Celbridge Road; the provision of future access connection points to adjacent lands to the southwest (Phase 1), north and the southeast; works to facilitate connections to existing services infrastructure in Rockfield Park to the west. The development will also comprise internal roads, footpaths, cycle tracks, public open spaces, children's play area and bicycle store areas; parking at surface level (95 No. total spaces for car parking and 33 No. bicycles spaces); drainage attenuation; all hard and soft landscaping; boundary treatments; removal of the existing hedgerows adjacent to Celbridge Road; changes in levels. all ancillary site development works and site services provision (including wayleave to the north-east) above and below ground. Potential for In-combination effects The application was granted without a full ecological impact assessment and so the local authority are satisfied no effects are likely considering the grant of permission.			
21155	Kildare County Council	Granted in 2024	Railpark, Celbridge Road, Maynooth
Development Description Development on this 18 ha site, approximately, at lands adjoining an existing residential development (Rockfield Park), Railpark, Celbridge Road, Maynooth, Co. Kildare. (This forms Phase 1 of a residential masterplan for some 105 no. units in total on a wider c. 26 ha landholding under the Applicant's control). The proposed Phase 1 development will consist of: Construction of a residential development comprising 58 no. dwellings in total, consisting of 18 no. two-bedroom two storey houses, 14 no. three-bedroom three storey houses and no. four-bedroom three storey houses (34 no. houses in total) including rear private open spaces; 1no. one-bedroom apartments and 1no. two-bedroom apartments (24 no. three storey duplex apartments in total), including balconies. The development will also include: new vehicular, cyclist and pedestrian access from Celbridge Road; a new pedestrian footpath and cycle track along the main site frontage to Celbridge Road; the provision of future access connection points to adjacent lands to the northeast (Phase 2), northwest and the southeast; works to facilitate connections to existing services infrastructure to the northeast via Phase lands. The development will also comprise internal roads, footpaths, cycle tracks, public open spaces, and bicycle store areas; parking at surface level (117 no. total spaces for car parking and 30 no. bicycles spaces); drainage attenuation; all hard and soft landscaping; boundary treatments; removal of the existing hedgerows adjacent to Celbridge Road, changes in levels. all ancillary site development works and site services provision (including wayleave to the north-east) above and below ground.			

Potential for In-combination effects			
The application was accompanied by an ecological assessment report with suitable mitigation and granted by the local authority. No in combination effects are therefore expected.			
211108	Kildare County Council	Granted in 2022	Parklands Grove, Railpark, Maynooth, Co. Kildare, W23 V5D
Development		Description	
The demolition of a habitable house and the construction of 40 No. houses and 36 No. apartments, 1 No. vehicular link with the approved Maynooth Eastern Ring Road and all associated and ancillary site development works. Details of the dwelling types are as follows: 24 No. "Type A", 3-Bed, 5 Storey Houses; 8 No. "Type B", 3-Bed Storey Houses; 1 No. "Type B1", 3-Bed, Storey House; 3 No. "Type C", 3-Bed, Storey Houses; No. "Type C1", 3-Bed, Storey Houses; No. "Type D", 3-Bed, Storey Houses; 20 No. "Type E", 2-Bed Apartments; 10 No. "Type F", 1-Bed Apartments; 1 No. "Type H", 1-Bed Apartment; No. "Type I", 1-Bed Apartments; 3 No. "Type J", 2-Bed Apartments. The application contains a statement setting out how the proposal will be consistent with objectives of the relevant development plan or local area plan. Revised by Significant Further Information which consists of the applicant has requested a 10-year permission.			
Potential for In-combination effects			
This site screened out any potential impacts to designated sites due to the extensive treatment of water prior to any discharges into the surface water network. Provided these are implemented as reported, no potential for in-combination effects to designated sites is predicted. Potential in-combination effects for protected species will be assessed on completion of the full suite of surveys for the Proposed Development, however due to the size and nature of the development, no in-combination effects are likely.			
2461139	Kildare County Council	Decision due date: 02/01/2024	Lands at Doctor's Lane, Maynooth, Co. Kildare
Development Description			
For the construction of 18 no. residential units comprising of 1 no. bed 3 storey terraced house, 10 no. bed with study 3 storey terraced houses, and 7 no. 3 bed 3 storey terraced houses, all provided with private gardens and balconies/terraces; bin and bicycle stores; car parking; new vehicular access on Doctor's Lane; landscaping; boundary treatments including works to existing boundary treatments; public lighting. all associated site infrastructure and engineering works necessary to facilitate the development including the decommissioning and removal of the existing soakaway system serving No. 8 Main Street and replacement with a new SUDS system. A Natura Impact Statement (NIS) has been prepared and is submitted to the planning authority with the application.			
Potential for In-combination effects			
This site is northwest of the Site of the Proposed Development, within the town of Maynooth. The surface water drainage for this Site also leads to Rye Water Valley/Carton SAC. A Natura Impact Statement (NIS) was submitted as part of this planning application, which included mitigation to prevent any contaminated surface water from entering the drainage network during both construction and operational phases of the development. Provided these are implemented as agreed, no in-combination effects are foreseen with regard to designated sites. Due to the distance of this site to the Proposed Development and the urban setting location of this site, no in-combination effects are predicted.			

