

GREENFIELDS SWORDS LRD

Ecological Impact Assessment Report

Jackie Green Construction

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1 INTRODUCTION

DNV was commissioned by Jackie Green Construction to undertake an Ecological Impact Assessment (EclA) in relation to a Proposed Large-Scale Residential Development (LRD), entitled 'Greenfields Swords LRD' at Greenfields, Swords Business Park, Swords, Co. Dublin, hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

This EclA 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 report will describe the ecology of the Site, with emphasis on habitats, flora and fauna, and will assess the potential effects of the Construction and Operational Phases of the Proposed Development on these ecological receptors. The report follows Guidelines for Ecological Impact Assessment in the UK and Ireland, by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) and supplemented by the National Roads Authority (2009) guidelines for Assessment of Ecological Impacts of National Road Schemes. The purpose of this EclA 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.

1.1 Quality Assurance and Competence

DNV Biodiversity & Environmental Services (BES) is a multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All DNV consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training and continued professional development.

DNV (BES) as a company remains fully briefed in European and Irish environmental policy and legislation. DNV staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. CRK, ecologist with DNV undertook the field surveys and authored this report. LG, senior ecologist with DNV, and KM, AD, and CR, ecologist and ecologist interns with DNV respectively, assisted with the bat surveys for the Site, and BMC, ecologist with DNV undertook the winter bird scoping survey for the Site.

CRK is an Ecologist with a M.Sc. in Biodiversity and Conservation from Trinity College Dublin. CRK's experience as an ecologist is broad, both in the variety of ecological reports and field surveys conducted. CRK has experience in surveying habitats, birds, plants, bats, mammals and invasive species, with some experience in assessing welfare conditions of animals using behavioural repertoires as indicators. In addition, CRK has one year of experience as an Ecological Clerk of Works (ECoW), providing on-site ecological supervision and compliance support for construction projects. This role included conducting weekly badger checks, assessing stream and watercourse conditions near active construction areas, monitoring for nesting birds, and overseeing a range of smaller ecological protection works to ensure adherence to environmental regulations and best-practice mitigation measures. CRK's experience in ecological report writing extends from research associated literature reviews to Appropriate Assessment reports (Stage I and II) and Municipal District Summary reports, as well as Preliminary Ecological Appraisals (PEAs), Ecological Impact Assessments (EclAs), and Invasive Species Management Plans (ISMPs).

LG has a B.Sc. in Zoology (Hons) and a M.Sc. in Wildlife Conservation and Management from University College Dublin. LG is a Senior Ecologist with 6+ years of experience in Ecological Consultancy and is highly 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 has significant experience in compiling Biodiversity Chapters of EIARs, Ecological Impact Assessments

(EclA), Appropriate Assessment (AA) screening and Natura Impact Statements (NIS) reports, and in the overall assessment of potential impacts to ecological receptors from a range of developments. LG is also a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM).

BMC is an Ecologist and experienced Ornithologist with 12 years of bird survey experience. Brian is a longstanding and active member of Bird Watch Ireland and has provided Ornithology survey work for ecological consultancies, e.g., vantage points surveys of gulls, terns, raptors, waders, and wildfowl; hinterland surveys of the above as well as riverine species; and breeding waders and country birds. Brian is highly experienced with all survey methodologies and with surveying all species groups of Irish birds and migrants.

KM is a Graduate Ecologist with DNV and has a B.Sc (Hons) in Environmental Biology from University College Dublin. She is also a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM). KM has a range of fieldwork experience including mammal, bird, and amphibian surveys in addition to freshwater ecology research. Her deskwork experience includes bat call sonogram analysis, habitat mapping, and report writing. KM has contributed to the preparation of several Stage 1 Appropriate Assessment (AA) Screening, Stage 2 Natura Impact Statement (NIS), and Preliminary Ecological Assessment (PEA) reports.

CR is a final year B.Sc. undergraduate in Sustainability and Environmental Science at University College Dublin, gaining skills in report writing, desktop research and literature review, alongside extensive laboratory and environmental and biological data analysis experience. Under the supervision of senior ecologists, CR has contributed to the preparation of Ecological Impact Assessments (EclAs) and AA Screening Reports, supporting the delivery of high-quality ecological reporting.

AD is an Intern Ecologist with a B.Sc. (Hons) in Geoscience from Trinity College Dublin, and a MSc in Applied Environmental Science from University College Dublin. AD's experience includes both geological and ecological field and laboratory work, molecular biomarker analysis, GIS and ecological report preparation. AD is also a student member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

1.2 Relevant Legislation and Policy 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, 2018). The Proposed Development is sub-threshold for an Environmental Impact Assessment (EIA) under the Planning and Development Regulations 2001-2025, as amended.

When an EclA is undertaken as part of an EIA process 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. This EclA 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 as amended (currently in effect till the Planning and Development Act 2024 that comes into effect in 2026).
- 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:

- Fingal Development Plan 2023-2029.
- Fingal Biodiversity Action Plan 2023-2030.

Further details on legislation and policy relevant to the Proposed Development are detailed in section 11.1.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The Site of the Proposed Development is a 2.22 hectare (Ha) site in Greenfield, Swords Business Park, Swords, Co. Dublin, located approximately 140 meters (m) south of Seatown Park West, and 300m north of Swords Business Park. The Site is principally bound: to the north by an access road and ancillary car park to serve the commercial units in Swords Business Park; to the east by the M1 Motorway; to the south by Mantua Road; and to the west by the 'Total Produce PLC' warehouse.

Figure 1 shows the overall Site location for the Proposed Development.



FIGURE 1. SITE LOCATION.

2.2 Proposed Development Description

The Proposed Development consists of a mixed-use development that constitutes a 'Large-Scale Residential Development' (LRD) at this site of 2.22 Ha principally located at Swords Business Park, Swords, Co. Dublin. The site is principally bound: to the north by an access road and ancillary car park to serve Swords Business Park; to the east by the M1 Motorway; to the south by Mantua Road; and to the west by an access road to serve Swords Business Park. The application site also extends to include parts of: the access road to the north and west for footpath, landscape and foul drainage connection works; Mantua Road to the west for foul drainage connection works; and the green strip to the south at Mantua Road for a pedestrian and cyclist connection.

Permission is sought for a mixed-use development with a gross floor area of 30,358 sq m and principally comprised in 5 No. blocks (A–E), with heights ranging from 1 No. to 9 No. storeys. The proposed block heights are as follows: Block A is 6 No. to 7 No. storeys; Block B is 6 No. to 7 No. storeys; Block C is 6 No. to 7 No. storeys; Block D is 6 No. to 9 No. storeys; and Block E is 1 No. to 9 No. storeys. The development consists of: 289 No. residential apartments (60 No. 1-bed, 200 No. 2-bed and 29 No. 3-bed); retail/commercial unit (701 sq m); and crèche (418 sq m) with outdoor play area (42 sq m).

Permission is also sought for: new multi-modal site entrance to the west; minor relocation of existing northern site entrance to the east; internal road, cycle and footpath network; 132 No. car parking spaces; 13 no. motorcycle parking spaces; cycle parking; hard and soft landscaping, including public open space, communal amenity space (at-grade and as roof gardens atop Block D and Block E) and incidental open space; private amenity space as balconies and terraces facing all directions; public lighting; bin stores; plant rooms; 2 No. sub-stations; green roofs; rooftop plant, PV panels, telecommunications infrastructure, lift overruns and automatic opening vents; and all associated works above and below ground.

A Natura Impact Statement has been prepared in respect of the proposed development. The Planning Application, along with the Natura Impact Statement, may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the Planning Authority during its public opening hours: Fingal County Council, Fingal County Hall, Main Street, Swords, Fingal, Co. Dublin. Opening Hours 09:30 16:30, Monday–Friday. (Cash Office opening hours are 09:30–15:30.) The Planning Application, along with the Natura Impact Statement, may also be inspected online at the following website set up by the applicant: XXX

A submission or observation in relation to the Application and Natura Impact Statement may be made in writing to the Planning Authority on payment of a fee of €20, within the period of 5 weeks, beginning on the date of receipt by Fingal County Council of the Application, and such submissions or observations will be considered by the Planning Authority in making a decision on the application. The Planning Authority may grant permission subject to or without conditions, or may refuse to grant permission.



FIGURE 2. SITE LAYOUT (MCORM, 2026)

2.2.1 Drainage and Water Supply

2.2.1.1 Surface water

The following information is extracted from the Engineering Infrastructure Report & Stormwater Impact Assessment (Roger, 2026a).

Existing Surface Water Drainage

As per the above report, the existing site is greenfield. However, there is an existing 900m surface water pipeline laid parallel to the eastern boundary of the Site. This pipe currently drains the Swords Business park to the south of the Proposed Development and also drains the public road (L6310) between. A remnant alignment of what was the Gaybrook watercourse remains on the Site but this has been diverted some c.30 years ago into the above noted 900mm culvert and the ditch remains “dry” with no upstream flows entering the site.

Proposed Surface Water Drainage

The surface water drainage design has been carried out in accordance with the Greater Dublin Regional Code of Practice, the GDSDS and the CIRIA Report c753 “The SuDS Manual” 2015. Attenuation and SuDS are included in the design.

It is proposed to outfall the attenuated surface water from the Proposed Development into the existing 900mm surface water pipeline located parallel to the eastern boundary of the Site (see Figure 3). From here, all surface water will be direct north to the 1350mm pipeline, before outfall into the Malahide estuary. The surface water drainage infrastructure for the Proposed Development will collect the rainfall on Site, via sustainable urban drainage systems (SuDS) proposed for the Site, and convey the water via intensive green roofs, bioretention areas, drained tree pits, permeable paving, underground pipes, manholes and direct towards a vortex flow restricting devices, Hydrobrake or similar. The retained water will be stored in 2 no. below ground void arched system, such as the StormTech system and 2 no. detention basins. Due to the constrained nature of the Proposed Development and requirement to provide useable open space for the residents, it is proposed to use 2 no. below ground attenuation storage areas between Blocks A/B and B/C in the privately managed landscaped open space areas. Bio-retention features are contained in these areas to replicate natural drainage characteristics and fulfil the SuDS principles. 2 no. open detention basins are also provided where the Site is less constrained.

SUDS

The Proposed Development will incorporate the design principles of Sustainable Drainage Systems (SuDS). The SuDS elements which were found applicable to the proposed scheme design and layout include the following:

- Intensive green roofs
- Permeable paving to all parking spaces
- Tree pits
- Bio-retention areas
- Filter swales
- Silt-trap/catchpit manholes
- Hydrobrake
- Detention basin and stone lines voided arch retention storage

2.2.1.2 Foul Drainage

The following information is extracted from the Engineering Infrastructure Report & Stormwater Impact Assessment (Roger, 2026a).

Existing Foul Water Drainage

There are no known public foul drainage services on the Site of the Proposed Development. There are existing private foul drainage systems in the surrounding area, but the Proposed Development intends to construct a new

foul pumping station on the Site to cater for the Development with a rising main extending to the Seatown road roundabout at the R132 Dublin Road.

Proposed Foul Water Drainage

Foul water drainage at the Site is to be in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure. Uisce Éireann have issued a Confirmation of Feasibility (CDS25000867 - 21/07/25) approval noting that connection is feasible without upgrades to the existing infrastructure. A foul pumping station is proposed to service the Site, which will pump the effluent into the 100mm diameter rising main along the L6310 "Mantua Road". From here, the networks discharge into the existing UÉ network (750mm trunk sewer) in the R132 Dublin Road roundabout approximately 630m from the pumping station location on Site (see Figure 4). The pumping station is located at the required separation distances from existing neighbouring buildings and the proposed residential blocks. It is fully below ground level with only 2 no. above ground kiosks visible. All foul water from this network will be treated at Swords Wastewater Treatment Plant (WwTP).

2.2.2 Landscape Plan

The proposed landscape design of the Site has been prepared by Cunnane Stratton Reynolds (Cunnane, 2026a) (see Figure 5).

The landscaping design outlines details of the proposed landscaping at the Proposed Development, which includes pedestrian footpath networks, a vehicular access road along the eastern section of the Site, hard landscaping for these areas, public open space, communal open space, soft landscaping across the Site, boundary treatment, and SuDs proposed for the Site.

Along the southern section of the Site, a communal open space is proposed, where retained sections of the existing treeline will be further enhanced by the additional planting of ornamental and native trees. Pedestrian access will be provided in this section and lighting will be limited to ensure semi-dark corridors are maintained to encourage nocturnal biodiversity at the Site. Wildflower planting is also proposed for the southern section of the Site.

In support of policy GINHP14 of the Fingal Development Plan (2023-2029), which states "Biodiversity Net Gain Guidance Promote biodiversity net gain in new developments and develop a planning guidance document on Biodiversity Net Gain.", the scheme incorporates ecological enhancement measures to promote biodiversity net gain. These include supplementary planting of native and ornamental trees, wildflowers, shrubs, and native hedgerow, along with enhancements for fauna such as bird boxes, bat boxes, log piles, and swift bricks/blocks. Collectively, these measures will enhance habitat diversity, support local fauna, and deliver a net gain in biodiversity value of the Site.

In addition to the existing trees being retained in the southwest section of the Site, additional trees in the form of street trees and parkland trees are proposed across the entire Site, and native hedgerow planting along the eastern boundary have been proposed. Around each of the five building blocks proposed at the Site, shrub planting is proposed along with public amenity grass mix. The proposed detention basin at the northeast section of the Site will include also include a mix of ornamental floral species.

2.2.3 Lighting Plan

A lighting plan for the Site was developed by M and E Consulting Engineers (M and E, 2026).

This lighting report outlines details such as the design criteria, luminaire types proposed for the development and how the proposed design will meet the relevant public lighting standards (see Figure 6). The lighting system was designed to achieve the level of Lux and set up a plan to bring up the overall to the desired limits. The Public Lighting has been designed in accordance with the requirements of the Irish Standard for Road Lighting, I.S. EN 13201-2:2015 while observing NSAI National Rules for Electrical Installations and ESB Networks Distribution System interface requirements. In addition to the above design criteria, the lighting has also taken local fauna into consideration through the following approach:

- Shielding to avoid overspill thereby restricting lighting to the necessary areas through downward facing lighting
- Dark-Sky lanterns with zero upward light spill
- Narrow spectrum output to reduce UV levels

- Zero degree tilt to avoid any upward light spill
- The use of standard LED Street lighting has been designed to utilise 4000K colour temperature.

These strategies will ensure that all installations meet the requisite specifications for safety, efficiency, and environmental considerations, while providing optimal illumination for public areas.

2.3 Description of the Construction Phase

A Construction Environmental Management Plan (CEMP) has been prepared by AWN Consulting (AWN, 2026) with details of the Construction Phase for the Site.

It is anticipated that the construction works associated with the Proposed Development will be undertaken in an approximately 24-36 months programme. There is no demolition associated with the Proposed Development. The Proposed Development will involve excavations for new foundations, site levelling and excavations for roads and services. The Resource Waste Management Plan prepared by AWN Consulting Ltd (257501.0151WMR01) for the Proposed Development will be updated by the Main Contractor and will be in compliance with the requirements of the Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects 1 published by the Environmental Protection Agency (2021), which will identify and categorise any waste arising from the Proposed Development.

Site development and building works will only be carried out between the hours of 07:00 to 19:00 Mondays to Fridays inclusive and between 08:00 and 14:00 hours on Saturdays. There will be no construction works carried out on Sundays or public holidays. Deviation from these times will only take place when written approval is granted by FCC in exceptional circumstances.

2.4 Description of the Operational Phase

The Operational Phase of the Proposed Development will see the normal use of the large-scale residential development by its tenants. It is anticipated that human activity across the Site, but more specifically the southern sections of the Proposed Development will be increased from the baseline due to the communal open space incorporated in this region, and the pedestrian access route that connects the communal open space. It is also anticipated that road use (vehicular, cyclists and pedestrian activity) along the access road and ancillary car park located north of the Site, and Mantua Road located south of the Site, will both increase from the baseline.

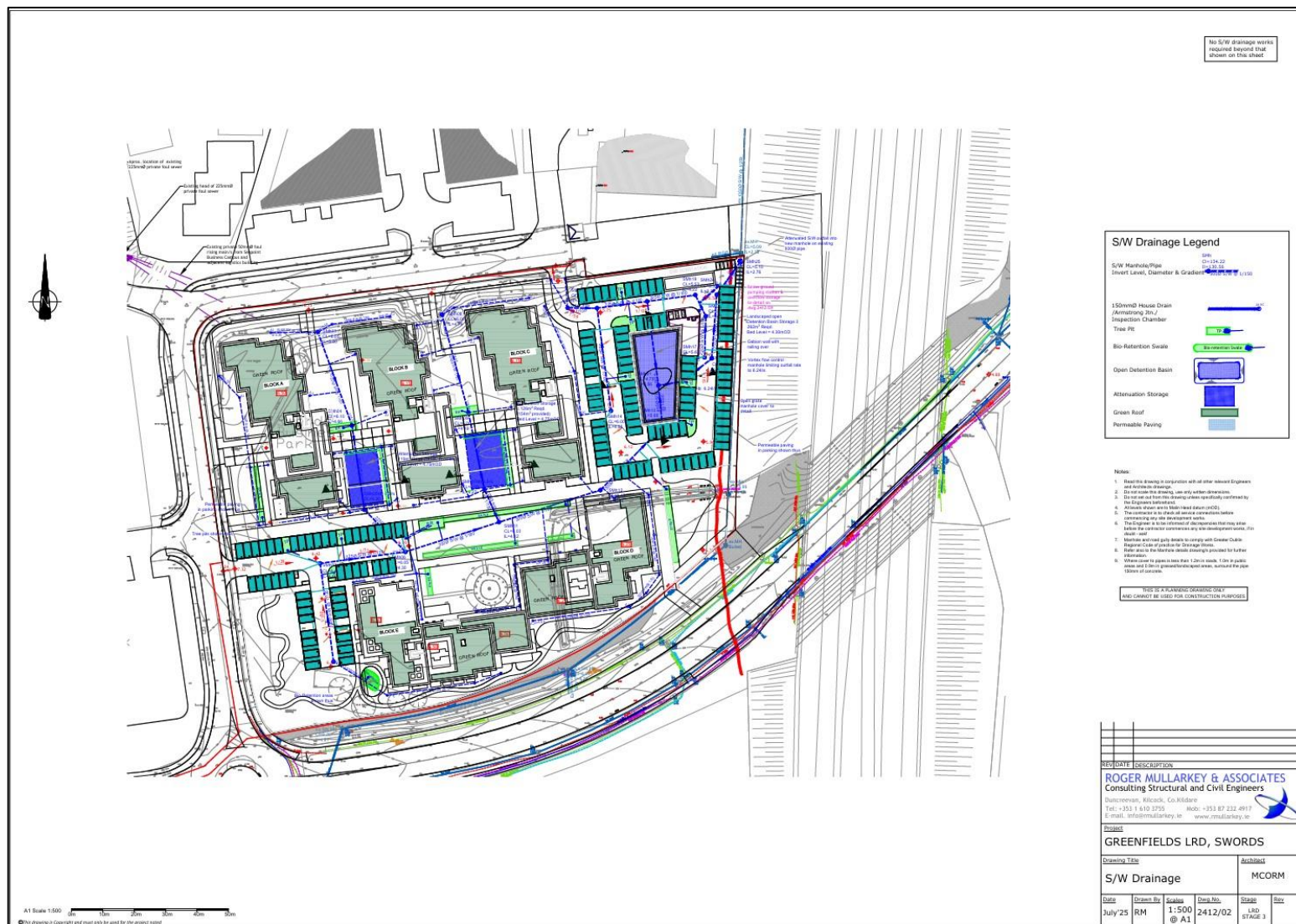


FIGURE 3. PROPOSED SURFACE WATER DRAINAGE LAYOUT FOR THE PROPOSED DEVELOPMENT (ROGER, 2025A)