2460774	Kildare County Council	Granted 1/10/2024	Lands adjoining and to the rear of St Mary's Church at Mill Street, Maynooth, Co. Kildare
Development Description The development will comprise amendments to the permitted development as per Large-scale Residential Development permission reference 23/494 which comprised 115no. apartments in 4no. separate blocks, provision of a creche and restaurant and provision of a basement to provide for car parking, bicycle storage and ancillary bin storage areas. The proposed development incorporates the following amendments: a. Reconfiguration of the basement layout with a reduction in car parking provision within the scheme from 74no. car parking spaces to 69no. car parking spaces. b. The redesign of apartment blocks A, B1, Band C within the scheme with each block incorporating the following proposals: •Block A: A four storey building comprising 10no. 2bed apartments. •Block B1: A five storey building comprising 18no. 2bed apartments. •Block B2: A six storey building comprising 25no. 1bed apartments and 35no. 2bed apartments. •Block C: A part 4 storey and part 5 storey building comprising 4no. 1bed apartments, 14no. 2bed apartments and 9no. 3bed apartments. Block C will be raised on stilts with a flood storage area provided at ground level beneath this block. c. The amendment of overall unit mix within the scheme which incorporated 27no. 1bed apartments, 77no. 2bed apartments and 11no. 3bed apartments under permission 23/494 (a total of 115 apartments) to provide an amended unit mix consisting of 29no. 1 bed apartments, 77no. 2bed apartments and 9no. 3bed apartments (total of 115 apartments). d. Associated amendments to building designs, facades, floor plans, layouts and internal configurations. e. Amendments to the creche and restaurant layouts in Block A. f. The omission of the office unit from Block A. g. Amendments to communal space areas and associated parking area/turning area at podium level within the courtyard to include for provision of play areas. h. The provision of associated site works and attenuation system along with a foul pump station and foul, storm and public water networks for connection to the existing foul, storm and public water networks. i. Provision of an ESB substation adjacent to Block A. j. Site excavation works to facilitate the proposed development to include levelling, excavation and general site preparation works. k. The provision of an amended basement layout which is to be positioned beneath blocks B1, B The access position, public open space, internal pedestrian walkway bridge, ground levels for flood storage requirements will remain as granted under permission reference 23/49 A Natural Impact Statement has been prepared and accompanies this application. Potential for In-combination effects This application was accompanied by an ecological impact assessment and granted. As such, no in-combination effects are predicted.			

The above-listed planning applications were all accompanied by the relevant environmental assessments that detail the potential impacts and the mitigation measures required to ensure the developments do not have a significant effect on local biodiversity, alone or in-combination with other developments. In addition, the Kildare County Council granted permission for the above planning applications following evaluations of the potential ecological and environmental impacts of each application.

It is not considered likely that the Proposed Development will act in-combination with other permitted developments in the vicinity and cause significant effects on any nearby or linked KERs.

5.7 'DO NOTHING' IMPACT

Under the do-nothing scenario, most of the habitats at the Site of the Proposed Development would continue to undergo succession. The hedgerows would continue to serve as biodiversity corridors, providing habitat connectivity, along with nesting/roosting and foraging habitat for birds and mammals. The grassland would also continue to provide foraging and commuting habitat for local wildlife and pollinators, with potential for scrub species along the hedgerow to further encroach into the grassland area. The invasive cherry laurel tree that is present may continue to colonise the hedge along the western boundary of the Site.

The construction of the MERR road is about to commence at the Site which will significantly impact the hedgerow along the eastern boundary, and the internal hedgerow at the Site. This hedgerow contained many of the small mammal burrows onsite.

5.8 AVOIDANCE, REMEDIAL & MITIGATION MEASURES

Some potential impacts have been mitigated through by the design of the Proposed Development. These are as follows:

In total, replacement planting at the Site results in a net increase of hedgerow and treeline length on the Site lands. Excluding smaller hedgerows between houses, standalone trees, and pockets of woodland, and while also including the loss of hedgerow associated with the MERR project, the Proposed Development still results in a net gain of approximately 396m of hedgerow, and 1,647m of treelines.

During the operational phase, surface and groundwater protection will be implemented as a result of SuDS measures designed into the Site layout.

The lighting plan has been reviewed by the project ecologist to minimise light spill onto boundary features. The lighting plan incorporates bat mitigation measures in line with ILP 2023.

The landscape plan has been reviewed by the project ecologist to ensure no non-native invasive species are planned as part of the design of the Site.

5.8.1 Construction Phase

BIO CONST 1: Standard Surface Water and Ground Water Protection Measures

Control of Fuel and Chemical Storage:

Fuel and oil use during the Construction Phase will be minimised and strictly controlled in accordance with procedures outlined in the Construction Environmental Management Plan (CEMP). Where small quantities of oils or chemicals are required, their use will be limited and storage avoided where possible.

- All tank, container, and drum storage areas will be rendered impervious to the materials stored therein. Bunds and storage areas will be designed in accordance with Environmental Protection Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' (EPA, 2004) and Enterprise Ireland Best Practice Guidelines (BPGCS005). As a minimum, bunded areas will be sized to hold either:
 - 110% of the capacity of the largest tank or drum within the bunded area; or

- 25% of the total volume of substances that could be stored within the bunded area.
- Any fuels retained on drip trays, mobile bunds, or similar containment systems will be emptied into a secure, bunded waste oil drum for appropriate off-site disposal.
- Refuelling of plant and machinery will be carried out only at a designated impermeable refuelling station located on-site. This station will be equipped with appropriate containment measures and spill response equipment. A dedicated Environmental and Emergency Spill Response Team will be appointed prior to the commencement of works.
- Where feasible, oil and lubricant changes and general maintenance will be conducted off-site. Only emergency breakdown maintenance will be permitted on-site. Drip trays and spill kits will be available at all times to ensure that any accidental spills are contained and removed promptly.
- All personnel working on-site will receive training in pollution incident control response. Emergency silt control and spillage response procedures, as outlined in the CEMP, will be made available on-site and will include contingency plans for managing silt and chemical spills during construction activities.

Control of Emissions to Surface Water Drainage

- All works will comply with relevant statutory legislation including the Local Government (water Pollution) Acts, 1977 and 1990. The CEMP has been developed with reference to best international practice, including but not limited to:
 - CIRIA C650: Environmental Good Practice on Site (2005)
 - CIRIA C697: The SUDS Manual (2007)
 - CIRIA C648: Control of Water Pollution from Linear Construction Projects (2006)
 - UK Pollution Prevention Guidelines (PPG), Environmental Agency (2004)
 - Inland Fisheries Ireland (2016): Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters
- Where required, designated impermeable cement washout areas will be provided. Run-off from working areas and exposed soils will be intercepted at regular intervals and directed to silt traps or settlement lagoons. Overflow from these systems will be directed to land rather than to drainage systems.
- Silty water generated on-site will be treated using temporary silt traps, settlement ponds, and interceptors until permanent drainage infrastructure is operational. Storm drain inlets that may receive runoff from the site will be protected throughout the Construction Phase.
- Weather forecasts will be reviewed regularly, and contingency plans will be prepared in advance of heavy rainfall events to minimise the risk of silt-laden runoff. Where possible, construction activities will be suspended during periods of high rainfall.
- Imported materials will be placed directly in their final location where feasible to avoid double handling. Where temporary storage is necessary, designated areas will be established and surrounded with silt fencing to prevent suspended solids entering surface water systems.
- Temporary hydrocarbon interceptor facilities will be installed and maintained where drainage waters may be discharged to nearby drains. All containment and treatment facilities will be subject to regular inspection and maintenance.
- If portaloos or containerised welfare units are used, all associated waste will be removed from site by a licensed waste disposal contractor. All site personnel will be trained in pollution incident control response.

Control of Emissions to Soil and Groundwater

The measures outline above will also serve to protect soil and groundwater resources. In addition, the following specific controls will be implemented:

- No direct untreated discharge of construction runoff to groundwater will be permitted under any circumstances.
- In the event of a pollution incident, construction works will be halted immediately until the source of contamination is identified and remedied.
- Groundwater may be encountered during excavation works. Where dewatering is required, water will be managed in accordance with CIRIA C750 best practice and any relevant regulatory consents.
- Any excavated soils that are potentially contaminated will be stockpiled in a manner that prevents leaching or runoff. These stockpiles will be located, constructed, and sheeted to ensure containment within the Site boundary.

BIO CONST 2: Tree/Hedgerow Protection

The protection of existing trees and hedgerows during the Construction Phase is essential to preserve ecological corridors, maintain landscape character, and safeguard biodiversity. The following mitigation measures will be implemented to ensure that retained vegetation is not damaged or degraded during site works:

- Prior to the commencement of any construction activities, protective fencing will be erected around all trees and hedgerows designated for retention. This fencing will be installed in accordance with BS 5837:2012 – Trees in relation to design, demolition and construction – Recommendations.
- The fencing will be positioned to fully enclose the Root Protection Area (RPA) of each tree, as defined in the arboricultural constraints plan. The fencing will be robust, clearly marked, and remain in place for the duration of construction works.
- A qualified arborist will inspect and sign off on the fencing installation prior to any site clearance or earthworks. No ground disturbance, stockpiling of materials, or movement of machinery will be permitted within the fenced protection zones.
- All site personnel will be briefed on the importance of tree and hedgerow protection during toolbox talks, and signage will be placed on fencing to reinforce exclusion protocols.
- Any works required in proximity to retained trees (e.g. utility installation or landscaping) will be carried out under the supervision of the appointed arborist and in accordance with best practice guidelines to avoid root damage or canopy stress.

BIO CONST 3: Construction Phase Lighting

As a precautionary measure, and to avoid adverse effects on bats, breeding birds, and other light-sensitive fauna recorded or potentially present on Site (e.g. common lizard), construction phase lighting will be strictly controlled. This is necessary due to the presence of ecological corridors (hedgerows and treelines). The following measures will apply throughout the construction phase:

- No overnight lighting will be directed towards boundary habitats, including hedgerows and treelines. These features will be maintained as unlit ecological corridors throughout the Construction Phase.
- Where overnight lighting is required for health and safety reasons, lighting will be designed and installed to minimise ecological impact, in consultation with the appointed Ecologist and in accordance with Bat Conservation Trust guidelines on artificial lighting and bats (Collins, 2023).
- There will be no light spill to boundary habitats. All luminaires will lack UV and IR elements to reduce ecological disturbance.

- LED luminaires will be used for their directional control, low intensity, good colour rendition, and dimming capability.
- A warm white spectrum (≤ 3000 Kelvin) will be used to reduce the blue light component of the LED spectrum.
- Luminaires will feature peak wavelengths >550 nm, avoiding the spectral range most disruptive to bats.
- Column heights will be minimised; the shortest allowable height will be selected to reduce light spill.
- Only luminaires with an upward light ratio of 0% and good optical control will be used.
- All luminaires will be mounted horizontally, with no upward tilt.
- Security lighting will be motion-activated and limited to short-duration timers (≤ 1 minute).
- As a final measure, accessories such as baffles, hoods, and louvres will be installed where necessary to contain light within target areas and prevent spill into adjacent habitats.
- Hedgerows and treelines will be maintained as unlit ecological corridors throughout construction.

BIO CONST 4: Reduction of Noise Related Impacts

Noise generated during the Construction Phase of the Proposed Development may cause temporary disturbance to faunal species including breeding birds, non-volant mammals, and potentially bats. To minimise disturbance, the following measures will be implemented:

- Selection of plant and equipment with low inherent potential for generating noise.
- Siting of plant and machinery as far away from sensitive ecological receptors as permitted by site constraints.
- Avoidance of unnecessary revving of engines and switching off plant items when not in use.
- Ensuring all plant machinery and vehicles are adequately maintained and serviced to reduce noise emissions.
- Proper balancing of rotating components within plant items to prevent excess vibration.
- Maintenance of internal haul routes to avoid abrupt gradients and surface defects that may contribute to noise.
- Minimisation of material drop heights or placement of resilient matting beneath drop zones to dampen impact noise.
- Where noise originates from resonating body panels or cover plates, appropriate dampening materials or stiffening ribs will be applied safely.
- Limiting high-noise activities to daytime working hours only to reduce disturbance during sensitive periods.
- Appointment of a dedicated site representative responsible for overseeing noise control implementation.
- Monitoring of typical noise levels during critical ecological periods and at key receptor locations to ensure compliance and responsiveness.

BIO CONST 5: Vegetation Clearance

The preferred period for vegetation clearance is within the months of September and October, to avoid the main breeding bird season, bat maternity and roosting season, and mammal hibernation periods. This timing reduces the risk of disturbance or injury to protected and sensitive fauna including nesting birds, hedgehogs, and common lizards.