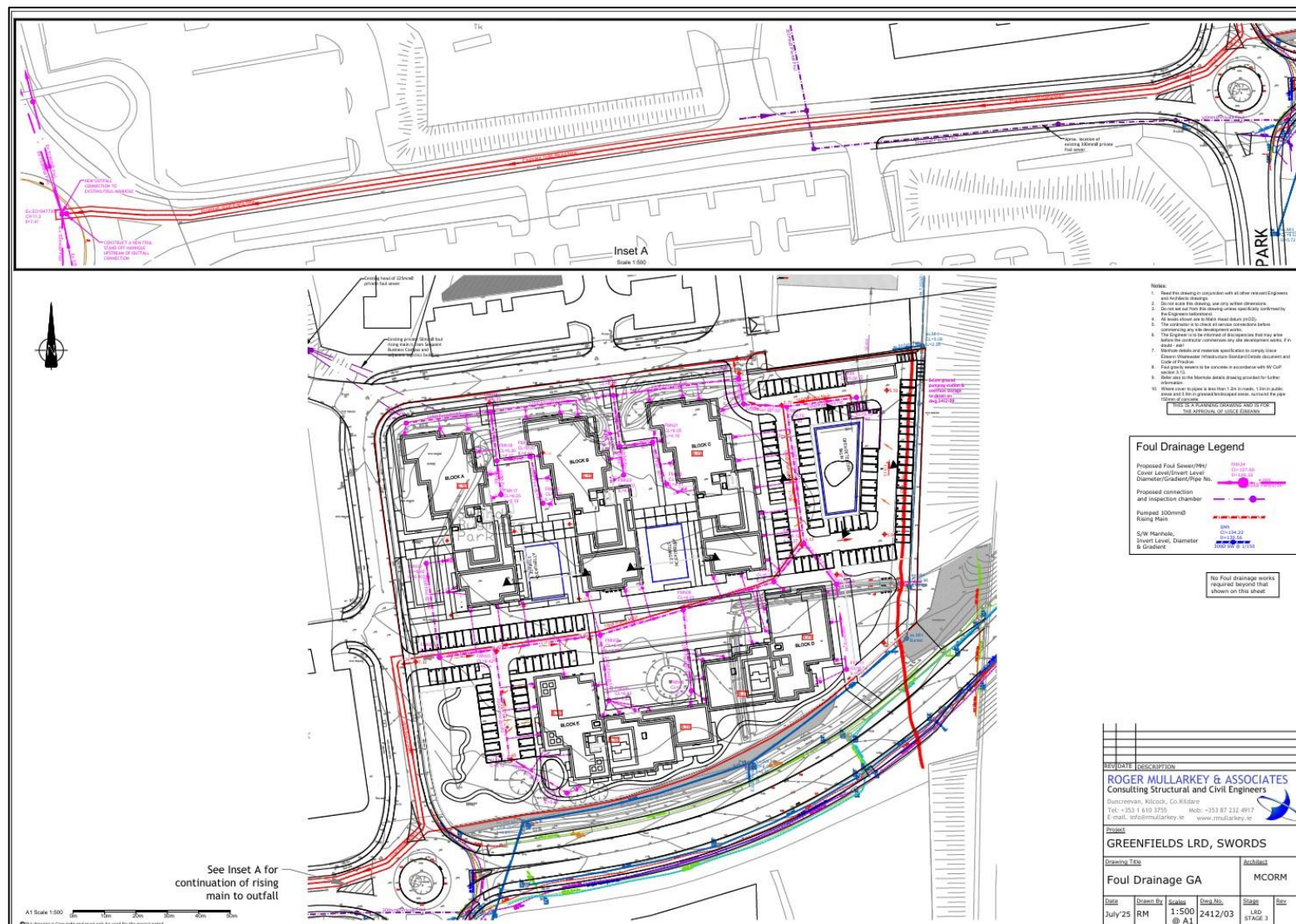


FIGURE 4. PROPOSED FOUL WATER DRAINAGE AT THE PROPOSED DEVELOPMENT (ROGER, 2025B)



FIGURE 5. PROPOSED LANDSCAPE MASTERPLAN FOR THE PROPOSED DEVELOPMENT (CUNNANE, 2026)



3 METHODOLOGY

This EclA has been undertaken to support and assess 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.

3.1 Scope of Assessment

The specific objectives of the study were to:

- Undertake baseline ecological surveys and evaluate the nature conservation importance of the Site;
- Identify and assess the direct, indirect and cumulative ecological implications or impacts of the Proposed Development during its lifetime; and
- Where possible, propose mitigation measures to remove or reduce those impacts at the appropriate stage of the Proposed Development.

3.2 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 April 2026, 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 Floral Protection Order (FPO) Bryophytes database at dahq.maps.arcgis.com;
- 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 National Parks and Wildlife Service (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: <https://housinggov.ie/maps/arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de>; and
- 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 Section 10, References.

3.3 Zone of Influence

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, 2018). 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 O14, and the 2km grid square O14Y. 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).”

3.4 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 EclA reports 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 Biosphere's; and
- Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

3.5 Field Surveys

To determine the likely ecological constraints at the Site, a multidisciplinary walkover survey was carried out on 14th March 2025. this survey covered the following aspects:

- Habitat mapping to level 3 (Fossitt 2000)
- Preliminary Bat roost Assessment and Habitat Suitability Survey
- Bird Scoping Survey
- Invasive Flora Survey

- A search for signs of protected fauna (e.g., mammals, reptiles, amphibians)

Following the initial walkover, targeted surveys to determine the bat activity were also carried out. The list of surveys conducted for the Site of the Proposed Development have been presented in the table below.

TABLE 1. FIELD SURVEYS UNDERTAKEN AT THE PROPOSED DEVELOPMENT SITE.

Survey	Surveyor	Dates
Habitats and Floral Survey (incl. invasive species) General Mammal Survey Bird Scoping Survey	DNV (CRK & BS)	14 th March 2025
Winter Bird Scoping Survey	DNV (BMC)	26 th February 2025
Breeding Bird Survey	DNV (BMC)	19 th August 2025 26 th August 2025 10 th September 2025
Bat Activity Survey	DNV (CRK, LG, KM, CR & AD)	21 st August 2025 4 th September 2025 29 th September 2025

3.5.1 Habitat Surveys

Habitat surveys of the Site were conducted by DNV on 14th of March 2025. Habitats were categorised according to the Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000) to level 3. 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. Any incidental observations of evidence for rare and/or protected flora were recorded.

In addition, the Site was searched for invasive flora with a particular focus on those listed on the Third Schedule of SI No. 477/2011, and their location and extent recorded.

3.5.2 Invasive Species Surveys

An invasive species surveys were carried out in conjunction with the habitat surveys on 14th March 2025. This included a detailed search for signs or any invasive flora or fauna, with any incidental observations of evidence for invasive species recorded whenever on Site.

3.5.3 Bat Surveys

3.5.3.1 Preliminary Bat Roost Assessment

A daytime inspection of the Site was undertaken on 14th March 2025. 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 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. Sub-categories to consider for structures are as presented in Table 4.1 (Collins, 2023):

- Negligible – No suitable features observed, however, a small element of uncertainty remain;
- 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; and
- 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 according to Table 4.2 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; and
- 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 6.2 (Collins 2023). PRF's 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's only, no further surveys may be required, but appropriate compensation for all PRF-I's 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-M's 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 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.

3.5.3.2 Preliminary Bat Habitat Suitability Assessment

A Bat Habitat Suitability Assessment was carried out in conjunction with the roost assessment on 14th March 2025. 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.

3.5.3.3 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 - 13.0000000: Low
- 13.0000001 - 21.3333000: Low – Medium
- 21.3333001 - 28.1110999: Medium
- 28.1111000 - 36.4444001: Medium – High
- 36.4444002 - 58.5555999: High

3.5.3.4 Bat Activity Surveys

The Site was assessed by an experienced ecologist in relation to the potential bat foraging habitat and commuting routes. The surveys were undertaken to best practice guidance (Collins, 2023 and Marnell et al., 2022) during times of suitable weather conditions, as detailed below. The surveyor was equipped with a Elekon Batlogger M2 detector and powerful L.E.D. torch and head torches. Surveys started at sunset and continued for 2-3 hours, along a predesigned transect route with regular point counts, as presented in Figure 12.

TABLE 2. WEATHER CONDITIONS RECORDED DURING BAT TRANSECT SURVEY

Date	Sunset	Survey Start and End	Weather at Start	Weather at End
21/08/2025	20:39	20:34 – 22:39	16 °C, dry, 100% cloud cover, 100% visibility, light breeze (wind speed of 10 km/h – SSE)	15 °C, dry, 75% cloud cover, 25% visibility, light breeze (wind speed of 8 km/h – E)
04/09/2025	19:43	19:42 – 21:45	14 °C, dry, 50% cloud cover, 100% visibility, light breeze (wind speed of 9km/h – SE)	11 °C, light shower at the end of survey, 75% cloud cover, 25% visibility, light breeze (wind speed of 11km/h – SE)
29/09/2025	19:06	19:04 – 21:10	13 °C, dry, 75% cloud cover, 100% visibility, light breeze (wind speed of 13km/h – SSE)	10 °C, dry, 25% cloud cover, 25% visibility, light breeze (wind speed of 10km/h – E)

3.5.3.5 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.

3.5.4 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, 1992 and Gilbert et al, 1998), which has subsequently been adapted into guidelines for ecological consultants by the Bird Survey & Assessment Steering Group. (BSASG, 2022). 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.

3.5.4.1 Bird Scoping Survey

A bird scoping survey was carried out on 14th March 2025 to scope out the breeding and non-breeding bird species potentially at the Site based on habitats. Additionally, all bird species encountered during the survey were recorded and activity noted where possible.

3.5.4.2 Breeding Bird Survey

To inform an evaluation of the on-site habitats for bird species, three breeding bird survey visits were undertaken on between 19th August 2025 to 10th September 2025. Transects were done throughout the site to record all the species that were present. A final zig-zag walk through the site was done at the end of the survey to ensure no additional species were missed.

3.5.4.3 Wintering Bird Survey

To inform an evaluation of the on-site habitats for wintering bird species, one survey visit was undertaken 26th February 2025. The surveys were carried out in suitable weather conditions and within daylight hours. The survey lasted for two hours. Transects were done throughout the site to record all the species that were present. A final zig-zag walk through the site was done at the end of the survey to ensure no additional species were missed.

3.5.5 Fauna Survey

A general fauna survey of the Site was carried out in conjunction with the other field surveys on 14th March 2025. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. The Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and other fauna as per the National Road Authority (NRA, 2005; NRA.2009a).

3.6 Ecological Assessment

This EclA 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, 2018); and with reference to the National Roads Authority '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.

3.6.1 Evaluation of Ecological Features

The value of the ecological features, i.e., the habitats and species present or potentially present, was determined using the ecological evaluation at different geographical scales (NRA, 2009), presented in section 11.2. 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. Based on best practice (CIEEM, 2018), any features considered to be less than of local value are not assessed within this EclA.

3.6.2 Impact Assessment

As per the NRA guidelines, impact assessment is only undertaken of Key Ecological Receptors (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 in section 11.3. 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; and
- 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.

3.6.3 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 (see section 1.2) 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.

3.6.4 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.

3.7 Limitations

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.
- The initial surveys for habitats, rare and protected flora, and invasive species survey were undertaken in March 2025, which is outside the optimal survey period (April to September). However, this is not considered to be a significant limitation given the limited extent of habitats recorded at the Site, and the urban nature of vegetation e.g., unmanaged grassland and shrub habitats, and thus not likely to support any significant populations of native flora or fauna. The survey timing was sufficient to record vegetative evidence of non-native species should they be present. Additionally, DNV are competent in the identification of invasive species, particularly those listed on the Schedule III list (S.I.477, 2011) and particularly in the urban and semi-urban environment.
- The bat activity surveys were conducted towards the end of the optimal survey period for bats (August and September). Bat surveys are conducted from the months of April to September, where surveys are carried out in monthly intervals. However, this does not constitute a significant limitation given the limited

no. of bats and bat species recorded at the Site, which are limited to the common Irish bat species that are abundant in the predominant surroundings where more suitable habitats have been observed.

- Only one wintering bird survey was carried out at the Site given it's close proximity to an SPA. However, this is not considered to constitute a significant limitation given the limited bird species recorded at the Site during the scoping survey and the wintering bird survey. Furthermore, the habitats at the Site are limited in suitability for wintering birds.

4 ECOLOGICAL BASELINE CONDITIONS

This section sets out the baseline conditions for the ecological features within the Site using the findings of the desk study and field surveys.

4.1 Geology, Hydrogeology and Hydrology

The Site is located in the *Liffey and Dublin Bay* catchment (I.D.: 09), and in the *Mayne_SC_010* sub-catchment (I.D.: 09_17).

Two channels of the Gaybrook_010 (IE_EA_08G080700) watercourse, namely Greenfields and Seapoint, of the first order flows through the existing ditch at the Site and 13m north of the Site. The Greenfields channel traversing the Site is currently disused (dry) and was diverted approximately 30 years ago into the 900mm culvert running north parallel to the eastern boundary of the Site. These watercourses flow in a northeastern direction, ultimately draining into the Broadmeadow Water Estuary transitional waterbody (IE_EA_060_0100) approximately 270m downstream of the Site. This transitional waterbody flows into the Irish Sea via Malahide Bay (IE_EA_060_0000), Northwestern Irish Sea (HA 08) (IE_EA_020_0000), and Irish Sea Dublin (HA 09) (IE_EA_070_0000) coastal waterbodies. The Ward_040 (IE_EA_08W010610) watercourse of the fifth order is the closest river system to the Site, located 800m west of the Site (EPA, 2026). This watercourse also ultimately drains into the Broadmeadow Water Estuary transitional waterbody 1.3km downstream from the closest point from the Site via the Broadmeadow_040 (IE_EA_08B020800) watercourse of the sixth order.

The Site is situated on the *Dublin* (IE_EA_G_008) groundwater body, and the vulnerability to contamination of said groundwater from human activities is classified as 'Low' for the Site and the surrounding area (GSI, 2026). The aquifer type in the surrounding area is 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones' (LI) (GSI, 2026). The groundwater rock unit underlying the Site is the Malahide Formation, and is classified as 'Argillaceous bioclastic limestone, shale' (ML).

The soil underneath the Site of the Proposed Development is classified as 'Urban – soil concreted over' for the predominant area, with the eastern section of the Site classified as 'Fine loamy drift with siliceous stones'. The sub-soil underneath the Site is 'Man-made' for the predominant area where the Urban soil type is found, and is 'Limestone till (Carboniferous)' (TLs) for the eastern section of the Site (GSI, 2026). The waterbody status for the waterbodies relevant to the Site as recorded by EPA (EPA, 2026) in accordance with European Communities Regulations 2003 (SI no. 722/2003) are provided in Table 3 below.

TABLE 3. EPA MONITORING STATIONS AND ASSIGNED Q VALUES

EPA Monitoring Station name	Station Code	Location from Site	Distance from Site	Assigned value	Q
WARD - Br at SW end of Swords (Well Rd Br)	RS08W010500	Southwest	1.2km	3 "Poor"	
WARD - Scotchstone Br (Watery Lane)	RS08W010600	West	0.78km	3 "Poor"	
Br d/s Scotchstone Br	RS08W010610	Northwest	0.9km	3-4 "Moderate"	

TABLE 4. WFD RISK AND WATER BODY STATUS

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2019-2024)	WFD 3 rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
Gaybrook_010	IE_EA_08G080700	North and	0.01 and Within Site	Poor	Review	Upstream of Site (for Northern channel) and within

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km)	WFD water body status (2019-2024)	WFD 3 rd cycle Risk Status	Hydraulic Connection to the Site
		Within Site				Site (disused and redirected)
Ward_040	IE_EA_08W010610	East	0.8	Moderate	At Risk	None
Broadmeadow_040	IE_EA_08B020800	North	0.9	Moderate	At Risk	None
Transitional Water Bodies						
Broadmeadow Water	IE_EA_060_0100	Northeast	0.26	Moderate	At Risk	Downstream of Gaybrooke_010, Ward_040 and Broadmeadow_040
Coastal Water Bodies						
Malahide Bay	IE_EA_060_0000	East	3.3	Good	Not at Risk	Downstream of Gaybrooke_010, Ward_040 and Broadmeadow_040, and connected to Broadmeadow water Estuary
Northwestern Irish Sea (HA 08)	IE_EA_020_0000	East	4.5	Good	At Risk	Connected to Malahide Bay
Irish Sea Dublin (HA 09)	IE_EA_070_0000	East	4.7	Good	Not at Risk	Connected to Malahide Bay and Northwest Irish Sea (HA 08)
Groundwater Bodies						
Dublin	IE_EA_G_008	N/A	N/A	Good	Review	Underlying groundwater-body

4.2 Designated Sites

All European sites potentially linked to the Proposed Amendments have been identified and fully assessed in the AA Screening Report (Stage 1 AA) and subsequent Natura Impact Statement (NIS) (Stage 2 AA) accompanying this submission under separate cover (DNV, 2026a and DNV, 2026b). A summary of the AA conclusions is given below.

Other nationally or internationally designated sites potentially linked to the Proposed Development are identified in section 4.2.2.

4.2.1 European sites – Appropriate Assessment and Natura Impact Statement

The following conclusion is extracted from the AA Screening report accompanying this application under separate cover (DNV, 2026a):

“The Proposed Development at Greenfields, Swords Business Park, Swords, Co. Dublin has been assessed taking into account:

- The nature, size and location of the proposed works and possible impacts arising from the construction works.
- The QIs and conservation objectives of the European sites
- The potential for in-combination effects arising from other plans and projects.

*In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that the possibility **cannot be excluded** that the Proposed Development will have a significant effect on any of the European sites listed below:*

- Malahide Estuary SAC (000205),
- Malahide Estuary SPA (004025),
- North-West Irish Sea SPA (004236).

In carrying out this AA screening, any targeted ecological mitigation measures and/or measures intended or included for the purposes of avoiding adverse effects arising as a result of the Proposed Development on any European site have not been taken into account.