Where this seasonal restriction cannot be observed, a pre-clearance check for active nests will be carried out immediately prior to any site clearance by a suitably qualified Ecological Clerk of Works

(ECoW). This check will be repeated as necessary to ensure compliance with relevant legislation, including the Wildlife (Amendment) Act, 2000. If an active nest is identified, the nest will be protected, and no works will take place in its vicinity until the young have successfully fledged.

All vegetation clearance will be carried out in sections, working in a consistent direction to encourage fauna to move away from the works area and toward retained boundary habitats. Logs and branches from felled vegetation will be reused on-site to create hibernacula for small mammals and reptiles.

A phased cutting approach will be implemented under the supervision of a suitably qualified ECoW to allow wildlife to vacate suitable habitat prior to its removal:

- Phase 1 – Cut vegetation to 150-200mm and remove arisings.
- Phase 2 – After a minimum of one hour, hand-search the cut areas (conducted by the ECoW), remove any sheltering habitat (logs or debris), then cut vegetation to ground level and remove arisings.
- Phase 3 – Conduct a soil scrape to remove root mats and surface refugia.

Where suitable refugia or day-nesting habitats must be removed, this will occur outside of peak vulnerability periods for hedgehogs (i.e. outside June-July), and always under ECoW supervision.

Tree Felling Precautions for Bats

Where tree felling is required, a soft felling approach will be adopted as a precautionary measure due to the highly mobile nature of bats, which may roost opportunistically in different trees on different nights. Soft felling will be conducted under the supervision of a suitably qualified and experienced ecologist and will include the following procedures:

- Tree removal shall be carried out in sections, starting with smaller branches and limbs to allow any bats present the opportunity to disperse.
- Where tree cavities, cracks, or loose bark are present, these sections will be lowered carefully to the ground and left undisturbed for 24-48 hours in a sheltered location to allow any undetected bats to vacate voluntarily.
- Works will avoid overnight felling, particularly during periods when bats are most vulnerable (e.g. maternity season, hibernation period), unless otherwise directed by a bat ecologist.
- All felling will take place during suitable weather conditions (i.e. not during very cold, wet, or windy periods) to minimise stress to any potential bats and maximise the chance of bat activity if present.

This approach ensures compliance with the Wildlife Acts 1976 as amended and guidance from the National Parks and Wildlife Service (NPWS, 2023). Any evidence of bats or roosts found during the works will trigger an immediate halt and consultation with NPWS.

BIO CONST 6: Avoidance of Accidental Trapping of Fauna

To prevent accidental trapping or injury of fauna such as hedgehogs, badgers, foxes, small mammals, and reptiles during the Construction Phase, the following measures will be implemented:

- All excavations (e.g. trenches, footings, service runs) will be covered overnight with boards or sheeting to prevent fauna falling in.
- Where covering is not feasible, ramped escape routes (e.g. soil mounds, wooden planks) with a slope of no greater than 45° will be installed at regular intervals.
- Any open excavations will be checked each morning by the site contractor for trapped fauna before construction resumes.

- Temporary fencing will be designed to avoid entrapment, e.g. using open mesh that allows small mammals to pass or including gaps at the base.
- Construction materials such as pipes, mesh, or sheeting stored on Site will be elevated off the ground or capped at both ends to prevent entry by fauna.
- Netting (e.g. erosion control, sediment fencing, or turf netting) used on Site will be biodegradable, wildlife-friendly mesh or avoided entirely where unnecessary.
- Toolbox talks will be provided to all site staff to raise awareness of protected species, reporting protocols, and responsibilities in the event fauna are encountered.

5.8.2 Operational Phase

BIO OPERA 1: Invasive Species Management

A small number of Cherry Laurel stands were identified within the Site. This species is non-native and invasive, and its removal is necessary to prevent further spread and to support the integrity of native habitats. The following control method will be applied:

- All Cherry Laurel shrubs will be cut at the base using hand tools or mechanical equipment, ensuring minimal soil disturbance.
- Stumps will be treated immediately after cutting with an appropriate glyphosate-based herbicide using the cut-stump method.
- Herbicide application will be carried out by a licensed and suitably qualified professional in accordance with the manufacturer's instructions and all relevant legislation.
- Treated areas will be clearly marked and monitored for regrowth. Any regrowth will be re-treated as necessary during follow-up visits.
- All arisings will be removed from Site and disposed of responsibly to prevent vegetative propagation.

BIO OPERA 2: Bat and Mammal Sensitive Lighting – Maintenance of Dark Commuting Corridors

Perimeter hedgerows and habitats that may be used as commuting corridors by both bats and non-volant mammals such as badgers, fox etc., should be kept dark as much as possible to prevent disturbance. In accordance with the best practise bat-friendly lighting guidelines (ILP, 2023), the below measures will be incorporated as part of the Lighting Design of the Proposed Development. These measures will also assist in retaining dark corridors for species other than bats:

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.
- Any luminaires around the perimeter of the Site will be fitted with shields to ensure no light spill onto hedgerows and treelines.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white light source (3000 Kelvin or lower) should be adopted to reduce blue light component.
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.

- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered.
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or minute timer is likely to be appropriate.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and 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.

BIO OPERA 3: Bird Boxes

A variety of 15 no. bird nests boxes will be installed across the Site. Boxes will be of varied shape and size to support different nesting preferences. The locations will be decided by an ecologist. They should be firmly fixed to trees at heights of at least 2m and should be placed as near as possible to hedgerows and other sheltered vegetation. There should be no ledges or suitable perching places for predators such as cats beneath the nest boxes.

BIO OPERA 4: Pre Commencement Badger Survey

A potential badger sett was recorded within 50 m of the Site footprint, and although currently disused, there remains a possibility it could become active again. Based on its characteristics, including a single entrance, it is likely to be an outlier sett and therefore unlikely to support breeding badgers. Nonetheless, as a precautionary measure, a pre-commencement badger survey should be undertaken no less than three months prior to the start of construction. The survey should cover the entire Site footprint and surrounding lands to within 50m where possible. This will ensure all potential setts are recorded and allow sufficient time for appropriate mitigation to be implemented if required, and if badgers are found to have reoccupied the sett or established a new sett within the footprint of the Proposed Development.

5.8.3 Biodiversity Enhancement: Biodiversity Management Plan

The following Biodiversity Management Plan (BMP) sets out a series of long-term, site-specific measures to enhance and support biodiversity at the Proposed Development. The plan is informed by the baseline ecological surveys and tailored to the future residential nature of the Site, which includes open space provision for amenity and play. Where relevant, the measures below also contribute toward mitigation and enhancement.

BIO ENH 1: Hedgerow Enhancement and Gap Planting

Retained hedgerows will be reinforced using native, locally appropriate species to improve structural integrity, floristic diversity, and ecological function. Where feasible, seed from native species currently present on-site (e.g. *Crataegus monogyna*, *Prunus spinosa*, *Ilex aquifolium*) will be collected at the appropriate time of year and redistributed within retained hedgerows to support natural regeneration. Supplementary planting will use nursery stock of Irish provenance and genetic origin.

BIO ENH 2: Meadow Margins and Pollinator Strips

Boundary grassland edges and selected green spaces not designated for recreational use will be managed under a reduced mowing regime. These areas will be sown with a native wildflower and grass mix suited to the local soil conditions (neutral to base-rich), sourced from suppliers such as Wildflowers.ie. The aim is to provide long-term pollinator habitat while maintaining safe, usable amenity zones elsewhere on the Site.

BIO ENH 3: Invasive Species Monitoring and Control

Although only a single cherry laurel was recorded during site surveys, post-construction monitoring will be implemented to detect any regrowth or spread of this or other invasive species. Control will follow best-practice techniques appropriate to the species encountered and will form part of general landscape maintenance protocols.

BIO ENH 4: Ecologically-Informed SuDS Planting

All SuDS features—including attenuation areas and swales—will be planted with a mix of native wetland plants suited to seasonal inundation. Suitable species may include *Iris pseudacorus*, *Carex otrubae*, *Lythrum salicaria*, and *Caltha palustris*, depending on water retention patterns. All seed and plug planting will be sourced from native Irish suppliers only.

BIO ENH 5: Long-Term Habitat Management

A tailored management schedule will apply to all biodiversity-relevant features post-construction. Hedgerows not required to be cut for traffic visibility or safety will be managed on a three-year rotational basis to preserve flowering and fruiting potential. Meadow margins will be cut once annually, typically in late summer, with arisings removed to maintain low soil fertility. No cutting or heavy maintenance will be carried out during the bird nesting season (March-August inclusive) unless specifically required for safety or access.

BIO ENH 6: Community Engagement and Signage

Low-key interpretive signage will be installed near key biodiversity features (e.g. retained hedgerows, meadow areas, SuDS zones). Signage will highlight the ecological value of the Site and its role in supporting native species. It will also reference findings of the baseline bird surveys and include a list of species historically recorded, tailored for public interest and awareness.

5.9 RESIDUAL EFFECTS OF THE PROPOSED DEVELOPMENT

Predicted (Residual) effects are defined as '*effects that are predicted to remain after all assessments and mitigation measures*'. They are the remaining 'environmental costs' of a project and are the final or intended effects of a development after mitigation measures have been applied to avoid or reduce adverse impacts. Predicted impacts from the proposed development were considered as part of this environmental assessment. Table 5.29 below provides a summary of the impact assessment for the identified KERs and details the nature of the impacts identified, mitigation proposed and the classification of any residual impacts.

All mitigation measures detailed in this Chapter will be implemented in full and will remain effective throughout the lifetime of the facility. Therefore, no significant negative residual impacts on the local ecology or on any designated nature conservation sites will result from the Proposed Development.

Table 5.29: Summary of potential impacts on KER(s), mitigation measures/mitigating factors and residual impacts.

KER	Potential Impact	Quality	Magnitude/Extent	Duration	Significance	Mitigation Implemented	Residual Impacts
Habitats: Hedgerows (WL1) & Treelines (WL2)	Machinery damage to hedgerows/tree lines	Negative	Local	Permanent	Moderate	Mitigation 2: Tree/Hedgerow Protection	None
	Hedgerow removal	Negative	Local	Long-term	Moderate	Mitigation by Design: Landscape plan to replant hedgerows	None
	Invasive species spread	Negative	Local	Long-term	Moderate	Mitigation 7: Invasive Species Management;	None
Bats	Light disturbance	Negative	Local	Medium-term	Slight	Mitigation 3: Construction Phase Lighting Management Mitigation 8: Bat and mammal lighting plan	None
	Hedgerow loss	Negative	Local	Long-term	Slight	Mitigation by Design: Hedgerow replacement	Imperceptible

Breeding Birds	Vegetation clearance	Negative	Local	Short-term	Significant	Mitigation 5: Vegetation Clearance.	None
	Light and noise disturbance	Negative	Local	Medium-term	Moderate	Mitigation 3: Construction Phase Lighting Management; Mitigation 4: Construction Phase Noise Management;	None
	Habitat Loss	Negative	Local	Permanent	Significant	Mitigation 9: Bird boxes	Imperceptible
Non-Volant Mammals (incl. badgers)	Light & noise disturbance	Negative	Local	Medium-term	Moderate	Mitigation 3: Construction Phase Lighting Management; Mitigation 4: Construction Phase Noise Management;	None
	Entrapment	Negative	Local	Medium-term	Significant	Mitigation 6: Avoidance of accidental trapping of fauna Mitigation 10: Pre	None

						Commencement Survey	
	Displacement & habitat loss	Negative	Local	Permanent	Slight	Mitigation by Design: Landscaping includes replacement planting to offset some habitat loss and retaining commuting corridors Mitigation 8: Bat and mammal lighting plan (to retain dark corridors) Mitigation 10: Pre Commencement Survey	Negative, permanent, slight
Common Lizard	Vegetation clearance	Negative	Local	Medium-term	Slight	Mitigation 5: Vegetation Clearance;	Imperceptible

	Entrapment	Negative	Local	Medium-term	Significant	Mitigation 6: Avoidance of accidental trapping of fauna	None
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5.10 MONITORING

Table 5.30 below provides a summary of the required monitoring and pre-works inspections during the Construction Phase, as well as any surveys that should be completed during the Operational Phase. The monitoring, inspections and surveys will ensure that the identified mitigation measures are implemented and maintained efficiently and have the desired effect of protecting the local ecology from adverse impacts.