*On the basis of the screening exercise carried out above, it can be concluded, on the basis of the best scientific knowledge available and objective information, that the possibility of any significant effects on the above listed European sites, whether arising from the project itself or in combination with other plans and projects, **cannot be excluded** in light of the above listed European sites' conservation objectives. Thus, there is a **requirement** to proceed to Stage 2 of the Appropriate Assessment process; and a **NIS has been prepared** and accompanies this submission under separate cover."*

Following this, an NIS was prepared for the Site of the Proposed Development. The following conclusion is extracted from the NIS Report accompanying this application under separate cover (DNV, 2026b):

"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 Greenfields, Swords Business Park, Swords, Co. Dublin, on the following European Sites:

- Malahide Estuary SAC (000205),
- Malahide Estuary SPA (004025),
- North-West Irish Sea SPA (004236).

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 AA 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 Malahide Estuary SAC (000205), Malahide Estuary SPA (004025), and North-West Irish Sea SPA (004236). Accordingly, the Proposed Development will not adversely affect the integrity of any relevant European site."

4.2.2 Other Designated sites

4.2.2.1 S-P-R links to Designated Sites

Potential impact pathways are discussed in the following sections in the context of the Proposed Development as described in Section 3.

Direct Pathways

Hydrological Pathways

The closest watercourses to the Site of the Proposed Development are two channels of the Gaybrook_010 watercourse, namely Greenfields and Seapoint, that flow through the existing ditch at the southern section of the Site and 13m north of the Site, respectively. The Greenfields channel traversing the Site is currently disused (dry) and was diverted approximately 30 years ago into the 900mm water culvert running north parallel to the eastern boundary of the Site. These watercourses flow in the northeastern direction and discharge into the Broadmeadow Water transitional waterbody (Malahide Estuary) located 270m downstream of the Site, which in turn drains into the Irish Sea via Malahide Bay, Northwestern Irish Sea and Irish Sea Dublin coastal waterbodies.

The Seapoint channel of Gaybrook_010 watercourse flows underground/sub surface north of the Site but above surface before it's discharge point into Broadmeadow Water transitional waterbody. Given that the stream is below surface at its closest point from the Site, hydrological connections via surface water run-off between the Site and designated sites via the Seapoint channel are considered to be insignificant. The culvert parallel to the eastern boundary of the Site is located in close proximity (<20m) and is therefore hydrologically connected to the Site. Designated sites downstream of this channel (approximately 250m via river distance) include *Malahide Estuary pNHA (000205)*, and *The Broadmeadow Estuary Ramsar site (833)*. Therefore, there exists a significant hydrological pathway between the Proposed Project and designated sites within Malahide Estuary via surface water run-off into the 900mm culvert. However, given that these designated sites overlap with European sites such as *Malahide Estuary SAC (000205)*, and *Malahide Estuary SPA (004025)*, which are also situated in Malahide Estuary, significant impacts for these sites via the same hydrological pathways have been identified and mitigated for in the accompanying NIS (DNV, 2026b). Therefore, impacts via hydrological pathways to designated sites is not envisaged and is not considered further in this assessment.

The Ward_040 watercourse (fifth order stream) is the closest river system to the Site, located approximately 800m west. This watercourse discharges into Broadmeadow_040 watercourse (sixth order stream) which subsequently flows into the Broadmeadow Water transitional waterbody at approximately 1.3km via intervening river distance. Given the urban nature of the area between this watercourse and the Site, the presence of large road networks west of the Site and the SuDS proposed that will collect and discharge all surface water from the Site into the existing water drainage network, hydrological pathways via surface water runoff to this watercourse and their downstream designated sites are not envisaged.

Additionally, the Dublin Bay Biosphere (UNESCO) United Nations Educational, Scientific and Cultural Organisation) site is located downstream of Malahide Estuary in the Irish Sea. However, for reasons outlined above, the hydrological pathway between the Site of the Proposed Development and this designated site is deemed to be insignificant.

Foul water from the Operational Phase of the Proposed Development will be treated at Swords Wastewater Treatment Plant (WwTP) located approximately 400m northwest of the Site. Treated effluents from this WwTP discharges into the upper reaches of the Broadmeadow Water transitional waterbody, where the closest designated sites within the depositing point of the Swords WwTP are *Malahide Estuary pNHA (000205)*, and *The Broadmeadow Estuary Ramsar site (833)*.

The Swords WwTP is currently functioning within its available capacity, as indicated by its 'Green' Status (Irish Water, 2026). According to the most recent Annual Environmental Report (AER) for Swords WwTP (Irish Water, 2023), the plant's capacity is not expected to be exceeded within the next four years. Additionally, the AER confirms that discharge from the WwTP does not have an observable impact on the bathing water quality and does not have an observable negative impact on the Water Framework Directive status. Furthermore, the Appropriate Assessment (AA) Screening Report for the WwTP upgrade works concluded "*the project is not directly connected with or necessary to the management of the sites as European site(s) and as it can be excluded, on the basis of objective information and in light of the conservation objectives of the relevant European Site(s), that the project,*

individually or in combination with other plans and projects, would have a significant effect on a European Site". Upgrade works at Swords WwTP are expected to be completed in 2026, and the receiving waterbodies of Broadmeadow Water transitional waterbody have remained of the 'Moderate' status before and after the upgrade works. Based on this information, the potential for a significant hydrological pathway via foul water between the Proposed Development and the identified designated sites is considered negligible and can be ruled out. By extension, any hydrological connection to designated sites situated in the Irish Sea is also deemed insignificant.

Hydrogeological Pathways

The Site of the Proposed Development is located within the Dublin groundwater body, which drains in an eastward direction towards the Irish Sea. The closest designated sites, and ones that share the same groundwater body to the Site are, *Malahide Estuary pNHA (000205)*, and *The Broadmeadow Estuary Ramsar site (833)*, which are located approximately 210m east of the Proposed Development. The vulnerability to groundwater contamination due to human activities is mapped as 'Low' for the Site and the predominant area surrounding Malahide Estuary. Given that the groundwater diffuses directly into the Irish Sea rather than Malahide Estuary, and the 'Low' vulnerability to groundwater contamination at the Site, significant hydrogeological pathways between the Site and these European sites is not envisaged and can be ruled out. By extension, any hydrogeological connection to European sites situated in the Irish Sea or further afield are also deemed insignificant.

Air and Land Pathways

Dust, noise, vibration and general anthropogenic impacts may be produced as a result of the Construction Phase of the Proposed Development. For birds, disturbance effects would not be expected to extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate to close to background levels at that distance. There are no designated sites located within immediate proximity to the Proposed Development. The nearest designated sites are *Malahide Estuary pNHA (000205)*, and *The Broadmeadow Estuary Ramsar site (833)*, situated approximately 210m east from the closest point of the Proposed Development.

According to the Institute of Air Quality Management (2016) *"95% of dust particles from mineral workings have a relatively high mass and generally deposit within 100m of the point of release, with the remainder being deposited within 200 – 500 m of source"*. Given that the nearest European site lies approximately 0.2 km from the Proposed Development, this separation distance is considered sufficient to avoid significant impacts from dust or other airborne pollutants.

Furthermore, while the Site is located within 300m from Malahide Estuary where the aforementioned designated sites are located, significant impacts via air pathways to SCI species are not anticipated. This is due to the presence of physical buffering features, including the surrounding built environment, the adjacent M1 motorway, and the vegetated features surrounding both the M1 and nearby buildings, which collectively act as barriers to pollutant dispersion and noise transmission. These factors, along with the deposition characteristics of dust—where 95% settles within 100m and the remaining 5% represents a negligible amount—indicate that significant impacts via air pathways will not affect SCI species of Malahide Estuary SPA (004025).

As such, it is considered that there are no significant air or land pathways between the Proposed Development and any designated sites.

Indirect Pathways

Ex-Situ Foraging Habitat and Disturbance Events

The Site does not provide significant ex-situ habitat that is within foraging range of any SCI/QI species of any designated site. Therefore, indirect land and air pathways via ex-situ habitat use are not envisaged and impacts via this pathway is deemed negligible.

Collision Risk and Disruption to Migratory Paths

Collision risk and disruptions to migratory pathways were considered in this report. Tall structures such as electrical pylons, wind farms and tall buildings can lead to fatal collisions with commuting bird species. This is particularly true for those species considered to be "poor" fliers, with relatively low manoeuvrability compared to other more agile bird species (see Eirgrid, 2012).

Some of the most at-risk groups (classified as 'medium' and 'high' collision risk species) include wader species; waterfowl such as geese, swan and duck species, and some raptor species. Gulls such as black-headed gull,

herring gull and lesser black-backed gull are classed as 'low' collision risk species due to their superior manoeuvrability when flying (Eirgrid, 2012).

Large glass panes with no material variety are known to significantly increase the risk of bird collisions, as birds often cannot perceive clear or reflective glass as barriers (U.S. Fish and Wildlife Service, 2017). The Proposed Development incorporates a variety of materials and avoids expansive glass facades to mitigate this risk.

Additionally, the Proposed Development will comprise buildings with a maximum height of seven storeys. Considering the Site's location on the edge of an urban centre, the Proposed Development will not be significantly taller than other structures, either manmade or natural, in the vicinity of the Site and so birds are not likely to have to make rapid adjustments in direction or altitude to avoid the Proposed Development. Therefore, in conjunction with the lack of suitable ex-situ habitat, indirect air and land pathways for collision risk and migratory disruptions are not envisaged and impacts via this pathway are deemed negligible.

4.2.2.2 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. are shown in Figure 7 and Figure 8. 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. DESIGNATED SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD TO ESTABLISH NOTABLE LINKS BETWEEN THE SOURCES OF EFFECTS ARISING FROM THE PROPOSED DEVELOPMENT, AND ANY RELEVANT DESIGNATED SITES. THOSE SITES WITH NOTABLE S-P-R LINKS THAT ARE FURTHER ASSESSED IN THIS REPORT ARE HIGHLIGHTED IN GREEN (IF ANY).

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	2.1km SE	UNESCO, 2026 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 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 2015. 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.	None – No potential pathways identified.
The Broadmeadow Estuary Ramsar Site (833)	0.2km N	Ramsar Sites Information Service (2022) This estuary is cut off from the sea by a large sand spit and includes saltmarshes, salt meadows, rocky shores, a well-developed dune ridge and sand mudflats. There are beds of blue mussels and eelgrass and extensive mats of green algae. A railway viaduct built in the 19th century crosses right through the Site, influencing the tidal regime as the estuary does not fully empty at low tide but remains as a permanent lagoon. The estuary is an important wintering site for numerous species of waterbird including the globally threatened common loon (<i>Gavia immer</i>). The Site supports	Hydrological pathway via surface water run-off via the 900mm culvert located parallel to the eastern boundary of the Site. No other potential pathways identified.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
		more than one percent of the flyway population of the light-bellied brent goose (<i>Branta bernicla hrota</i>). It regulates water quality and flooding and mitigates the effects of storms. The inner part of the estuary is used for water sports. A section of the outer estuary has been infilled for a marina and housing development and the invasive ascidian (<i>Didemnum vexillum</i>) which is known to occur at the marina could pose a threat to several habitats. Monitoring is implemented and National Parks and Wildlife Service Conservation Rangers regularly inspect the Site.	
National Designated Sites			
Malahide Estuary pNHA (000205)	0.2km N	QI habitats and species overlap with the EU site of the same name – Malahide Estuary SAC (000205). As per (NPWS, 2013a) Habitats • Mudflats and sandflats not covered by seawater at low tide [1140] • <i>Salicornia</i> and other annuals colonising mud and sand [1310] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] SCI species overlap with the EU site of the same name – Malahide Estuary SPA (004025). As per (NPWS, 2013b) • Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]	Hydrological pathway via surface water run-off via the 900mm culvert located parallel to the eastern boundary of the Site. No other potential pathways identified.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Designation Rationale / Site Description	Potential Pathway to receptors
		• Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] • Shelduck (<i>Tadorna tadorna</i>) [A048] • Pintail (<i>Anas acuta</i>) [A054] • Goldeneye (<i>Bucephala clangula</i>) [A067] • Red-breasted Merganser (<i>Mergus serrator</i>) [A069] • Oystercatcher (<i>Haematopus ostralegus</i>) [A130] • Golden Plover (<i>Pluvialis apricaria</i>) [A140] • Grey Plover (<i>Pluvialis squatarola</i>) [A141] • Knot (<i>Calidris canutus</i>) [A143] • Dunlin (<i>Calidris alpina</i>) [A149] • Black-tailed Godwit (<i>Limosa limosa</i>) [A156] • Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] • Redshank (<i>Tringa totanus</i>) [A162] • Wetland and Waterbirds [A999]	

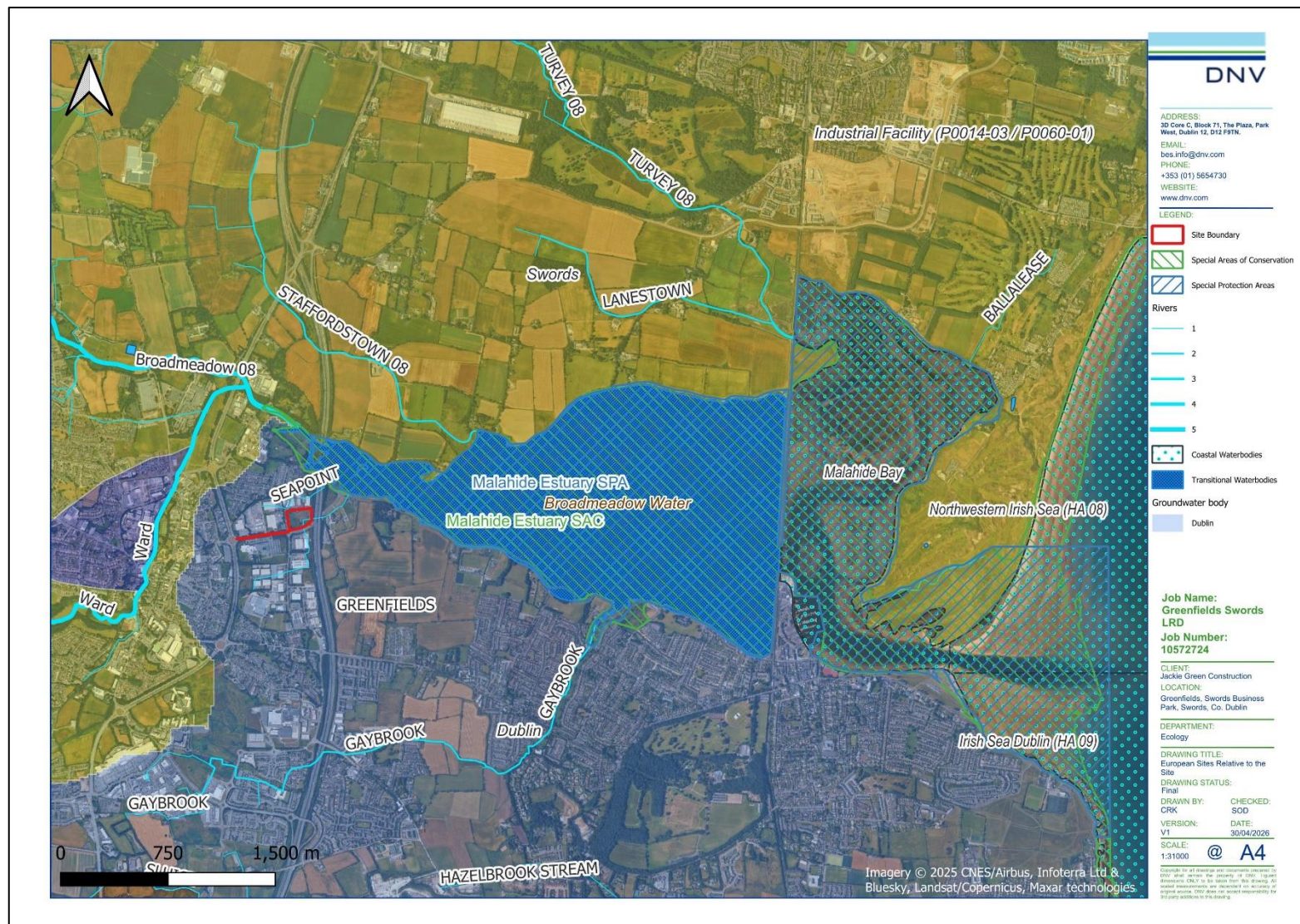


FIGURE 7. LOCATION OF EUROPEAN SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD IN RELATION TO THE PROPOSED DEVELOPMENT.

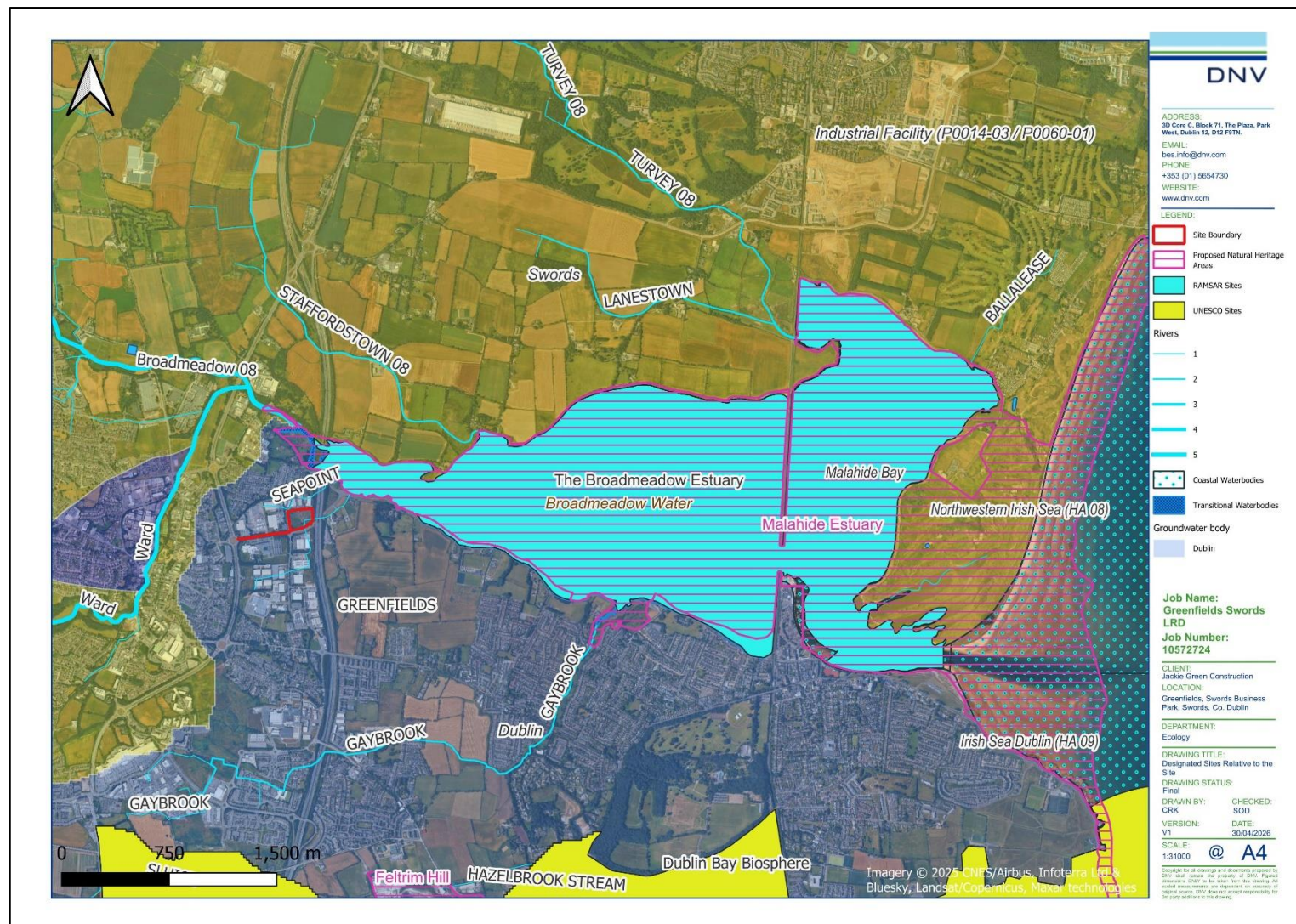


FIGURE 8. LOCATION OF DESIGNATED SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD IN RELATION TO THE PROPOSED DEVELOPMENT

4.3 Habitats

The habitats present within the Site, as recorded in the survey area during the field survey conducted on 14th March, are described in this section and summarised below. Site photographs of these habitats are included in section 11.4 and a map of the habitats is presented in Figure 9.

The majority of the Site consists of dry meadows and grassy verges (GS2) habitat. This habitat transitions into the scrub (WS1) habitat along the northwestern and western boundary of the Site. The GS2 habitat also transitions into the (mixed) broadleaved woodland (MWD1) habitat along the southwestern section of the Site. At the Site access gate located along the northern boundary, the exposed sand, gravel or till (ED1) habitat was recorded, however, during the most recent bat survey, it was identified that this habitat was colonised by pioneer floral species that are typically found in recolonising bare ground (ED3) habitats. Therefore, the ED3 habitat at present has superseded the ED1 habitat was recorded at the Site during the field survey on 14th March 2025.

The southern boundary of the Site consists of hedgerows (WL1) habitat that is discontinuous, with a gap along the central extent of this habitat. This hedgerow has not fully established itself, using the existing wooden fencing along the southern boundary for support. Along the western and eastern boundary of the Site, the treelines (WL2) habitats are found, providing additional linear habitat features at the Site. The eastern treeline is a part of the (mixed) broadleaved woodland (MWD1) planted between the Site and the existing M1 motorway. At the southern section of the Site, a drainage ditch (FW4) is found. While the ditch was dry during the time of survey with the absence of wet habitat based flora, the ditch acts as a channel for the Gaybrook_010 stream flowing though the Site. The buildings and artificial surfaces (BL3) habitat is only recorded in the southwestern section of the Site boundary, which comprise of a hardstanding paved public road.



FIGURE 9. MAP OF BASELINE HABITATS PRESENT AT THE PROPOSED DEVELOPMENT SITE.

4.3.1 Dry Meadows and Grassy Verges (GS2)

The GS2 habitat is the predominant habitat recorded at the Site. This portion of the Site is distinguished by a lower degree of disturbance and bare ground, and therefore a higher density of vegetation that is occasionally mowed. Along the northern boundary of the Site, this habitat is elevated due to the underlying mound which has been artificially created and subsequently colonised by grassland species.

Floral species found within this habitat include perennial ryegrass (*Lolium perenne*), small patches of cow parsley (*Anthriscus sylvestris*), creeping buttercup (*Ranunculus repens*), common hogweed (*Heracleum sphondylium*), meadow buttercup (*Ranunculus acris*), spear thistle (*Cirsium vulgare*), cleavers (*Galium aparine*), dandelion (*Taraxacum officinale* agg), common groundsel (*Senecio vulgaris*), scattered patches of Dame's violet (*Hesperis matronalis*), daisy (*Bellis perennis*), and creeping cinquefoil (*Potentilla reptans*). Nettle (*Urtica dioica*), and bramble (*Rubus fruticosus* agg.) were recorded along the northern extent of this habitat, where small patches of cut gorse (*Ulex europaeus*) were also recorded. Patches of rosebay willowherb (*Epilobium angustifolium*) were recorded in the northwest extent of this habitat, adjacent to the Site access gate of the Site. This species was not recorded in other sections of the Site. The southeast extent of this habitat was previously scrub, where cut bramble and gorse, willow (*Salix* sp.), and dock (*Rumex* sp.) were recorded. Patches of primrose (*Primula vulgaris*) and lesser celandine (*Ficaria verna*), dock and cleavers were recorded in this habitat only along areas adjacent to the FW4 habitat on Site.

The density and height of this vegetation provides opportunities for small mammal foraging and, potentially, breeding and foraging by bird species. Therefore, the dry meadows and grassy verges on the Site are considered to be of 'Local importance (higher value)'.

4.3.2 Scrub (WS1)

The WS1 habitat is located along the northwestern boundary of the Site. A section of this habitat along the Site boundary is raised. Much of the floral composition is consistent with species recorded in the GS2 habitat, with large growth of bramble dominating this habitat. Other flora recorded in this habitat include black mustard (*Brassica nigra*), cleavers, common hogweed, creeping buttercup, nettle and underlying rye grass.

The density and height of this vegetation provides opportunities for small mammal foraging and, potentially, breeding and foraging by bird species. Therefore, the scrub habitat on Site is considered to be of 'Local importance (higher value)'.

4.3.3 (Mixed) Broadleaved Woodlands (MWD1)

The MWD1 habitat is restricted in extent to the southwest corner of the Site, where a mix of mature and semi mature trees were recorded. Tree species recorded in this habitat include alder (*Alnus glutinosa*), cherry sp. (*Prunus* sp.), hazel (*Corylus avellana*), oak (*Quercus robur*), and willow sp. (*Salix* sp.). This habitat is not predominant in the greater area and is limited to the Site and other green spaces in its vicinity. Given the established nature of this habitat, this habitat not only offers foraging opportunities for birds and bats by supporting notable invertebrate species, but also functions as suitable nesting habitats for birds and refugia for small mammals. Therefore, the MWD1 habitat for this Site has been assigned as 'Local importance (higher value)'.

4.3.4 Recolonising Bare Ground (ED3)

The ED3 habitat is restricted in its range and limited to the existing access gate of the Site, located along the northern boundary. The floral composition of this habitat is limited to some flora recorded in the GS2 habitat surrounding the ED3 habitat, such as rye grass, creeping buttercup, common groundsel, cleavers and dandelion. Given that this habitat is abundant in the vicinity of the Site, and the limited flora it hosts on Site, the ED3 habitat for this Site has been assigned as 'Local importance (lower value)'.

4.3.5 Treelines (WL2)

There are two extents of WL2 habitat recorded at the Site, specifically along the western and eastern boundary of the Site. The treeline along the western boundary is an extension of the MWD1 habitat at the southwestern corner of the Site, where trees such as alder, cherry sp., hazel, silver birch (*Betula pendula*), elm (*Ulmus glabra*), and oak were recorded. Along the eastern boundary of the Site, the treeline present has been planted to function as a buffer

to the M1 motorway, where trees such as alder, hawthorn (*Crataegus monogyna*), hazel, and poplar sp. (*Populus* sp.) were recorded.

Given the mature nature of the trees along both extents, this habitat provides foraging opportunities for birds and bats by supporting notable invertebrate species and also functions as suitable nesting habitats for birds and refugia for small mammals. Therefore, the WL2 habitat for this Site has been assigned as 'Local importance (higher value)'.

4.3.6 Hedgerows (WL1)

The WL1 habitat at the Site of the Proposed Development is limited in its extent to the southern Site boundary, where the floral composition is predominantly composed of common gorse (*Ulex europaeus*) and hawthorn. All flora recorded in this section of the Site extend along the southern boundary and beyond the boundary of the Site in an eastward direction.

Given that this habitat provides foraging opportunities for birds and bats by supporting notable invertebrate species, the WL1 habitat for this Site has been assigned as 'Local importance (higher value)'.

4.3.7 Drainage Ditch (FW4)

The FW4 habitat at the Site is limited to two stretches of trenches in the southern section. The flora here is limited to species such as primrose (*Primula vulgaris*), isolated populations of lesser celandine (*Ficaria verna* ssp *verna*), dock sp. (*Rumex* sp.), bramble, spear thistle (*Cirsium vulgare*), dandelion, and colonising rye grass.

Given the limited flora recorded in this habitat and its very dry nature, the FW4 habitat at the Site has been assigned as 'Local importance (lower value)'.

4.3.8 Buildings and Artificial Surfaces (BL3)

The BL3 habitat at the Site is restricted in extent to the southwestern boundary of the Site, where this habitat is composed of hardstanding paved public roads. Therefore, this habitat at the Site has been assigned as 'negligible'.

4.4 Species and Species Groups

4.4.1 Flora

4.4.1.1 Rare and Protected Flora

The Site of the Proposed Development is located within the Ordnance Survey 10km grid square (O14), and 2km grid square (O14Y). Species records from the NBDC online database show these grid squares were studied for the presence of rare and/or protected species within the last 20 years. This database did not contain any records of protected flora within the last 20 years, however, two threatened species occurred within the 10km grid square (O14) (Table 6). The FPO Bryophytes database was also checked for rare and protected flora records within the vicinity of the Proposed Development. No rare and/or protected bryophyte records exist within the immediate vicinity of the Proposed Development, with the nearest listed record of protected bryophytes namely, petalwort (*Petalophyllum ralfsii*), many-seasoned thread-moss (*Bryum intermedium*), cernuous thread-moss (*Bryum uliginosum*), and Warne's thread-moss (*Bryum warneum*), all of which occur 6km west of the Proposed Development Site. The table below presents details of rare and protected flora records within the above databases.

TABLE 6. RECORDS OF RARE OR PROTECTED FLORA FOR THE SURROUNDING 10KM (O14) GRID SQUARES ASSOCIATED WITH THE SITE FROM THE NBDC.

Name	Grid Square	Date of last record	Database	Designation
Corn Marigold (<i>Glebionis segetum</i>)	O14	23/07/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened
Smooth Brome (<i>Bromus racemosus</i>)	O14	31/07/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened

Field Survey Results

No rare or protected flora were observed during the Site walkover on 14th March 2025. Therefore, these species are of 'Local importance (lower value)' and are not considered further in this report.

4.4.1.2 Invasive Species

There are records for 12 species of flora considered to be invasive within the grid squares which encompass the Site of the Proposed Development. Details of these records are listed in Table 7.

TABLE 7. RECORDS OF INVASIVE SPECIES OF FLOWERING PLANT FOR THE SURROUNDING 10KM (O14) GRID SQUARE ASSOCIATED WITH THE SITE FROM THE NBDC

Species	Grid square	Date of last record	Source	Designations
Butterfly-bush (<i>Buddleja davidii</i>)	O14	28/06/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Canadian Fleabane (<i>Conyza canadensis</i>)	O14	09/07/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Cherry Laurel (<i>Prunus laurocerasus</i>)	O14	26/01/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Species
Common Cord-grass (<i>Spartina anglica</i>)	O14	15/07/2014	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland)
Evergreen Oak (<i>Quercus ilex</i>)	O14	07/05/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Giant Hogweed (<i>Heracleum mantegazzianum</i>)	O14	05/05/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland) • EU Regulation S.I. 1143/2014
Himalayan Honeysuckle (<i>Leycesteria formosa</i>)	O14	21/09/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Japanese Knotweed (<i>Reynoutria japonica</i>)	O14	04/06/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland) • EU Regulation S.I. 1143/2014

Species	Grid square	Date of last record	Source	Designations
Russian-vine (<i>Fallopia baldschuanica</i>)	O14	21/08/2018	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Sycamore (<i>Acer pseudoplatanus</i>)	O14	29/11/2011	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Three-cornered Garlic (<i>Allium triquetrum</i>)	O14	04/04/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species • Regulation S.I. 477/2011 (Ireland) • Regulation S.I. 374/2024 (Ireland)
Wild Parsnip (<i>Pastinaca sativa</i>)	O14	22/06/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species

Field Survey Results

No 'High Impact' or 'Medium Impact' invasive plant species or Third Schedule listed species were recorded on Site during the field survey conducted on 14th March 2025.

4.4.2 Bats

4.4.2.1 Desk Study Results

A total of six bat species have been recorded within the 10km (O14) grid square which encompasses the Site (Table 8).

TABLE 8. RECORDS OF BATS FOR THE SURROUNDING 10KM GRID SQUARES (S92) ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Database	Designation
Brown Long-eared Bat (<i>Plecotus auritus</i>)	11/08/2017	National Database Ireland Bat of	• EU Habitats Directive - Annex IV • Wildlife Act 1976 (as amended)
Common Pipistrelle (<i>Pipistrellus pipistrellus sensu stricto</i>)	11/08/2017	National Database Ireland Bat of	• EU Habitats Directive - Annex IV • Wildlife Act 1976 (as amended)
Daubenton's Bat (<i>Myotis daubentonii</i>)	31/08/2020	National Database Ireland Bat of	• EU Habitats Directive - Annex IV • Wildlife Act 1976 (as amended)
Leisler's Bat (<i>Nyctalus leisleri</i>)	24/06/2022	National Database Ireland Bat of	• EU Habitats Directive - Annex IV • Wildlife Act 1976 (as amended)
Natterer's Bat (<i>Myotis nattereri</i>)	31/08/2006	National Database Ireland Bat of	• EU Habitats Directive - Annex IV • Wildlife Act 1976 (as amended)

Species	Date of last record	Database	Designation
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	24/06/2022	National Database Ireland	• EU Habitats Directive - Annex IV • Wildlife Act 1976 (as amended)

The Proposed Development Site (indicated in the black box in Figure 10) is located in an area with an overall Medium-High (31.22) suitability for bats in general. The suitability index for specific bat species is presented in Table 9. The landscape suitability index is high for five species of bats; soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), Leisler's bat (*Nyctalus leisleri*), and whiskered bat (*Myotis mystacinus*).

TABLE 9. 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 O14 10KM GRID SQUARE ARE HIGHLIGHTED IN GREEN.

Bat Species	Suitability Index (2km Grid Square)
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	45 (High)
Brown Longed-eared bat (<i>Plecotus auritus</i>)	42 (High)
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	44 (High)
Lesser horseshoe bat (<i>Rhinolophus hipposideros</i>)	0 (Low)
Leisler's bat (<i>Nyctalus leisleri</i>)	46 (High)
Whiskered bat (<i>Myotis mystacinus</i>)	38 (High)
Daubenton's bat (<i>Myotis daubentonii</i>)	31 (Medium-High)
Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>)	1 (Low)
Natterer's bat (<i>Myotis nattereri</i>)	34 (Medium-High)



FIGURE 10. BAT LANDSCAPE SUITABILITY MODEL (ALL BATS) SURROUNDING THE PROPOSED DEVELOPMENT SITE (ADAPTED FROM NBDC).

4.4.2.2 Field Survey Results

Bat Roost Assessment and Habitat Suitability

The ground-based preliminary bat roost assessment did not find any suitable PRFs within the Site. The trees along the eastern and western boundary, and trees within the southern section of the Site were not observed to contain any PRFs, such as trees with notable cracks, crevices or holes suitable for bat roosting. No potential roosting features were observed within the habitats inside the Site area.

The treeline along the eastern and western boundary of the Site, and hedgerow along the southern boundary of the Site may provide ‘moderate’ suitability habitat for foraging and commuting bats. The hedgerow along the southern boundary of the Site is considered to have only low suitability for foraging and commuting bats as lighting poles along the existing road south of the Site will have relatively high level lighting through the night. While this hedgerow connects the western treeline to the eastern treeline which in turn connects to green corridors northeast and west of the Site, this hedgerow is likely to provide limited prey items, and due to lighting is likely to be used only opportunistically by commuting bats.

Bat Activity Survey

Three dusk activity surveys were conducted at the Site on 21st August 2025, 4th September 2025, and 29th September 2025. Weather conditions were suitable for these surveys according to the guidance outlined in Collins (2023).

During the bat activity surveys, four species of bat were recorded. These include the common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), and Leisler’s bat (*Nyctalus leisleri*). As shown in Figure 11, the most frequently recorded species was common pipistrelle, accounting for 75% of the total bats recorded. This was followed by Soprano pipistrelle at 16%, and Leisler’s bat at 7%. The remaining 2% of the total bat species recorded at the Site account for myotis sp., which are considered likely to be either whiskered bat (*Myotis mystacinus*) or Natterer’s bat (*Myotis nattereri*).

The highest levels of bat activity at the Site was concentrated along the Site’s western, northwestern, southwestern and eastern boundaries, where existing vegetated features provide suitable foraging habitat. Activity primarily consisted of foraging and commuting, with bats frequently flying in a looped pattern along these linear features. Bats from these areas were eventually recorded flying in the northeastern direction of the Site (predominantly) and south of the Site. While activity was highest along the western and southern boundaries, the eastern boundary treeline also functioned as notable foraging and commuting corridor. Occasional In some rare instances, individual bats were recorded flying from the field south of the Site, with bats entering along the southern boundary and containing towards the western boundary.

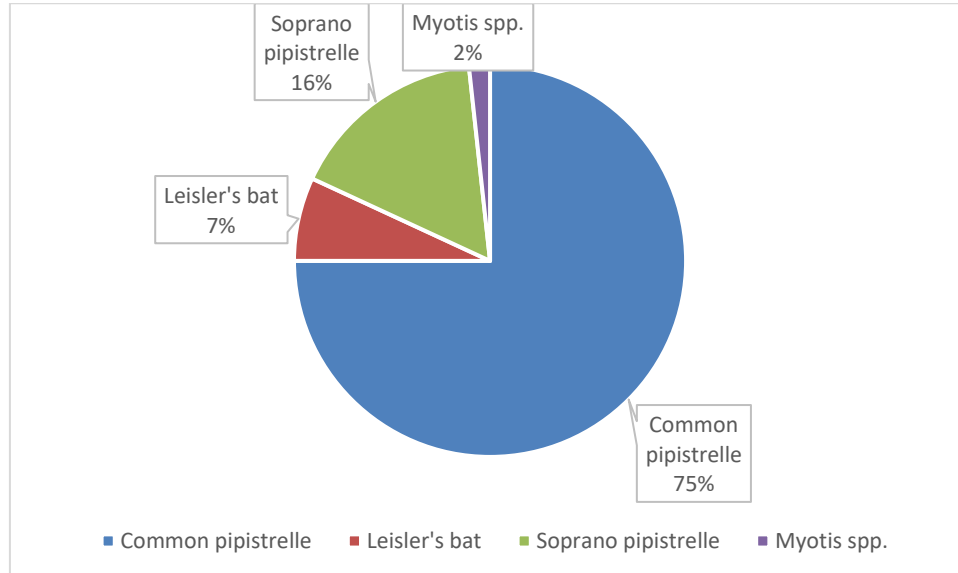


FIGURE 11. SPECIES COMPOSITION OF BAT RECORDS (ALL TRANSECTS)

4.4.2.3 Evaluation

The full suite of bat surveys at the Site revealed valuable information in relation to bat usage of the Site. The highest activity was recorded along the WL2 (treeline) habitats along the western and eastern boundary of the Site, followed by the MWD1 ((mixed) broadleaved woodland) habitat at the southwestern section of the Site. Typically, single bats or small groups (up to three individuals) were observed foraging for extended periods, often flying along existing vegetation in these sections of the Proposed Development. These habitats supported species commonly recorded in Ireland. Given that common pipistrelle, soprano pipistrelle, and Leisler’s bat were also recorded within the 10km grid square encompassing the Site, it is considered that the Site may support locally important populations



of these common bat species for commuting and foraging, and is of no importance to roosting populations of bat species in the local area. For these reasons, the bats at the Site of the Proposed Project have been assigned local importance (higher value) for commuting and foraging bats, and local importance (lower value) for roosting bat populations.