Table 5.30: Monitoring and pre-works inspections for the identified mitigation measures during the Construction Phase of the Proposed Development. To be carried out by a suitably qualified ecologist or ecological clerk of works or by the development contractor.

Measure	Monitoring
Mitigation 1: Standard Surface Water and Ground Water Protection Measures	Contractor / Ecologist
Mitigation 2: Tree and Hedgerow Protection	Contractor / Arborist
Mitigation 3: Construction Phase Lighting Management	Contractor
Mitigation 4: Construction Phase Noise Management	Contractor
Mitigation 5: Vegetation Clearance	Ecologist
Mitigation 6: Avoidance of Accidental Trapping of Fauna	Contractor / Ecologist
Mitigation 7: Invasive Species Management	Contractor / Ecologist
Mitigation 8: Bat-Sensitive Lighting and Mammal Lighting Plan (Operational Phase)	Contractor / Ecologist
BMP 1: Bat Boxes	Ecologist
BMP 2: Bird Nest Boxes	Ecologist
BMP 3: Grassland & Hedgerow Management	Contractor / Ecologist
BMP 4: Pollinator-Friendly SuDS Planting	Contractor / Ecologist
BMP 5: Public Signage	Contractor / Ecologist

5.11 INTERACTIONS

There are interactions between this biodiversity chapter and the hydrology, and hydrogeology chapters due to the assessment impacts to designated sites and aquatic environments via hydrological and hydrogeological pathways. The groundwater and surface water impacts discussed in these chapters are considered applicable to this chapter with regard to S-P-R pathways. Any mitigation or considerations of the ground and surface water impacts contained within those chapters are relevant to the biodiversity assessment with regard to the aquatic environment.

5.12 DIFFICULTIES ENCOUNTERED IN COMPILING

Every effort has been made to provide a comprehensive description of the Site; however, the following specific limitations apply to this assessment:

An extensive search of available datasets for records of rare and protected species within proximity of the Proposed Development has been undertaken as part of this assessment. However, the records from these datasets do not constitute a complete species list. The absence of species from these datasets does not necessarily confirm an absence of species in the area.

There were some access limitations during the surveys, due to the private residential areas to the west of the Site, there was active heavy machinery and inaccessible fencing limiting access to the crop field to the east of the Site. These surrounding areas were not included in the survey area cover. However, the urban areas were unlikely to support protected species such as badger. Similarly, the field to the east was highly unlikely to contain badger due to its regular disturbance by machinery to sow crops, and although a 50m search could not be implemented, the hedgerow along its boundary was assessed. This is therefore not a significant limitation.

Bat data from the 2025 activity transects do not include correct time and dates due to a formatting issue on the equipment. However, the surveys were conducted within a known 1.5 hour window, and GPS locations of all species records are available and so this is not a significant limitation.

5.12.1 Conclusion

Ecological surveys undertaken for the Proposed Development have identified a number of KERs of local and national importance, including designated sites connected via groundwater pathways, boundary hedgerows and treelines, bats, breeding birds, and terrestrial fauna such as badger, fox, and other small mammals. The Site itself is predominantly composed of improved grassland and species-poor grassland.

The primary ecological risks identified relate to habitat loss, lighting disturbance, and potential surface water and groundwater contamination during construction. If unmitigated, these could result in negative impacts to habitats and species of conservation concern, including downstream European and nationally designated sites. However, subject to the implementation of the mitigation measures outlined in this Chapter, and the AA and NIS accompanying this application under separate cover, residual impacts are predicted to be imperceptible or slight.

The integration of a biodiversity management plan will further support the conservation value of the Site and contribute to local ecological networks. With these measures in place, the Proposed Development is not expected to give rise to significant long-term ecological effects.

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APPENDIX 5.1

LEGISLATION AND POLICY

Appendix 5.1 - Legislation and Policy

International Legislation

EU Birds Directive

The Birds Directive constitutes a level of general protection for all wild birds throughout the European Union. Annex I of the Birds Directive includes a total of 194 bird species that are considered rare, vulnerable to habitat changes or in danger of extinction within the European Union. Article 4 establishes that there should be a sustainable management of hunting of listed species, and that any large scale non-selective killing of birds must be outlawed. The Directive requires the designation of Special Protection Areas (SPAs) for: listed and rare species, regularly occurring migratory species and for wetlands which attract large numbers of birds. There are 25 Annex I species that regularly occur in Ireland.

EU Habitats Directive

The Habitats Directive aims to protect some 220 habitats and approx. 1000 species through-out Europe. The habitats and species are listed in the Directives annexes where Annex I covers habitats and Annex II, IV and V cover species. There are 59 Annex I habitats in Ireland and 33 Annex IV species which require strict protection wherever they occur. The Directive requires the designation of Special Areas of Conservation (SACs) for areas of habitat deemed to be of European interest. The SACs together with the SPAs from the Birds Directive form a network of protected sites called Natura 2000.

Bern and Bonn Convention

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982) was enacted to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was introduced in order to give protection to migratory species across borders in Europe.

Ramsar Convention

The Ramsar Convention on Wetlands is an intergovernmental treaty signed in Ramsar, Iran, in 1971. The treaty is a commitment for national action and international cooperation for the conservation of wetlands and their resources. In Ireland there are currently 45 Ramsar sites which cover a total area of 66,994ha.