FIGURE 12. BAT TRANSECT ROUTE FOLLOWED FOR THE BAT ACTIVITY TRANSECT SURVEYS AT THE SITE.

4.4.3 Birds

4.4.3.1 Desk study Results

A total of 75 bird species have been recorded within the (O14) 10 km grid square. Of these, 37 are amber listed birds and 26 are red 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 10. The remaining twelve species are all green listed.

TABLE 10. DETAILS OF AMBER AND RED LISTED BIRD SPECIES WITHIN THE 10KM GRID SQUARE (O14)

Species	Date of record	BoCCI Status (2021)
Barn Owl (<i>Tyto alba</i>)	10/12/2015	Red
Bar-tailed Godwit (<i>Limosa lapponica</i>)	31/12/2011	Red
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	03/05/2018	Amber
Black-tailed Godwit (<i>Limosa limosa</i>)	04/05/2018	Red
Common Gull (<i>Larus canus</i>)	13/04/2016	Amber
Common Sandpiper (<i>Actitis hypoleucos</i>)	23/03/2023	Amber
Common Tern (<i>Sterna hirundo</i>)	27/06/2018	Amber
Coot (<i>Fulica atra</i>)	31/12/2011	Amber
Cormorant (<i>Phalacrocorax carbo</i>)	04/05/2018	Amber
Curlew (<i>Numenius arquata</i>)	22/10/2021	Red
Goldcrest (<i>Regulus regulus</i>)	22/01/2021	Amber
Golden Plover (<i>Pluvialis apricaria</i>)	31/12/2011	Red
Goldeneye (<i>Bucephala clangula</i>)	31/12/2011	Red
Great Crested Grebe (<i>Podiceps cristatus</i>)	31/12/2011	Amber
Greenfinch (<i>Chloris chloris</i>)	27/05/2021	Amber
Grey Partridge (<i>Perdix perdix</i>)	31/12/2011	Red
Grey Plover (<i>Pluvialis squatarola</i>)	31/12/2011	Red
Grey Wagtail (<i>Motacilla cinerea</i>)	23/03/2023	Red
Hen Harrier (<i>Circus cyaneus</i>)	08/10/2016	Amber
Herring Gull (<i>Larus argentatus</i>)	22/06/2022	Amber
House Martin (<i>Delichon urbicum</i>)	22/06/2022	Amber
House Sparrow (<i>Passer domesticus</i>)	19/06/2021	Amber

Species	Date of record	BoCCI Status (2021)
Kestrel (<i>Falco tinnunculus</i>)	15/03/2023	Red
Kingfisher (<i>Alcedo atthis</i>)	01/04/2023	Amber
Knot (<i>Calidris canutus</i>)	31/12/2011	Red
Lapwing (<i>Vanellus vanellus</i>)	04/05/2018	Red
Lesser Black-backed Gull (<i>Larus fuscus</i>)	15/07/2021	Amber
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>)	31/12/2011	Amber
Linnet (<i>Linaria cannabina</i>)	24/03/2022	Amber
Little Gull (<i>Hydrocoloeus minutus</i>)	31/12/2011	Amber
Little Ringed Plover (<i>Charadrius dubius</i>)	26/08/2008	Amber
Mallard (<i>Anas platyrhynchos</i>)	27/06/2018	Amber
Meadow Pipit (<i>Anthus pratensis</i>)	15/03/2023	Red
Mute Swan (<i>Cygnus olor</i>)	02/02/2024	Amber
Oystercatcher (<i>Haematopus ostralegus</i>)	31/12/2011	Red
Pochard (<i>Aythya ferina</i>)	31/12/2011	Red
Red Kite (<i>Milvus milvus</i>)	28/05/2021	Red
Red-breasted Merganser (<i>Mergus serrator</i>)	31/12/2011	Amber
Redshank (<i>Tringa totanus</i>)	27/06/2018	Red
Ruff (<i>Calidris pugnax</i>)	31/12/2011	Amber
Sand Martin (<i>Riparia riparia</i>)	23/03/2023	Amber
Sandwich Tern (<i>Thalasseus sandvicensis</i>)	09/05/2018	Amber
Scaup (<i>Aythya marila</i>)	31/12/2011	Red
Shelduck (<i>Tadorna tadorna</i>)	18/05/2012	Amber
Short-eared Owl (<i>Asio flammeus</i>)	31/12/2011	Amber
Shoveler (<i>Spatula clypeata</i>)	27/06/2018	Red
Skylark (<i>Alauda arvensis</i>)	27/05/2020	Amber
Snipe (<i>Gallinago gallinago</i>)	24/03/2022	Red
Spotted Flycatcher (<i>Muscicapa striata</i>)	17/09/2017	Amber

Species	Date of record	BoCCI Status (2021)
Spotted Redshank (<i>Tringa erythropus</i>)	31/12/2011	Amber
Starling (<i>Sturnus vulgaris</i>)	07/06/2021	Amber
Stock Dove (<i>Columba oenas</i>)	31/12/2011	Red
Swallow (<i>Hirundo rustica</i>)	25/05/2021	Amber
Swift (<i>Apus apus</i>)	28/07/2024	Red
Teal (<i>Anas crecca</i>)	31/12/2011	Amber
Tree Sparrow (<i>Passer montanus</i>)	21/09/2019	Amber
Tufted Duck (<i>Aythya fuligula</i>)	31/12/2011	Amber
Velvet Scoter (<i>Melanitta fusca</i>)	31/12/2011	Red
Whinchat (<i>Saxicola rubetra</i>)	16/09/2015	Red
White-tailed Eagle (<i>Haliaeetus albicilla</i>)	04/05/2021	Red
Whooper Swan (<i>Cygnus cygnus</i>)	31/12/2011	Amber
Wigeon (<i>Mareca penelope</i>)	31/12/2011	Amber
Yellowhammer (<i>Emberiza citrinella</i>)	02/05/2021	Red
Little Egret (<i>Egretta garzetta</i>)	19/04/2021	Green
Little Grebe (<i>Tachybaptus ruficollis</i>)	22/02/2017	Green
Mistle Thrush (<i>Turdus viscivorus</i>)	03/05/2018	Green
Great Black-backed Gull (<i>Larus marinus</i>)	08/12/2021	Green
Peregrine (<i>Falco peregrinus</i>)	05/10/2018	Green
Pink-footed Goose (<i>Anser brachyrhynchus</i>)	31/12/2011	Green
Pink-footed Goose (<i>Anser brachyrhynchus</i>)	31/12/2011	Green
Robin (<i>Erithacus rubecula</i>)	03/11/2024	Green
Rock Dove (<i>Columba livia</i>)	31/12/2011	Green
Sparrowhawk (<i>Accipiter nisus</i>)	05/09/2023	Green
Stonechat (<i>Saxicola rubicola</i>)	24/03/2022	Green
Woodpigeon (<i>Columba palumbus</i>)	08/12/2021	Green

4.4.3.2 Field Survey Results

Bird Scoping Survey

During the Site visit on 14th March 2025, ten bird species were recorded (see Table 11 below) at the Site. Of these, only one species is amber listed and none are red listed on the most recent 'Birds of Conservation Concern Ireland' (BoCCI) (Gilbert et al. 2021). The remaining bird species are green listed bird species.

TABLE 11. BIRD SPECIES RECORDED DURING WALKOVER SURVEY ON 14TH MARCH 2025

Species	BoCCI Status (2021)
Blackbird (<i>Turdus merula</i>)	Green
Great Tit (<i>Parus major</i>)	Green
Blue Tit (<i>Cyanistes caeruleus</i>)	Green
European Herring Gull (<i>Larus argentatus</i>)	Amber
Goldfinch (<i>Carduelis carduelis</i>)	Green
Jackdaw (<i>Coloeus monedula</i>)	Green
Magpie (<i>Pica pica</i>)	Green
Rook (<i>Corvus frugilegus</i>)	Green
Woodpigeon (<i>Columba palumbus</i>)	Green
Wren (<i>Troglodytes troglodytes</i>)	Green

Breeding Bird Surveys

The breeding bird surveys commenced on the mornings of the 19th August, 26th August, and 10th September 2025 at the Site. A total of **15** species were recorded between the three Breeding Bird Surveys, of which, only one species is classified as red listed and two species are classified as amber listed as per the most recent 'Birds of Conservation Concern Ireland' (BoCCI) (Gilbert et al. 2021). These species are listed in the table below. The remaining species are green listed bird species.

TABLE 12. BIRD SPECIES RECORDED AT THE PROJECT SITE AND SURROUNDING AREAS DURING BREEDING BIRD SURVEYS.

Species	BoCCI Status (2021)	Dates Recorded	Observations of Breeding Behaviour
Blue Tit (<i>Cyanistes caeruleus</i>)	Green	26 th Aug 2025 10 th Sept 2025	Heard and seen on two dates.
Dunnock (<i>Prunella modularis</i>)	Green	19 th Aug 2025 26 th Aug 2025 10 th Sept 2025	Common
Feral Pigeon (<i>Columba livia domestica</i>)	Unclassified	19 th Aug 2025 26 th Aug 2025	Flyovers
Goldcrest (<i>Regulus regulus</i>)	Amber	19 th Aug 2025 26 th Aug 2025 10 th Sept 2025	Small numbers in the hedgerows on all dates
Goldfinch (<i>Carduelis carduelis</i>)	Green	19 th Aug 2025	Two in trees on one date

Species	BoCCI Status (2021)	Dates Recorded	Observations of Breeding Behaviour
Grey Wagtail (<i>Motacilla cinerea</i>)	Red	19 th Aug 2025	One flew over calling on one date
Hooded Crow (<i>Corvus corone</i>)	Green	10 th Sept 2025	Flyovers
Jackdaw (<i>Corvus monedula</i>)	Green	26 th Aug 2025 10 th Sept 2025	Flyovers
Long-tailed Tit (<i>Aegithalos caudatus</i>)	Green	10 th Sept 2025	A small flock moved through on one date
Robin (<i>Erithacus rubecula</i>)	Green	19 th Aug 2025 26 th Aug 2025 10 th Sept 2025	Common
Rook (<i>Corvus frugilegus</i>)	Green	19 th Aug 2025 26 th Aug 2025 10 th Sept 2025	Flyovers
Stonechat (<i>Saxicola torquatus</i>)	Green	19 th Aug 202	Male at entrance to site on one date
Swallow (<i>Hirundo rustica</i>)	Amber	19 th Aug 2025	One flyover
Woodpigeon (<i>Columba palumbus</i>)	Green	19 th Aug 2025 26 th Aug 2025 10 th Sept 2025	Flyovers only
Wren (<i>Troglodytes troglodytes</i>)	Green	19 th Aug 2025 26 th Aug 2025 10 th Sept 2025	Common

Winter Bird Surveys

Given the close proximity to a Special Protection Area in the vicinity of the Site, a winter bird scoping survey was conducted on 26th February 2025. In total, 15 bird species were recorded during the survey. Of these, only one species is listed as a red listed species, and one species is listed as amber listed as per the most recent 'Birds of Conservation Concern Ireland' (BoCCI) (Gilbert et al. 2021). These species are listed in the table below. The remaining species are green listed bird species.

TABLE 13. BIRD SPECIES RECORDED DURING THE WINTER BIRD SCOPING SURVEY ON 26TH FEBRUARY 2025

Species	BoCCI Status (2021)	Activity
Blue Tit (<i>Cyanistes caeruleus</i>)	Green	Common in and in the vicinity of the Site.
Chaffinch (<i>Fringilla coelebs</i>)	Green	Ten individuals in the western treeline.
Dunnock (<i>Prunella modularis</i>)	Green	Common in and in the vicinity of the Site. Several calling from cover.
Goldfinch (<i>Carduelis carduelis</i>)	Green	Found in loose association with chaffinch.
Grey Wagtail (<i>Motacilla cinerea</i>)	Red	Flyover
Hooded Crow (<i>Corvus corone</i>)	Green	Flyover
Jackdaw (<i>Coloeus monedula</i>)	Green	Flyover

Species	BoCCI Status (2021)	Activity
Magpie (<i>Pica pica</i>)	Green	Flyover
Robin (<i>Erithacus rubecula</i>)	Green	Several present on Site
Rook (<i>Corvus frugilegus</i>)	Green	Common
Siskin (<i>Spinus spinus</i>)	Green	Six individuals in the western treeline.
Song Thrush (<i>Turdus philomelos</i>)	Green	One individual flushed from scrub habitat on Site.
Starling (<i>Sturnus vulgaris</i>)	Amber	Flyover
Woodpigeon (<i>Columba palumbus</i>)	Green	Eleven individuals feeding on Site
Wren (<i>Troglodytes troglodytes</i>)	Green	Common in and in the vicinity of the Site.

4.4.3.3 Evaluation

Considering the variety of bird species recorded both in the historical records and during the full suite of bird surveys carried out at the Site, it is considered that the Site contains resident and regularly occurring, locally important populations of bird species protected under the Wildlife Act, where the habitats on Site may provide limited suitable breeding habitats for these species. The hedgerow (WL1), treeline (WL2), and Scrub (WS1) habitat of the Site provides suitable habitat for these bird species which may be harmed during vegetation clearance in the absence of suitable mitigations or precaution. For this reason, bird species at the Site of the Proposed Development have been assigned local importance (higher value).

4.4.4 Mammals (excl. bats)

4.4.4.1 Desk Study Results

Records for terrestrial mammals were obtained from the NBDC online database. Table 14 lists these species, their date of last record and summarises their protected status/designation. In total, 12 mammal species (nine native and three non-native or invasive) were recorded within the grid squares which encompass the Proposed Development Site.

TABLE 14. RECORDS OF TERRESTRIAL MAMMALS (NATIVE AND NON-NATIVE) FOR THE SURROUNDING 10KM (O14) GRID SQUARE ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Source	Designation
NATIVE SPECIES			
European Otter (<i>Lutra lutra</i>)	02/05/2014	Mammals of Ireland 2016-2025	- Wildlife Act 1976 (as amended) - EU Habitats Directive – Annex II & IV
Badger (<i>Meles meles</i>)	30/05/2015	Atlas of Mammals in Ireland 2010-2015	Wildlife Act 1976 (as amended)
Hedgehog (<i>Erinaceus europaeus</i>)	16/10/2023	Hedgehogs of Ireland	Wildlife Act 1976 (as amended)
Irish Hare (<i>Lepus timidus</i>)	27/08/2023	Mammals of Ireland 2016-2025	- Wildlife Act 1976 (as amended) - EU Habitats Directive – Annex V

Species	Date of last record	Source	Designation
<i>subsp. hibernicus</i>)			
Pine Marten (<i>Martes martes</i>)	22/06/2020	Mammals of Ireland 2016-2025	- Wildlife Act 1976 (as amended) - EU Habitats Directive – Annex V
Pygmy Shrew (<i>Sorex minutus</i>)	07/09/2019	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Red Fox (<i>Vulpes vulpes</i>)	01/01/2018	Mammals of Ireland 2016-2025	Not legally protected
Red Squirrel (<i>Sciurus vulgaris</i>)	10/05/2011	Atlas of Mammals in Ireland 2010-2015	Wildlife Act 1976 (as amended)
Wood Mouse (<i>Apodemus sylvaticus</i>)	13/09/2011	Atlas of Mammals in Ireland 2010-2015	Not legally protected
NON-NATIVE AND INVASIVE SPECIES			
Brown Rat (<i>Rattus norvegicus</i>)	15/05/2017	National Invasive Species Database	- High Impact Invasive Species - Regulation S.I. 477/2011 (Ireland) – Offshore Islands Only
Grey Squirrel (<i>Sciurus carolinensis</i>)	07/07/2022	Mammals of Ireland 2016-2025	- High Impact Invasive Species - Regulation S.I. 477/2011 (Ireland) - Regulation S.I. 374/2024 (Ireland) - EU Regulation No. 1143/2014
Rabbit (<i>Oryctolagus cuniculus</i>)	24/06/2018	Mammals of Ireland 2016-2025	Medium Impact Invasive Species

4.4.4.2 Field Survey Results

There was no evidence of mammal activity observed on Site during the walkover on 14th March 2025. The absence of badger setts or signs of badger activity such as scat or footprints on Site of the Proposed Development indicated that badgers (*Meles meles*) are not present on the Site. Furthermore, while there is an existing access point via the underground tunnels at the existing ditches on Site to facilitate future usage of the Site by badgers given the wider context of the area and their occurrence within the 10km grid square encompassing the Site, the nearest historical record of badgers was recorded 2km north of the Site. Given this distance and the absence of larger linear green corridors connecting the Site to this area, it is considered that the presence of badgers at the Site is unlikely.

Additionally, no riparian habitats or watercourses are present within the Site, therefore, otters (*Lutra lutra*) were not observed during the survey. No signs of otters such as spraints, holts, slide tracks or footprints were observed during the field survey and the Site does not contain suitable habitat for otters.

While the woodland habitats at the southern section of the Site and the treeline along the western and eastern boundary are potential suitable habitats for pine marten (*Martes martes*), this species was not recorded during the survey conducted in 2025. Moreover, no evidence of this species such as dropping, footprints, or feeding remains were recorded during the survey conducted for the Site. The nearest historical record of pine marten was recorded 450m southwest of the Site. While there are existing roads that separate the Site from this area, pine marten do not require linear green corridors to commute between different areas, and are adapted to urban environments.

Given that there are suitable habitats within the Site and along the boundaries of the Site, it is considered that the presence of pine marten at the Site is likely.

Smaller terrestrial mammals such as European hedgehog (*Erinaceus europaeus*), pygmy shrew (*Sorex minutus*), red squirrel (*Sciurus vulgaris*), wood mouse (*Apodemus sylvaticus*), and Irish hare (*Lepus timidus subsp. hibernicus*) could potentially utilise the Site, specifically the scrub, meadow habitats, woodland habitats, treelines and hedgerow on Site, which offer some cover for these mammals. However, no footprints or droppings of these mammals were recorded on Site during the survey conducted in 2025.

4.4.4.3 Evaluation

Given the absence of large mammals recorded at the Site and the lack of suitable habitats for badgers and otter, it is concluded that the Proposed Development is unlikely to be of significant importance to badger and otter populations in the greater area. Therefore, badgers and otters at the Site is considered to be of local importance (lower value).