Water Framework Directive

The EU Water Framework Directive (WFD) 2000/60/EC is an important piece of environmental legislation which aims to protect and improve water quality. It applies to rivers, lakes, groundwater, estuaries, and coastal waters. The Water Framework Directive was agreed by all individual EU member states in 2000, and its first cycle ran from 2009 - 2015. The Directive runs in 6-year cycles; the second cycle ran from 2016 - 2021, and the current (third) cycle runs from 2022-2027. The aim of the WFD is to prevent any deterioration in the existing status of water quality, including the protection of good and high-water quality status where it exists. The WFD requires member states to manage their water resources on an

integrated basis to achieve at least 'good' ecological status, through River Basin Management Plans (RBMP), by 2027.

National Legislation

Wildlife Act 1976 and amendments

The Wildlife Act 1976 was enacted to provide protection to birds, animals, and plants in Ireland and to control activities which may have an adverse impact on the conservation of wildlife. With regard to the listed species, it is an offence to disturb, injure or damage their breeding or resting place wherever these occur without an appropriate licence from the National Parks and Wildlife Service (NPWS). This list includes all wild birds along with their nests and eggs. Intentional destruction of an active nest from the building stage up until the chicks have fledged is an offence. This includes the cutting of hedgerows from the 1st of March to the 31st of August. The act also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs). The Wildlife Amendment Act 2000 widened the scope of the Act to include most species, including the majority of fish and aquatic invertebrate species which were excluded from the 1976 Act.

The current list of plant species protected by Section 21 of the Wildlife Act, 1976 (and amendments) is set out in the Flora (Protection) Order, 2015 (S.I. No. 356/2015). The Flora (Protection) Order affords protection to several species of plant in Ireland, including 68 vascular plants, 40 mosses, 25 liverworts, 1 stonewort and 1 lichen. This Act makes it illegal for anyone to uproot, cut or damage any of the listed plant species and it also forbids anyone from altering, interfering, or damaging their habitats. This protection is not confined to within designated conservation sites and applies wherever the plants are found.

EU Habitats Directive 1992 and EC (Birds and Natural Habitats) Regulations 2011

The EU Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive 1992) provides protection to particular species and habitats throughout Europe. The Habitats Directive has been transposed into Irish law through the EC (Birds and Natural Habitats) Regulations 2011. Annex IV of the EU Habitats Directive provides protection to a number of listed species, wherever they occur. Under Regulation 23 of the Habitats Directive, any person who, in regard to the listed species, "Deliberately captures or kills any specimen of these species in the wild, deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration, deliberately takes or destroys eggs from the wild or damages or destroys a breeding site or resting place of such an animal shall be guilty of an offence."

Invasive Species Legislation

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011* (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Failure to comply with the legal requirements set down in this legislation can result in either civil or criminal prosecution, or both, with very severe penalties accruing. Convicted parties under the Act can be fined up to €500,000.00, jailed for up to 3 years, or both.

Extracts from the relevant sections of the regulations are reproduced below.

“49(2) Save in accordance with a licence granted [by the Department of Arts, Heritage and the Gaeltacht], any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in anyplace [a restricted non-native plant], shall be guilty of an offence.

49(3) ... it shall be a defence to a charge of committing an offence under paragraph (1) or (2) to prove that the accused took all reasonable steps and exercised all due diligence to avoid committing the offence.

50(1) Save in accordance with a licence, a person shall be guilty of an offence if he or she [...] offers or exposes for sale, transportation, distribution, introduction, or release—

- (a) an animal or plant listed in Part 1 or Part of the Third Schedule,
- (b) anything from which an animal or plant referred to in subparagraph (a) can be reproduced or propagated, or
- (c) a vector material listed in the Third Schedule, in any place in the State specified in the third column of the Third Schedule in relation to such an animal, plant or vector material.”

National Biodiversity Action Plan 2023-2030

The National Biodiversity Plan (NBAP) 2023-2030, the fourth such plan for Ireland, captures the objectives, targets and actions for biodiversity that will be undertaken by a wide range of government, civil society and private sectors. Actions required to achieve the strategic objectives as well as the lead and key partners responsible for their implementation are set out for each of the objectives and their outcomes (Table A5.1).

Table A5.1: Objectives and Outcomes of the National Biodiversity Action Plan 2023-2030.

Objective	Outcome
1: Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity	1A. Governance structures and reporting outputs have improved.
	1B. Organisational capacity and resources for biodiversity have increased at all levels of Government.
	1C: Responsibility for biodiversity is shared across the whole of government.
	1D: Biodiversity initiatives are supported across the whole of society.
	1E. The legislative framework for biodiversity conservation is robust, clear and enforceable.
2: Meet Urgent Conservation and Restoration Needs	2A: The protection of existing designated areas and protected species is strengthened and conservation and restoration within the existing protected area network are enhanced.
	2B: Biodiversity and ecosystem services in the wider countryside are conserved and restored - agriculture & forestry.
	2C: Biodiversity and ecosystem services in the wider countryside are conserved and restored - peatlands & climate action.
	2D: Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored.
	2E: Genetic diversity of wild and domesticated species is safeguarded.

	2F: A National Restoration Plan is in place to contribute to the ambition of the EU Biodiversity Strategy 2030 and global restoration targets.
	2H: Invasive alien species (IAS) are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment.
Secure Nature's Contribution to People	3A: Ireland's natural heritage and biocultural diversity is recognised, valued, enhanced and promoted in policy and practice.
	3B: The role of biodiversity in supporting wellbeing, livelihoods, enterprise and employment is recognised and enhanced.
	3C: Planning and development will facilitate and secure biodiversity's contributions to people.
Enhance the Evidence Base for Action on Biodiversity	4A: Research funding bodies will have an improved understanding of the research and skills required to address biodiversity research gaps.
	4B: Data relevant to biodiversity and ecosystems, including conservation needs, is widely accessible and standardised.
	4C: Long-term monitoring programmes are in place to guide conservation and restoration goals.
	4D: Ireland has prepared national assessments of ecosystem services.
Strengthen Ireland's Contribution to International Biodiversity Initiatives	5A: Science, policy and action on biodiversity conservation and restoration is effectively coordinated in an all-island approach.
	5B: Ireland takes action internationally to cooperate with other countries, sectors, disciplines and communities to address the biodiversity crisis.
	5C: Ireland enhances its contributions to the international biodiversity data drive.