Although no direct evidence of pine marten, hedgehogs, pygmy shrew, red squirrel, wood mouse and Irish hare was recorded during the Site walkover, the range of habitats present within the Site, including the scrub, hedgerow, treeline, and grassland habitats are considered to be suitable habitat for these species, even within a semi-urban context. Given the timid, nocturnal or cryptic behaviour of some of the aforementioned species, it can be considered that these species may utilise the Site now and in the future. Therefore, it can be concluded that the Site has the potential to provide suitable commuting, foraging and resting habitats for pine marten and smaller mammals, which may be significantly impacted during the Construction and/or Operational Phases of the Proposed Development in the absence of mitigation. For these reasons, pine marten and small mammal species at the Site of the Proposed Development has been considered to be of local importance (higher value).

4.4.5 Amphibians

Both common frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*) have been recorded in the 10km (O14) grid square encompassing the Site of the Proposed Development.

While no amphibians were observed on Site during the field survey conducted on 14th March 2025 or recorded as incidental sighting during the other surveys conducted at the Site to date, the existing drainage ditch (FW4 habitat) at the Site provides suitable habitats for common frog and smooth newt. The drainage ditch at the Site was dry during the survey with no signs of amphibia or vegetation supported by wet habitats. However, there is potential for the ditch to contain water during heavy rainfall events due to its trenched slopes, thereby maintaining suitability for breeding amphibians. Despite the lack of any direct sightings of amphibia at the Site, given the potential for the ditch to contain water during heavy rainfall events, a precautionary approach has been taken and the amphibians at the Site of the Proposed Development has been considered to be of local importance (higher value).

4.4.6 Common Lizard

While there are no records of common lizards (*Zootoca vivipara*) within the relevant (O14) 10km grid square, some suitable habitats for this species are available at the Site of the Proposed Development. This includes habitats such as scrub, woodlands, and treelines at the Site, which could provide some suitable sheltering habitat for this species. As no targeted surveys for lizard were carried out, it is assumed under the precautionary principle that a locally important population of this species may be present at the Site. Therefore, common lizards at the Site of the Proposed Project have been assigned local importance (higher value).

4.4.7 Other Fauna

Irish Stoat

The Irish stoat (*Mustela erminea hibernica*) has been historically recorded within the (O14) grid square encompassing the Site of the Proposed Development. However, this species was not observed during the Site survey conducted on 14th March 2025. While the Site could support small number of Irish stoat due to their ubiquitous distribution in Ireland, presence of prey (rabbits) and some suitable habitat within the Site such as the drainage ditch, hedgerows and scrub habitats, the nearest record of this species is located 2.6km southeast of the Site (NBDC). Given this distance and the absence of larger linear green corridors connecting the Site to this area,

it is considered that the presence of Irish stoat at the Site is unlikely. It is therefore not considered further in this assessment.

Fish

The critically endangered European eel (*Anguilla anguilla*) is the only fish species recorded within the 10km (O14) grid square encompassing the Site of the Proposed Development. The European eel is a catadromous fish species that hatches in the ocean but migrates into freshwater systems for their adult life before migrating back into the ocean to spawn. Given that there are no established watercourses within the Site, and the absence of historical records of this species within waterbodies hydrologically connected to the Site, it is considered that the Site does not have the potential to support this species or any other fish species. It is therefore not considered further in this assessment.

Marsh Fritillary (*Euphydryas aurinia*)

The Marsh Fritillary 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 this species within the (O14) 10km grid square which encompass the Proposed Development. Furthermore, no individuals of this species or its associated food plant; Devil's Bit Scabious (*Succisa pratensis*), were recorded during the field survey in March 2025. It should be noted that devil's bit scabious is an autumn flowering plant and as such was not recorded during the summer survey. The recommended survey period for Marsh Fritillary is in September and October when the caterpillars can be found within silken webs on the leaves of the foodplant. Despite the lack of an autumn survey, it can be confirmed with relative confidence that the Marsh Fritillary is unlikely to be present at the Site due to the limited habitats currently present, and the lack of suitable environmental conditions to support the growth of devil's bit scabious, thereby ruling out the presence of marsh fritillary. It is therefore not considered further in this assessment.

4.4.8 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:

- **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.
- **Fauna**
 - White-clawed Crayfish (*Austropotamobius pallipes*) – Not present in the watercourses adjacent to the Site, adjacent ditches and streams not considered suitable for this species due to low quality
 - Freshwater Pearl Mussel (*Margaritifera margaritifera*) – Nearest known records from River Aughrim, Wicklow to the South of the Site, no hydrological connection to this catchment.
 - Natterjack Toad (*Epidalea calamita*) – Distribution restricted to few coastal sites.
 - Kerry Slug (*Geomalacus maculosus*) – Distribution restricted to south and west of Ireland.

4.5 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).

The impacts of the Proposed Development on the identified KERs are assessed in section 5. Table 15 below summarises the evaluation rating assigned to each ecological feature and the rationale behind these evaluations is also provided.

TABLE 15. 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			
European Sites	International Importance	Potential significant impacts on European sites have been mitigated in the accompanying NIS under separate cover (DNV, 2026b).	No
UNESCO		Designated sites within the ZOI of the Proposed Development are sufficiently well separated from the Proposed Development so that no impacts on their designated features are anticipated as a result of the Proposed Development.	No
Ramsar Site	International Importance	Hydrologically linked to the Proposed Development via surface water run-off to Malahide Estuary where this Site, The Broadmeadow Estuary (833), is located. However, this pathway is deemed to be insignificant in light of the mitigation measures provided for the European sites it overlaps with in Malahide Estuary in the accompanying NIS report (DNV, 2026b).	No
Nationally designated Sites (pNHAs, NHAs)	National Importance	Hydrologically linked to the Proposed Development via surface water run-off to Malahide Estuary where this Site, Malahide Estuary pNHA (000205), is located. However, this pathway is deemed to be insignificant in light of the mitigation measures provided for the European sites it overlaps with in Malahide Estuary in the accompanying NIS report (DNV, 2026b).	No
HABITATS			
Dry meadows and grassy verges (GS2)	Local Importance (Higher Value)	Habitat covers majority of Site. Semi-natural habitat with some importance to local wildlife. Entirety will be lost to facilitate Proposed Development.	Yes
Scrub (WS1)	Local Importance (Higher Value)	Habitat covers a small section of the Site. Semi-natural habitat with some importance to local wildlife. Entirety will be lost to facilitate Proposed Development.	Yes
Recolonising ground (ED3) bare	Local Importance (Lower Value)	The loss of this low value habitat will not be significant. This habitat type is also abundant in the wider area east of the Proposed Development.	No
Hedgerows (WL1)	Local Importance (Higher Value)	Habitat covers a stretch of the southern boundary of the Site. Semi-natural habitat with some importance to local wildlife. Entirety	Yes

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
		will be lost to facilitate Proposed Development.	
Treelines (WL2)	Local Importance (Higher Value)	Habitat covers the western and eastern boundary of the Site. Semi-natural habitat with some importance to local wildlife. An extent of this treeline along the western boundary will be retained and will be retained in full along the eastern boundary.	Yes
Drainage Ditches (FW4)	Local Importance (Lower Value)	The loss of this low value habitat will not be significant. However, this habitat can support amphibian populations in the event of heavy rainfall, and is therefore brought forward in this assessment.	Yes
(Mixed) Broadleaved woodland (MWD1)	Local Importance (Higher Value)	Habitat covers a section of the Site, along the southwestern section. Semi-natural habitat with high importance to local wildlife. Will be fully retained.	Yes
Buildings and artificial surfaces (BL3)	Local Importance (Lower Value)	The loss of this low value habitat will not be significant. This habitat type is also abundant in the wider area east of the Proposed Development.	No
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
Invasive Species	Negligible value	No invasives recorded at the Site.	No
NATIVE FAUNA			
Bat Assemblage (Roosting)	Local Importance (Lower Value)	No suitable potential roosting features for any existing trees at the Site that are likely to host roosting bat species at the Site. Therefore, it is presumed that the Site does not have the capacity to support locally important populations of roosting bat species.	No
Bat Assemblage (Foraging and Commuting)	Local Importance (Higher Value)	Habitats such as treelines (WL2), hedgerow (WL1), woodland (MWD1), and scrub (WS1) at the Site offer low potential for commuting and foraging bats. The loss of these habitats has the potential to significantly affect commuting and foraging bat populations in the absence of mitigation.	Yes
Bird Assemblages	Local Importance (Higher Value)	Only one red listed and four amber listed bird species were recorded at the Site, where the majority of bird species recorded are green listed. Given that the Site has suitable breeding habitats for a few notable species, bird species utilising the Site have the	Yes

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
		potential to be significantly affected by the Proposed Development in the absence of mitigation and precaution.	
Large Mammals (badgers and otters)	Local Importance (Lower Value)	No resting sites, and foraging or commuting habitats for mammals such as badger or otter were identified at the Site. Therefore, it is presumed that the Site does not have capacity to support locally important populations of these species.	No
Pine Marten and Small Mammals	Local Importance (Higher Value)	Suitable habitats present for some of the small native mammals, such as hedgehog, pygmy shrew, wood mouse, red squirrel and Irish hare, and pine marten are present at the Site, which may be more timid and less likely to be recorded during surveys. Hedgehog specifically hibernate and may be susceptible to injury during vegetation clearance during hibernation in the absence of mitigation.	Yes
Amphibians	Local Importance (Higher Value)	Suitable habitat such as drainage ditch (FW4) present at the Site, which can host amphibians. While the ditch is predominantly dry, given that this ditch may be filled with water during heavy rainfall events, it is assumed that the Site is suitable for amphibians under the precautionary principal.	Yes
Common Lizard	Local Importance (Higher Value)	A range of suitable habitats present at the Site which are suitable for common lizards. These habitats can function as refugia for common lizards, therefore exposing them to injury during vegetation clearance in the absence of mitigation.	Yes
Other Fauna	Local Importance (Lower Value)	Very limited habitats at the Site to support these species and poor connectivity with the wider area. No field signs of presence and confirmed to be absent.	No

5 ECOLOGICAL IMPACT ASSESSMENT

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 integral to the design and completion 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 16.

TABLE 16. 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: - Intensive green roofs - Permeable paving to all parking lots - Tree pits - Bio-retention areas - Filter swales - Silt traps	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.
CEMP	Standardised international best practice measures as per the accompanying CEMP will be applied during the Construction Phase
Landscape Design: - Retention of mature and semi-mature trees in the southwestern section. - Green wall in the form of Native hedgerow planting along the southern boundary. - Supplementary planting in the form of native and ornamental hedgerow, street trees and parkland trees, shrub, native wildflower and public amenity grass mix. - Proposed Bioretention area to the northwest section of Site, where a planting mix will be incorporated. - Deployment of bat boxes, bird boxes, log piles and swift bricks/blocks in southern section of Site.	Slightly offsets the loss of habitats at the Site. Green walls along eastern, western and southern boundaries will provide connectivity between the Site and the wider area during the operational lifetime. Additional habitats for nesting birds and habitat connectivity for foraging and/or commuting bats provided due to landscaping design. Additional planting at the Site will also provide additional habitats for smaller mammals and help support invertebrates.
Lighting Design - Public lighting will adhere to best practice guidance. - Light spill controlled through a combination of directional lighting and luminaire optics design. - No floodlighting will be used on the scheme.	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.

5.2 Construction Phase

5.2.1 Impacts on Designated Sites

The Malahide Estuary pNHA (000205) and The Broadmeadow Estuary Ramsar site (833) will be impacted by surface water run-off from the Site during the Construction Phase. This would constitute a *negative, short-term*, and *moderate* impact at an international scale for Ramsar sites, and national scale for pNHAs.

5.2.2 Impacts on Habitats and Flora

5.2.2.1 Dry meadows and grassy verges (GS2)

All dry meadows and grassy verges habitat on the Site will be lost during the Construction Phase of the Proposed Development. This would constitute a *negative, permanent*, and *slight* impact at a local scale.

5.2.2.2 Scrub (WS1)

All scrub habitat on the Site will be lost during the Construction Phase of the Proposed Development. This would constitute a *negative, permanent*, and *slight* impact at a local scale.

5.2.2.3 Hedgerows (WL1)

The hedgerow habitat on the Site will be lost during the Construction Phase of the Proposed Development. This would constitute a *negative, permanent*, and *slight* impact at a local scale.

5.2.2.4 Treelines (WL2)

The vast majority of the treeline along the western boundary of the Site will be lost during the Construction Phase of the Proposed Development, where sections of the treeline will be retained and will be incorporated into the landscaping. The treeline along the eastern boundary will be retained in its entirety as this treeline has been planted as a buffer to the M1. Therefore, in relation to the treeline recorded along the western Site boundary, its removal during Construction Phase would constitute a *negative, permanent*, and *moderate* impact at a local scale for this habitat.

5.2.2.5 Drainage Ditch (FW4)

While this is a low value habitat at present, this habitat may contain stagnant water during heavy rainfall events. This would provide suitable conditions to support amphibian populations at the Site. Therefore, the loss of this habitat would constitute a *negative, permanent*, and *slight* impact at a local scale.

5.2.2.6 (Mixed) broadleaved woodlands (MWD1)

The mixed broadleaved woodland habitat located at the southwest section of the Site will be retained along its full extent for the Construction Phase of the Proposed Development. This habitat has been incorporated into the landscaping of the Site, with minor modifications to the habitat such as including a pedestrian walkway. Given that this high value habitat of mature and semi mature trees will remain on the Site, the Construction Phase would constitute a *neutral, permanent*, and *significant* impact at a local scale for this habitat.

5.2.3 Impacts on Native Fauna

5.2.3.1 Bats (commuting and Foraging only)

The activity transect survey revealed low foraging and commuting activity at the Site. Therefore, potential impacts resulting from the Construction Phase of the Proposed Development comprise of loss of foraging and commuting habitat, and disturbance from artificial light.

The full extent of habitats used by commuting and foraging bats will not be lost at the Site. Therefore, in the absence of mitigation, the temporary loss of foraging and commuting habitat during the Construction Phase of the Proposed Project would constitute a *negative, temporary* impact of *slight* significance on the local bat population, in the context of the low activity levels (and high disturbance in the area), and the presence of similar linear habitat in the wider area.

Bats have the potential to be disturbed by Construction Phase lighting. The lighting levels around much of the boundary habitats (excluding the northern and southern boundary) is currently at a low level. Although it will not be required year-round, construction lighting may be required when the days begin getting shorter. Lighting will be directed towards the works area though some light spill to boundary features used by commuting/foraging bats has the potential to occur. This may represent a *negative, temporary, and slight* impact at a local level

5.2.3.2 Birds assemblages

While no birds were observed breeding at the Site, there is potential for commonly occurring bird species to utilise habitats on Site for breeding and nesting. As such, vegetation removal to facilitate the Proposed Development could result in direct mortality of adult birds, chicks and eggs if undertaken during the breeding bird season (March to August inclusive). This would constitute a *negative, permanent, and significant* impact on local breeding birds.

Furthermore, the removal of scrub, hedgerow and treeline to facilitate the Proposed Development will result in a decrease in the available nesting habitat for breeding birds, constituting a *negative, permanent, and slight* impact on local breeding birds in the context of the wider area of alternative suitable habitat.

5.2.3.3 Pine marten and smaller mammals

Should smaller mammals such as hedgehog, pygmy shrew, red squirrel, Irish hare, or wood mouse, or pine marten be utilising the Site during Construction, there is the potential for entrapment within pipes, wires or other building materials if not properly stored. This could lead to direct mortality in the absence of mitigation, which would constitute a *negative, permanent, and significant* impact at the local level.

Should vegetation clearance be undertaken during the hibernation season from November to March, there is the potential for direct mortality of any hibernating individuals (small mammals such as hedgehog) present on the Site. This could constitute a *negative, permanent and significant* impact on local populations of small mammals.

In addition, disturbance in the form of dust, noise and/or lighting generated during the Construction Phase has the potential to displace these species either from the Site (should they be present) or from it's vicinity in the absence of mitigation, which would constitute *negative, short-term, and slight* impacts at the local level.

5.2.3.4 Amphibians

There is suitable potential amphibian breeding habitat within the Site in the form of the FW4 drainage ditches. While there are no signs of amphibians recorded at the Site, and the fact that the drainage ditch is dry, suitable breeding habitat may be available for amphibians during heavy rainfall events. Therefore, there is the potential for suitable breeding habitat to be destroyed by machinery, leading to direct mortality of amphibians. The absence of mitigation, this would constitute a *negative, short-term and significant* impact on local amphibian populations.

Amphibians can also use the Site during the Construction Phase, leading to their entrapment within pipes, wires or other building materials if not properly stored. This could lead to direct mortality in the absence of mitigation, which would constitute a *negative, permanent, and significant* impact at the local level.

5.2.3.5 Common lizard

Common lizard in Ireland is widespread, utilising stone walls or vegetated areas for basking in sunlight. The vast majority of habitats at the Site consist of vegetated habitats which may be used by common lizard for basking or as refugia.

During the Construction Phase, vegetation clearance may place lizards potentially present at risk of injury and mortality. Additionally, lizards may become trapped in inappropriately stored plastic sheeting and other construction wastes, as well as in dig holes and trenches. In the absence of any mitigation or precaution, this risk represents a potential *significant, negative, and permanent* impact on the Common Lizard at a local scale.

5.3 Operational Phase

5.3.1 Impacts on Native Fauna

5.3.1.1 Bats

Operational Phase lighting could potentially have a negative impact on local bat populations, as most bat species avoid strongly lit areas when foraging and/or commuting. However, the lighting plan for the Proposed Development has taken into consideration the bat foraging and commuting potential of hedgerow, treeline and woodland habitats along the boundaries of the Site, and as such incorporates measures to limit light spill into these areas. Therefore, the potential impacts from the Operational Phase of the Proposed Development are considered to be *negative*, *permanent*, and *slight* significance in the absence of mitigation at a local scale

5.3.1.2 Birds

Given that the Operational Phase of the Proposed Development will incorporate additional habitats on Site as part of the landscaping plan, these habitats will provide more opportunities for breeding birds at the Site. Therefore, the potential impacts from the Operational Phase of the Proposed Project are considered to be *positive*, *permanent*, and *moderate* significance at a local scale.

5.3.1.3 Pine marten and small mammals (excl. bats)

Given the green corridors connecting the Site to larger green areas north of the Site, should pine marten or small mammals such as hedgehog and/or, pygmy shrew be utilising the Site's green infrastructure during the Operational Phase, there is potential to disturb these species due to the increased human activity at the Site. This could lead to a reduction in the presence of these species in the absence of mitigation, which would constitute a *negative*, *permanent*, and *slight* impact at the local scale.

5.3.1.4 Common lizard

As additional habitats will be made available for common lizards, there is potential to disturb these species due to the increase human activity at the Site. This could lead to a reduction in the presence of these species in the absence of mitigation, which would constitute a *negative*, *permanent*, and *slight* impact at the local scale.

5.4 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 habitats on Site will continue to serve as low value biodiversity corridors, providing habitat connectivity, along with nesting/roosting and foraging habitat for birds, bats and mammals. The grassland and scrub habitats would also continue to provide foraging and commuting habitat for local wildlife and pollinators, with potential for scrub species to further encroach into the grassland area. The floral composition of recolonising bare ground, and drainage ditch habitats will continue to increase in the absence of disturbance. The treeline, hedgerow and woodland habitats at the Site will continue to further establish themselves, becoming more mature in the absence of disturbance. Thus, in the absence of the Proposed Development, the Site would continue to provide low ecological value to local fauna.