Kildare County Development Plan 2023-2029

The policies and objectives relevant to the Proposed Development are listed below:

Table A5.2: Relevant policies and objectives of the Kildare County Development Plan.

Aim / Target	Policies and Objectives
Chapter 12: Biodiversity & Green Infrastructure	
Protection and enhancement of biodiversity and landscape, including green infrastructure.	BI P1, BI O2, BI O3, BI O70, BI O72, BI O75
Policies and objectives promoting Biodiversity Net Gain.	BI O5, BI O7,
The requirement for an EclA.	BI O1, BI O12, BI O38, BI O51
Protection of European sites.	BI P2, BI O6, BI O9, BI O10,
Protection of nationally designated sites for nature conservation.	BI P3, BI O6, BI O14,
Protected species and habitats outside of designated sites.	BI P4, BI O15, BI O16, BI O17, BI O18, BI O19, BI O21, BI O22

Protection and retention of trees, woodlands and hedgerows.	BI P6, BI O26, BI O27, BI O28, BI O29, BI O30, BI O31, BI O32, BI O34, BI O35
Protection of watercourses, lakes, and wetland habitats, including riparian zones.	BI P7, BI O37, BI O41, BI O44, BI O45, BI O46, BI P8, BI O56, BI P15
Require consultation with relevant environmental agencies and statutory bodies (e.g., NPWS, IFI, etc.)	BI O39, BI O43, BI O54, BI O60
Prevent spread of invasive species	BI P9, BI O58,

In addition, Chapter 15 - Development Management Standards of the KCDP 2023-2029 contains detailed guidance on Soft Landscaping, including tables 11 a-c which list tree and hedge species approved by the Council, and provides a planting guide of suitable habitats for each (i.e., suited as street trees, hedging, open space, wet habitats, etc.)

Maynooth and Environs Joint Local Area Plan 2025-2031

The Maynooth and Environs Joint Local Area Plan sets out an overall strategy for the planning and sustainable development of Maynooth and Environs.

This includes the objectives GBIO - GBIO1.5 to protect and enhance local biodiversity within the town. These are:

- **Objective GBIO :** Protect, conserve and manage the Rye Water Valley / Carton SAC by ensuring that screening for Appropriate Assessment (AA), in accordance with Article 6(3) of the Habitats Directive is carried out with respect to any plan or project, including masterplans.
- **Objective GBIO :** Ensure that any proposal for development within or adjacent to the Royal Canal pNHA is located and designed to minimise its impact on the biodiversity, geological, water, landscape and amenity value of the pNHA.
- **Objective GBIO :** Support the full implementation of the targets and actions outlined in the Maynooth Biodiversity Action Plan 2023-2028 and any subsequent or amended Plan prepared for Maynooth.
- **Objective GBIO 1.4:** Require that expert advice is sought from a suitably qualified bat expert, in developing lighting proposals along river and stream corridors or other important locations or corridors for wildlife, to mitigate impacts of lighting on bats and other species. The use of artificial lighting shall be avoided in streamside zones and artificial lighting should be restricted unless absolutely.

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APPENDIX 5.2

Site Photographs

Appendix 5.2: Site Photographs

	
Photograph 1. View looking east to west of the main field	Photograph 2. Example of native hedgerow boundary with trees
	
Photograph 3. Grassland during July 2024 survey, grown to seed head.	Photograph 4. Transition from grassland to scrub species and ruderals along the base of the hedgerow
	
Photograph 5. Ground works commenced onsite, during December 2024 surveys.	Photograph 6. Large patch of thistles and common hogweed in the eastern field

	
Photograph 7. North east boundary (December 2024)	Photograph 8. North west boundary (December 2024)
	
Photograph 9. West boundary fencing	Photograph 10. West boundary fencing
	
Photograph 11. Scrub along west boundary	Photograph 1 Active ground works (December 2024) southern boundary

	
Photograph 1 Example of mammal trail in grassland (July 2024)	Photograph 1 Example of mammal trail in grassland (July 2024)
	
Photograph 1 Burrow 1 (14cm wide, 12cm tall)	Photograph 16. Burrow (25cm wide, 12-13cm tall)
	
Photograph 17. Burrow (25cm wide, 12-13cm tall)	Photograph 18. Burrow 3 (21cm wide, 12cm tall)



Photograph 19. Burrow 4/tunnel under grass tuft (Approx. 10cm wide, 10cm tall.)



Photograph 20. Small mammal trail leading to the tunnel at Burrow 4 (6cm wide)



Photograph 21. Evidence of digging



Photograph Evidence of digging



Photograph 2 Burrow 6 and 7 with evidence of recent digging



Photograph 2 Burrow 6 leading into a series of smaller tunnels. (over 30cm wide, inside tunnels approx. 8cm wide)



Photograph Burrow 7 narrows further into the tunnel (10cm wide. 5cm tall.)



Photograph 26. Burrow 8

	
Photograph 27. Evidence of digging along north east of section of the Site.	Photograph 28. Well used trail from eastern field into field adjacent.
	
Photograph 29. Burrow 9 in hedgerow bank along adjacent field (Approx. 19cm wide and 19cm tall.)	Photograph 30. Burrow 10 very small hole in hedgerow bank (less than 4 cm wide)
	
Photograph 31. Burrow 11 (11cm wide and 16cm tall.)	Photograph 3 Burrow 1(9cm wide, 15cm tall.)

	
Photograph 3 Large trail into dense scrub along Northern boundary	Photograph 3 Burrow 13 entrance 1 (14cm wide, 15cm tall)
	
Photograph 3 Burrow 13 entrance 1 (14cm wide, 15cm tall)	Photograph 36. Burrow 1 smaller entrances adjacent to the first.
	
Photograph 37. Potential badger sett outside Site boundary (25cm by 30cm)	Photograph 38. Potential badger sett outside Site boundary

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Photograph 39 Photograph 38. Potential badger sett outside Site boundary	