5.5 Potential for In-Combination Effects

5.5.1 Relevant Plans and Policies

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

- Fingal Development Plan 2023 - 2029
- Fingal Biodiversity Action Plan 2023 - 2030

No specific projects or plans within the Fingal Development Plan 2023 – 2029 (CDP) 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 section 11.1 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.

5.5.2 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 Liffey) as the Proposed Development are identified below in Table 17 and the potential for possible in-combination effects with the Proposed Development are assessed.

TABLE 17. ASSESSMENT OF POTENTIAL IN-COMBINATION EFFECTS OF THE PROPOSED DEVELOPMENT AND OTHER DEVELOPMENTS PENDING OR GRANTED PERMISSION IN THE LAST 5 YEARS (2018-2023). DEVELOPMENTS ALONG THE SAME IMPACT PATHWAYS AS PROPOSED DEVELOPMENT WERE CONSIDERED WITHIN A 2KM RADIUS.

Planning Reference	Planning Authority	Status	Location
F22A/0365	Fingal County Council	Granted Permission	South and west of the Proposed Development (approx. 25m away)
Development Description All in or in the vicinity of the townlands of Mainscourt, Roscall, Richardstown, Gracedieu, Brownstown, Magillstown, Skidoo, Dollards, Balheary, Newtown, broadmeadow, Balheary Demesne, Seatown West, Swords Demesne, Mantua, Greenfields, Seatown East and Mountgorry, Co. Dublin. The development of grid connection infrastructure to connect the approved solar photovoltaic ('PV') energy development on lands at Mainscourt, Ballyboghil, Co. Dublin under Register Reference F17A/0340, PL06F.249174 to the ESB Mountgorry 38kV Substation, Swords Business Park, Swords, Co. Dublin, comprising the laying of 9,470 metres of 38kV underground electricity cables in ducts and associated infrastructure substantially under public roads and beneath the Ward River Bridge, Gracedieu Bridge and the Broadmeadow river by means of horizontal directional drilling. A Natura Impact Statement (NIS) will be submitted to the Planning Authority with the planning application.			
Potential for In-combination effects This development shares a hydrological pathway with the Proposed Development via surface water run-off into the existing 900mm culvert running parallel to the eastern boundary of the Site. The EIAR dated 18/07/2022 concluded that there was no potential for any significant direct, indirect, or cumulative effects on biodiversity as a result of the proposed development. Therefore, there is no potential for cumulative effects with this development and the Proposed Development of this EclA report. As such, in-combination effects with the Proposed Development can be ruled out.			
F23A/0438	Fingal County Council	Granted Permission	Northeast of the Proposed Development (approx. 800m away)
Development Description Permission is sought for (a) internal demolition of some non-original partitions on the upper and lower levels to facilitate new layout, (b) internal demolition and removal of some parts of upper floor and lower floor slabs to provide for new simplified floor levels internally, (c) removal of internal non-original stairs, (d) knock out section of exterior wall to the south to provide for new enlarged window opening, (e) opening up some original openings to the south elevation to provide for new windows, (f) new internal building works to provide for new floors in part and new partitions, (g) renovations to the house internally and new window replacement externally, (h) new waste water treatment plant WWTP to replace existing septic tank on site. All to split level 2 storey house which is a protected structure.			
Potential for In-combination effects			

This development shares a hydrological pathway with the Proposed Development at Malahide Estuary, where the culvert running parallel to the eastern boundary of the Site discharges into.

The Chief Executives Order dated 13/08/2023 has a section pertaining to the EIA screening, which concluded '*The proposed development is not listed in Schedule 5 (part 1 or Part 2) of the Planning and Development Regulations 2001 as amended nor does the proposed development meet the requirements for sub-threshold EIA as outlined in Section 103 of the Planning and Development Regulations 2001 as amended. No Environmental Impact Assessment (EIA) is therefore required.*' Given that this development has was no potential for any significant direct, indirect, or cumulative effects on biodiversity, it is concluded that there is no potential for cumulative effects with this development and the Proposed Development of this EclA report.

As such, in-combination effects with the Proposed Development can be ruled out.

The Proposed Development is estimated to provide an increase in both extent and variability of available habitats for local wildlife, offsetting some of the loss accrued by nearby developments (both permitted and planned).

It is considered that there is no potential for the Proposed Development to act in-combination with other permitted developments in the vicinity that could cause likely significant effects on any nearby KERs.

6 AVOIDANCE, MITIGATION, COMPENSATION AND ENHANCEMENT MEASURES

6.1 Avoidance By Design

The Proposed Development design does not implement any specific avoidance measures.

6.2 Construction Phase

Table 18 gives a summary of the best practice development standards and mitigation measures to be implemented during the Construction Phase of the Proposed Development. The measures listed are outlined in more detail in the Construction and Environmental Management Plan (CEMP) (AWN, 2026) accompanying this application under separate cover.

TABLE 18. SUMMARY OF BEST PRACTICE STANDARDS AND MITIGATION OUTLINED IN THE CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN (AWN, 2026). WHERE SPECIFIC DETAILS RELATING TO PROTECTION OF KEY ECOLOGICAL RECEPTORS IS REQUIRED UNDER THESE MEASURES, REFERENCE IS MADE TO THE APPROPRIATE SECTION IN THIS REPORT.

Theme	Best Practice Standards and Mitigation	Ecology Specific Mitigation
Soils and Geology	Appropriate measures to store and handle stripped topsoil and subsoil; consideration of weather conditions to minimise silt/sediment entering surface water network and dust control; and appropriate fill material import, storage and handling away from surface water features. Surface water discharge points for rain and groundwater pumped from excavations and directed to settlement ponds during Construction to be agreed with KCC prior to works. Appropriate storage of fuels, oils and other chemicals, designated refueling and maintenance area, and preparation of emergency response procedure.	No.
Water - Hydrogeology	Measures for erosion and sediment control (i.e., settlement ponds), prevention and control of accidental spills and leaks, concrete handling.	Yes – See section 7.7 of CEMP.
Water - Water Supply, Drainage & Utilities	Appropriate use of settlement ponds, foul water to be tankered off site for treatment until connection to foul network made, and all connections (waste water, water supply, electrical, gas and telecommunications) to be made by authorized and qualified people.	No.
Pest Control	Vermin control layout plan with bait traps in strategic locations.	Yes – See section 7.6.3 of CEMP.

Theme	Best Practice Standards and Mitigation	Ecology Specific Mitigation
Site Compound Facilities and Parking	Location to be agreed with KCC prior to works. Appropriate measures to handle foul water generated, protect potable water supply, health and safety, separate areas for (i) machinery and plant; (ii) concrete batching; and (iii) staff parking.	No.
Construction Waste Management	Managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication – ' <i>Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects</i> '.	Yes – See section 7.6.1 and 7.6.2 of CEMP.
Landscape and Visual Impact	Appointment of an Arborist to oversee works relating to trees, establishment on Tree Protection Zones in accordance with BS 5837:2012 ' <i>Trees in Relation to Design, Demolition and Construction – Recommendations</i> '; and post-construction tree assessment.	No.
Noise and Vibration	To comply with the requirements of BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014 (Code of Practice for Noise and Vibration Control on Construction and Open Sites) as well as Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.	Yes – See section 7.5.1 and 7.5.2 of CEMP.
Air Quality	Dust Management Plan to include suppression via watering of areas identified as potential dust source; road sweeping to remove aggregate materials; appropriate cover of transported materials; wheel washing; maintenance of public roads in relation to dust; and appropriate monitoring.	Yes – See Section 7.3 of CEMP.

In addition, to ensure the CEMP remains 'fit for purpose' for the duration of the project it should be reviewed and updated by the Project Manager in consultation with the Contractor's Ecologist during the life of the project to ensure that it remains suitable to facilitate efficient and effective delivery of the project's environmental commitments. The Contractor shall also designate a Site Engineer/Manager/Assistant Manager as the Construction Waste Manager and who will have overall responsibility for the implementation of the Project Waste Management Plan (WMP). This Plan will be prepared upon appointment of the Main Contractor.

Additional mitigation measures required for sufficient protection of the KERs identified in this report, and/or details for the specific implementation of the mitigation measures as per the above table are given in the below sections.

6.2.1 Protection of Habitats and Flora

6.2.1.1 Mitigation 1: Root Protection Zones for Retained Vegetation at the Site

An arborist will oversee works relating to trees and demarcate a suitable buffer for the retained vegetation, such as the stretch of the treeline along the western boundary of the Site, and trees within the woodland at the southwest section of the Site. This is to be done prior to the commencement of the Construction Phase. Protective tree fencing in compliance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*'

will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees to be retained at the Site. The fencing should be signed off by a qualified arborist prior to Construction to ensure it has been properly erected. No ground clearance, earthworks, stock-piling or machinery movement will be undertaken within these areas.

6.2.1.2 Mitigation 2: Biosecurity

The following best practice site hygiene and biosecurity measures will be in place to avoid the potential introduction of invasive floral species at the Site and offsite via movement of materials/staff:

- All soils/materials being introduced to the Site will be sourced from a certified invasive flora-free source site, to ensure no introduction of invasive plant materials to the Site occurs.
- Personnel working on or between sites will ensure their clothing and footwear are cleaned, ensuring they are visually free from soil and organic debris, in order to prevent inadvertent spread of invasive plant material.
- All vehicles entering or leaving the Site will have been suitably checked and pressure washed to ensure no introduction of invasive flora to and from the Site. Measures such as a drive through hygiene bath or footbaths will be considered where appropriate.
- Material/water left after vehicles have been pressure-washed must be contained, collected and disposed of appropriately.

6.2.1.3 Mitigation 3: Water Quality Protection

The following applies to all stages of the Construction Phase and will serve to mitigate against potential deterioration of water quality in the in the waterbodies to the east of the Site.

Construction Phase Best Practice

The following measures, designed to protect surface water quality, will serve to prevent any negative effects occurring in surrounding water bodies as a result of Construction Phase groundwater discharges from the Site. These mitigation measures will treat the source (e.g., refuelling of plant to be carried out at designated refuelling station locations on Site) or remove the pathway (e.g., no release of wastewater generated on-Site to ground during the Construction Phase).

All works carried out as part of the Proposed Development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990.

Personnel working on the Site will be trained in the implementation of environmental control and emergency procedures. Procedures and relevant documents produced will be formulated in consideration of standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

In addition, standard best practice measures will be implemented throughout the Construction Phase to ensure no construction-related pollutants are discharged into the surface water or groundwater at and surrounding the Site. Standard best practice measures (as per CEMP) that will be implemented on the Site during the Construction Phase are as follows:

- Silt fencing will be used along the stream boundary and any streams and/or drainage ditches on Site which may have a hydrological link to nearby designated sites.
- Any drains or sewers, where present, which could act as pathways for contamination from the Site will be blocked where required.
- Location of stilling/settling ponds will take into account groundwater vulnerability at the site and will be located in suitable areas and at distance from any hydrologically connected to nearby designated sites.
- Discharge water generated during placement of concrete will be stored and removed off Site for treatment and disposal.
- There will be no washing out of any concrete trucks on Site. Any washing of chutes will be carefully collected in a designated container which will be subsequently sent off site for compliant waste management.
- Specific areas for storage, delivery, loading/unloading of materials will be designated, which will have appropriate containment/spill protection measures where required. These storage areas will be located in suitable areas and at distance from any watercourses hydrologically connected to nearby designated sites.
- Leachate generation from stockpiles or waste receptacles will be prevented by using waterproof covers.
- Prolonged exposure of contaminated soils or groundwater to the atmosphere will be avoided where practical or unnecessary.
- Appropriate bunding, storage and signage arrangements for all deleterious substances will be used.
- Robust and appropriate Spill Response Plan and Environmental Emergency Plans will be included within the Contractor's CEMP and the details of which will be communicated, resourced and implemented for the duration of the works.
- Control measures and spill clean-up equipment adequate to treat spills at the Site will be available and staff will be trained and experienced in using said equipment.
- A register will be kept of all hazardous substances either used on Site or expected to be present. The register shall be available at all times and shall include as a minimum: valid safety sheets; Health & Safety, environmental controls to be implemented when storing, handling, using and in the event of spillage of materials; emergency response procedures/precautions for each material; the Personal Protective Equipment (PPE) required when using the material.
- All existing services will be mapped, and a plan will be put in place to decommission/di vert and manage any drains or sewers which are associated with the Site.
- A plan for dealing with any unknown drains or services which may be encountered during the works will be set out and implemented.
- Any surface water inflow into the main areas of excavation will be minimised where possible.

Maintenance of Plant and Machinery

- All plant and equipment will be regularly cleaned and properly maintained.
- There will be no washing out of any concrete trucks on Site.
- Pumped concrete will be monitored to ensure there is no accidental discharge and will be carried out in dry weather and with impermeable pouring mats laid down where possible.

Building/Road Network and Services

- Constructing buildings and roads above flood level to ensure that backflows through the surface water outfalls will not occur.
- The Proposed Development's road network will be finished with tarmac or asphalt surface which will discharge runoff to a piped drainage system, and surface water drains will be installed in roads and streets and in pre-determined wayleaves adjacent to building structures.
- All car parking and refuel areas at the Site will be located on substrate underlain with an impermeable liner to prevent contaminant leaching to groundwater.

Earthworks Mitigation

The proposed earthworks mitigation measures for both the Construction and Operational Phases include:

- A street sweeper will attend Site regularly to clean the road when there are truck movements in and out of the Site.
- Hard surface roads will be regularly swept to remove mud and aggregate materials from their surface;
- Public roads outside the Site will be regularly inspected for cleanliness, and cleaned as necessary;
- Material handling systems and Site stockpiling of materials will be designed and laid out to minimise exposure to wind; and
- Water misting or sprays will be used on stockpiles as required if particularly dusty activities are necessary during dry or windy periods.

Storage and Use of Fuels, Oils and Chemicals

- Appropriate bunding, storage and signage arrangements for all deleterious substances (e.g., fuels, oils, and chemicals) will be used.
- Fuels, lubricants, and hydraulic fluids for equipment used on the construction Site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice (Enterprise Ireland BPGCS005).
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the Site for disposal or recycling.
- Diesel tanks, used to store fuel for the various items of machinery, will be self-contained and double-walled.
- Spillage and leaks of oil from cars parked in the Development during the Construction Phase are unavoidable. To reduce the potential impacts, oil interceptors will be incorporated into the Site drainage design.
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the Site and properly disposed of.
- Refuelling will be carried out from tanks or delivery vehicles on a designated impermeable surface and will not be left unattended.
- Plant will not be left running when not in use (i.e., no idling) and plant with dust arrestment equipment will be used where practical.

Spill/Emergency Response Plans

- Robust and appropriate Spill Response Plan and Site Environmental Emergency Plans (SEP) will be implemented for the duration of the works:
 - Identifying fuel storage and refuelling locations on designated areas within the compound, away from drainage ditches/waterbodies (where present), and on substrate underlain with an impermeable liner to prevent contaminant leaching to groundwater;

- Identifying spill kit locations (spill kits will be required for each piece of heavy equipment (e.g., excavators, loaders, trucks, etc.,) which will be at least 21L drum size each with spill pads, sorbent, small boom, plastic garbage bag and gloves;
 - A specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on Site.
 - Staff will be trained and experienced in using appropriate control measures and spill kits on-Site, and will be familiar with the location of all spill kit locations and the Site layout.
- A register will be kept of all hazardous substances either used on Site or expected to be present. The register shall be available at all times and shall include as a minimum:
 - Valid safety sheets; Health & Safety, environmental controls to be implemented when storing, handling, using and in the event of spillage of materials;
 - Emergency response procedures/precautions for each material;
 - PPE is required when using the material.

Waste Management and Disposal

Waste management and disposal will comprise the following:

- All existing services will be mapped, and a plan will be put in place to decommission/divert and manage any drains or sewers which are associated with the Site.
- Portaloos and/or containerised toilets and welfare units will be used to provide facilities for Site personnel. All associated waste will be removed from the Proposed Development Site by a licenced waste disposal contractor.
- Mixer washings are not to be discharged into ground or drainage ditches and will be collected and disposed of at a suitably licenced facility.

In addition, a minimal waste approach of reduction, reuse and recycling will be utilized where practicable/appropriate. Where this cannot be carried out, all wastes will be disposed of at licenced waste facilities.

6.2.1.4 Mitigation 4: Air Quality Protection

In order to protect the surrounding waters and habitats/species therein from dust deposition during earthworks, the following mitigation measures are proposed:

- Dust generation will be controlled through proper placement of stockpiles away from sensitive receptors and taking note of the prevailing wind direction.
- Stockpiles will be located in sheltered parts of the Site and watered where required.
- Staff will monitor dust levels during working hours
- Bowsers will be available during dry periods for surface watering to keep unpaved areas moist.
- Any dust emitting works will be postponed during high winds (gales) until winds have subsided.
- Vehicles delivering material will be covered to prevent the escape of dust.
- A wheel washing facility will be installed near the Site compound for use by vehicles exiting the Site.

The above, proactive control of dust will ensure the prevention of significant emissions of dust. Should dust be found to be excessive, the following measures will be applied at the Site:

- Dust deposition rate will be measured by Bergerhoff Dust Deposit Gauges situated in strategic locations in the Site including boundary vegetation.
- Results will be quantified in a lab after 30 days and monitoring reports prepared by the relevantly qualified person.

A limit of 350mg/m² per day will be adhered to.

6.2.2 Protection of Fauna

6.2.2.1 Mitigation 5: Vegetation Clearance

Vegetation clearance at the Site will need to be cognisant of any potentially present fauna. Table 19 provides guidance for when vegetation clearance is permissible in relation to wintering, hibernating and breeding fauna. Information sources include British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, 2000*. The preferred period for vegetation clearance is within the months of September and October to avoid the main breeding bird season and bat maternity and roosting season as well as mammal hibernation.

Where this seasonal restriction cannot be observed, a check for active nests will be carried out immediately prior to any Site clearance by an Ecological Clerk of Works (ECoW) and repeated as required to ensure compliance with legislative requirements. Where a breeding bird and an active nest is found, the nest will be protected, and no further works will take place in the vicinity of the nest until the young have fledged.

TABLE 19. SEASONAL RESTRICTION ON VEGETATION REMOVAL. RED BOXES INDICATE PERIODS WHEN CLEARANCE/WORKS ARE NOT ADVISED

Ecological Features	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Breeding birds	Vegetation clearance permissible		<u>Nesting bird season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist						Vegetation clearance permissible			
Hibernating mammals (namely hedgehog)	<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist		Vegetation clearance permissible							<u>season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist		
Common lizard	<u>Lizard hibernation season</u> No habitat clearance permissible		Active period Habitat (scrub, tall sward grass) clearance permissible							<u>Lizard hibernation season</u> No habitat clearance permissible		

Additionally, all vegetation clearance will be carried out in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog, pygmy shrew). A phased cutting approach under the supervision of a suitably qualified ECoW will be used to allow wildlife (small mammals, reptiles and amphibians) to move away from any suitable habitat that will be removed:

- Phase 1 – Cutting vegetation to 150-200 mm and removing the arisings;
- Phase 2 – After a minimum of one hour, hand-searching the cut areas (conducted by an ECoW) and removing any sheltering habitat (e.g. logs or debris) then cutting vegetation to ground level and removing the arisings; and
- Phase 3 – Soil scrape.

Should any suitable refugia or day nesting habitats need to be removed, this will be carried out outside the most vulnerable breeding periods for hedgehogs wherever practicable (main hedgehog birthing months June and July) and will be supervised by the ECoW.

6.2.2.2 Mitigation 6: Construction Phase Lighting

As a precautionary measure, no overnight lighting will be directed to the natural habitats bounding the Site. Where overnight lighting cannot be avoided in these areas due to health and safety concerns, the lighting within the Proposed Development will be designed and installed to minimise the impact on local wildlife as agreed with the Ecologist and in accordance with the Bat Conservation Trust guidelines on artificial lighting and bats (Collins, 2023)

- There will be no light spill to the boundary habitats.
- All luminaires used will lack UV/IR elements to reduce impact.
- LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (3000 Kelvins will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e., with no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

6.2.2.3 Mitigation 7: Noise Reduction

Mitigation measures that can be applied at the Site to suppress noise generated during Construction are outlined below:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by Site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.

6.2.2.4 Mitigation 8: Avoidance of Accidental Trapping of Fauna

In order to avoid accidental harm/injury or mortality to mammals during construction all excavations shall have a wooden plank, sloping edge or other means of escape to avoid accidental trapping of mammals. All pipes shall be covered at night.

6.2.2.5 Mitigation 9: Waste Management

As best-practice all construction-related rubbish on Site e.g., plastic sheeting, netting etc. will be kept in a designated area and kept off ground level so as to prevent small mammals such as hedgehogs, pygmy shrew and irish stoat from entrapment and death.

Trenches/pits must be either covered at the end of each working day or include a means of escape for any animal falling in e.g., a plank or objects placed in the corner of an excavation.

Any temporarily exposed open pipe system will be capped in such a way as to prevent animals gaining access as may happen when contractors are off Site.

6.3 Operational Phase

6.3.1 Protection of Habitats

6.3.1.1 Mitigation 10: Invasive Species Management

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.

As such, it is recommended that any newly landscaped areas, particularly where infill materials and soils have been imported for soft landscaping, are assessed during the Operational Phase within the next botanical season for the presence of any inadvertently introduced invasive species, with particular focus on those listed on Schedule III of SI 477 of 2011. If invasive species are detected, an Invasive Species Management Plan will be prepared, agreed with the Local Authority and implemented at the earliest possibility to limit the potential for further spread during the Operational Phase.

6.3.2 Protection of Fauna

6.3.2.1 Mitigation 11: Wildlife Friendly Lighting

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:

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used.
- 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 2 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.

6.4 Biodiversity Enhancement Measures

6.4.1 Biodiversity Enhancement by Design

The proposed landscaping for the Site has been designed in accordance with Policy GINHP14 of the Fingal Development Plan 2023 – 2029, which states “Biodiversity Net Gain Guidance Promote biodiversity net gain in new developments and develop a planning guidance document on Biodiversity Net Gain.” While the landscaping doesn’t quantitatively demonstrate the BNG objective, the design has incorporated elements that qualifiedly prove that the landscaping for the Proposed Development provides a net increase in biodiversity for the Site.

The landscape plan for the Site of the Proposed Development (Cunnane, 2026) incorporates a mix of native and non-native (but not invasive) planting throughout the proposed green spaces of the Project Site. This will take the form of street/avenue trees, parkland trees, native hedgerow, ornamental hedge, shrub planting, bioretention planting, wildflower meadows, public amenity grassland, and the retained treeline and woodlands at the western and southwestern section of the Site. These vegetated features will enhance the variety of habitats at the Site, providing more habitats than the current baseline. The wildflower meadow planting will follow the All Ireland Pollinator Plan 2021 -2025, which aims to incorporate native wildflower planting to promote local flora, thereby providing additional habitat for invertebrate populations at the Site.

In addition to the landscaping, the Site of the Proposed Development will also incorporate wildlife friendly lighting by design, where the following considerations have been implemented:

- Shielding to avoid overspill
- Dark-Sky lanterns with zero upward light spill
- Narrow spectrum output to reduce UV levels
- Zero degree tilt to avoid any upward light spill

These elements of the lighting plan (M and E, 2026) will allow nocturnal wildlife to utilise the Site during it’s operational phase, causing no significant deviation in it’s usage from current baseline levels.

To further increase engagement at the Site, bat boxes and bird boxes have been proposed for the Proposed Development. A total of four bat boxes, and four bird boxes have been proposed for the southern section of the Site, which will provide resting and/or nesting habitat for birds, and roosting habitats for the common Irish bat species that have been recorded at the Site. Swifts, that are red listed species (as per BOCCI) have also been taken into consideration, where swift bricks/blocks will be provided at the Site. The no. of swift bricks/blocks is yet to be determined at the Site, but the inclusion of this enhancement measure will provide further nesting opportunities to the declining national population of this species. In addition, multiple log piles will be provided along the southern section of the Site to provide habitats for herpetofauna and invertebrates.

6.4.2 Enhancement 1: Bat Boxes

A minimum of four summer bat boxes (e.g. Woodcrete 1FF Schwegler design) will be erected on suitably sized trees in the green open space proposed for the southern section of the Site. The boxes will be installed as part of the landscaping works, so as not to delay their deployment and potential positive impacts.

Bat boxes will be sited carefully, and this will be undertaken by a bat specialist. The bat ecologist will erect the bat boxes with assistance from the contractor. Some general points that will be followed include:

- Bat boxes will be erected on trees (or telegraph poles) with no crowding branches or other obstructions for at least 1 metre above and below the bat box.
- Diameter of tree should be wide and strong enough to hold the required number of boxes.
- Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas. Locations will be sheltered from prevailing winds.
- Bat boxes will be erected at a height of 4-5 metres to reduce the potential for vandalism and predation of roosting bats.
- The recommended Woodcrete 1FF design is open at the bottom, allowing the droppings to fall out, and so does not need cleaning.

6.4.3 Enhancement 2: Bird Boxes

To enhance the value of the Site for birds, four artificial nest boxes (for passerine species) are recommended to be placed across the green open space in the southern section of the Site. The final location of these boxes have been determined for the Proposed Development, and will be deployed as part of the landscaping works, so as not to delay their deployment and potential positive impacts.

In general, the boxes should be placed out of reach from wild predators, with a separation distance of at least 15m between each box, and should be installed in areas with minimal human disturbance. Final nest box design will be informed by a suitably qualified Ecologist (or ECoW) and agreed with the Local Authority.

6.4.4 Enhancement 3: Swift Bricks/Blocks

Swift boxes/ bricks can be included into the design of the Proposed Development. Swifts (*Apus apus*) are an endangered species of bird that migrate to Ireland from South Africa each summer and traditionally nest in crevices or the eaves of buildings. The swift bricks in particular are discrete hollow bricks designed to building regulation standards that can be matched to the design of the façade.

Swifts are a “clean” bird species which remove their own wastes from their nests periodically. As such, Swift bricks do not require any cleaning by the management company.

The incorporation of Swift Boxes or Bricks will help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021). The following recommendations are extracted from “Saving Swifts” by Birdwatch Ireland (BirdWatch Ireland, 2023).

Swift Bricks/boxes:

- **should be** constructed of long-lasting material and securely fixed in position.
- **should be** erected at least five metres above ground level
- **should be** erected in sheltered cool areas out of the sun, or under an overhang and /or under the eaves. Bricks can be placed at any aspect, however, as they tend not to overheat the way that externally fitted boxes can.
- **should have** a clear airspace in front for access
- **should be** grouped (side by side in rows) as swifts are colony nesters
- **should avoid** sites which can be accessed by predators- cats, squirrels, magpies, rats.
- **should avoid** sites near plate glass windows because they are a known collision hazard for birds.
- **should not** be placed directly above ledges or other obstructions. Swifts drop before taking flight and can collide with obstacles below the nest entrance.
- **should not** be one above the other.
- **should not** be near spotlights or later fit spotlights near them.

As such, given that the Proposed Development will be a large-scale residential development with high rise buildings, swift bricks/boxes have been Proposed for the Site the location of which is to be agreed prior to construction.

In addition to the swift bricks/ boxes, it is also advised to install a Swift calling system to attract Swifts and encourage them to take up residence at a new site. A Swift calling system is a small speaker set-up that plays Swift calls during the summer. It should be located close to the brick entrances and has been seen to greatly increase the chances of Swifts using the Swift boxes/bricks. Solar panel options are possible.

An Ecologist will be instructed to set up the Swift calling system once the construction of the Proposed Development is complete. This can be with the help of active local Swift groups as required (e.g., Dublin Swift Conservation Group), who can help and advice as to the best set up etc.

6.4.5 Enhancement 4: Log Piles/ Amphibian and Reptile Hibernacula

It is recommended to enhance the proposed bioretention area for amphibian and reptile use by providing suitable refuge and hibernacula around it. It is recommended that 2-3 areas of hibernacula are provided at the southern section of the Site, as this is furthest removed from traffic and likely human activity, and the location would provide a potential link to the adjoining treeline along the eastern boundary of the Site.

Hibernacula for amphibians and reptiles is relatively easy to create from rubble, wood and soil, all of which can likely be sourced from the Site during works. Rubble and wood in various sizes should be piled either in a shallow depression or on the slope of the attenuation pond in a disorganised way to create nooks and crevices. Larger tree trunks or rocks should be placed so that they will protrude through the final mound to provide open entrances to the mound. This pile should then be covered in soil to allow the inner crevices to maintain a stable temperature through the winter and allow for hibernation. The top can be planted with for example grass and native wildflowers. See Figure 13 for examples of finished hibernacula.



FIGURE 13. EXAMPLES OF SUITABLE AMPHIBIAN AND REPTILE HIBERNACULA AND REFUGIA.

6.4.6 Enhancement 5: Log Piles for Small Mammals and Invertebrates

Log piles made up of dead and decaying wood makes for great habitat suitable for invertebrates. Dead wood and fallen trees are natural features of woodlands and creates mini-ecosystems when incorporated on Site (Browne, 2020).

The following considerations are required to create log piles at the Site:

- The base of the log pile will contain logs that have been buried upright and under the soil. This will attract underground hibernators.
- Large logs will be stacked above this towards the centre, with smaller logs around the sides and on top of this arrangement. The drier habitats are created towards the top of the pile, giving a variety of habitat types for invertebrates.
- The bark on the wooden logs is to be retained.
- The room for wildlife provided by log piles is directly proportional to the size of the log pile. Therefore, bigger log piles provide more room for wildlife inside, and greater warmth during the winter months.
- A shaded north-facing spot is good as it mimics the shaded environment of the woodland floor.
- A quiet corner away from human disturbance will be more attractive to wildlife.
- Avoid locating the log piles too close to healthy trees and shrub to avoid the spread of fungi.
- The addition of leaf litter in autumn or a pile of leaves nearby will attract hedgehogs as this will serve as suitable hibernation sites.

7 MONITORING

Table 20 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 20. MONITORING AND PRE-WORKS INSPECTIONS FOR THE IDENTIFIED MITIGATION MEASURES DURING CONSTRUCTION PHASE OF THE PROPOSED DEVELOPMENT. TO BE CARRIED OUT BY A SUITABLY QUALIFIED ECOLOGIST OR ECOLOGICAL CLERK OF WORKS (HIGHLIGHTED IN GREEN) OR BY THE DEVELOPMENT CONTRACTOR (NO HIGHLIGHT).

Measure	Monitoring
CONSTRUCTION PHASE	
Mitigation 1: Root Protection Zone for Retained Vegetation at the Site	Ongoing monitoring by contractor.
Mitigation 2: Biosecurity	Ongoing monitoring by contractor.
Mitigation 3: Water Quality Protection	Ongoing monitoring by contractor.
Mitigation 4: Air Quality Protection	Ongoing monitoring by contractor.
Mitigation 5: Vegetation Clearance	Any Site vegetation clearance within the habitats to be removed from the Site prior to the Construction Phase of the Proposed Development will be supervised by a suitable qualified Ecologist and a phased approach.
Mitigation 6: Construction Phase Lighting	Ongoing monitoring by contractor.
Mitigation 7: Noise Reduction	Ongoing monitoring by contractor.
Mitigation 8: Avoidance of Accidental Trapping of Fauna	Ongoing monitoring by contractor.
Mitigation 9: Waste Management	Ongoing monitoring by contractor.
Enhancement 1: Bat Boxes	The placement and installation of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 2: Bird Boxes	The placement and installation of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 3: Swift Bricks/Boxes	The placement and installation of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 4: Log Piles/ Amphibian and Reptile Hibernacula	The placement and installation of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 5: Log Piles for Invertebrates	The placement and installation of these structures should be carried out under the supervision of an Ecologist to ensure they are fit for purpose.
OPERATIONAL PHASE	

Measure	Monitoring
Mitigation 10: Invasive Species Management	An Invasive Species Survey will be carried out by a qualified Ecologist during the next botanical season after soft landscaping have been completed.
Mitigation 11: Wildlife Friendly Lighting	To be monitored by contractor and/or suitably qualified ecologist.

8 RESIDUAL IMPACTS

Residual impacts are impacts that remain once mitigation has been implemented or impacts that cannot be mitigated. Table 21 below provides a summary of the impact assessment for the identified KERs and details the nature of the impacts identified, the mitigation measures proposed, and the classification of any residual impacts.

Both standard Construction Phase control measures, and specific mitigation measures, have been outlined to ensure that the Proposed Development does not impact on any species, habitats or designated sites of conservation importance. It is essential that these measures are complied with, in order to ensure that the Proposed Development complies with National conservation legislation.

Provided all recommended measures are implemented in full and remain effective throughout the lifetime of the Proposed Development, no significant negative residual impacts on the local ecology, or on any designated nature conservation sites, will occur as a result of the Proposed Development.

TABLE 21. SUMMARY OF POTENTIAL IMPACTS ON KER(S), MITIGATION PROPOSED AND RESIDUAL IMPACTS. [INSERT NEW HEADERS FOR THE GROUPINGS AS APPROPRIATE EG., HABITATS, NON-VOLANT FAUNA, ETC, AS PER THE SPLIT YOU DID FOR DESCRIBING IMPACTS]

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
HABITATS									
Scrub (WS1)	Local Importance (Higher Value)	<u>Construction Phase:</u> Loss of habitat <u>Operational Phase:</u> None identified.	Negative none	Local none	Permanent none	Slight none	None identified.	Biodiversity Enhancement by Design. Additional landscaping at the Site.	Negative, Local, Permanent, Slight
Dry meadow and Grassy Verges (GS2)	Local Importance (Higher Value)	<u>Construction Phase:</u> Loss of habitat <u>Operational Phase:</u> None identified.	Negative none	Local none	Permanent none	Slight none	None identified.	Biodiversity Enhancement by Design. Additional landscaping at the Site.	Negative, Local, Permanent, Slight
Hedgerows (WL1)	Local Importance (Higher Value)	<u>Construction Phase:</u> Loss of habitat <u>Operational Phase:</u> None identified.	Negative none	Local none	Permanent none	Slight none	None identified.	Biodiversity Enhancement by Design. Additional landscaping at the Site.	Positive, Local, Permanent, Slight
Treelines (WL2)	Local Importance (Higher Value)	<u>Construction Phase:</u> Partial loss of habitat and the retention of the remainder or habitat. Damage to retained	Negative	Local	Permanent	Moderate	Mitigation 1: Root Protection Zones	Biodiversity Enhancement by Design. Additional	Neutral, Local, Permanent, Moderate

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
		treeline during construction works. Dust related impacts to retained treeline. Operational Phase: None identified.	<i>none</i>	<i>none</i>	<i>none</i>	<i>none</i>	Mitigation 4: Air Quality Protection	landscaping at the Site.	
Drainage Ditch (FW4)	Local Importance (Lower Value)	Construction Phase: Loss of habitat that is suitable to support amphibians at the Site during heavy rainfall events. Operational Phase: None identified.	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Slight</i>	None identified	None	Negative, Local, Permanent, Slight
(Mixed) Broadleaved Woodlands (MWD1)	Local Importance (Higher Value)	Construction Phase: Retention of this habitat in its entirety. Damage to this habitat during construction works. Operational Phase: None identified.	<i>Neutral</i> <i>none</i>	<i>Local</i> <i>none</i>	<i>Permanent</i> <i>none</i>	<i>Significant</i> <i>none</i>	Mitigation 1: Root Protection Zones Mitigation 4: Air Quality Protection	None. Entire extent of habitat to be retained.	Neutral, Local, Permanent, Not significant

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
Invasive Species	Local Importance (Higher Value)	Construction Phase: None identified. Operational Phase: Inadvertent introduction of invasive species as part of the landscaping.	<i>None</i> <i>Negative</i>	<i>None</i> <i>Local</i>	<i>Long-term</i> <i>none</i>	<i>Slight</i> <i>none</i>	Mitigation 2: Biosecurity	None	Imperceptible
FAUNA									
Bat Assemblage	Local Importance (Higher Value)	Construction Phase: Loss of foraging/commuting habitats. Increased lighting during construction works Operational Phase: Increased lighting during the operational phase	<i>Negative</i> <i>Negative</i> <i>Negative</i>	<i>Local</i> <i>Local</i> <i>Local</i>	<i>Temporary</i> <i>Temporary</i> <i>Permanent</i>	<i>Slight</i> <i>Slight</i> <i>Slight</i>	Mitigation 6: Construction Phase Lighting Mitigation 11: Wildlife Friendly Lighting	Enhancement 1: Bat Boxes. Biodiversity Enhancement by Design: Retention of valuable habitats used by bats. Additional planting at Site provides more foraging and commuting habitats.	Positive, Local, Permanent, Slight
Bird Assemblages	Local Importance (Higher Value)	Construction Phase: Risk of injury or death during vegetation clearance.	<i>Negative</i>	<i>Local</i>	<i>Permanent</i>	<i>Significant</i>	Mitigation 5: Vegetation Clearance	Enhancement 2: Bird Boxes	Positive, Local, Permanent, Moderate

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
		Loss of nesting habitats. <u>Operational Phase:</u> Additional habitats provided by the Proposed Development	<i>Negative</i> <i>Positive</i>	<i>Local</i> <i>Local</i>	<i>Permanent</i> <i>Permanent</i>	<i>Slight</i> <i>Moderate</i>	Best practice development standards outlined in various sections of the CEMP.	Enhancement 3: Swift Bricks/Blocks Biodiversity Enhancement by Design: Retention of valuable habitats used by birds. Additional planting at Site provides more nesting habitats.	
Pine Marten and Small Mammals (e.g. hedgehogs, pygmy shrew)	Local Importance (Higher Value)	<u>Construction Phase:</u> Entrapment in construction related rubbish Risk of injury or death during vegetation clearance. Disturbance from noise, dust and/or lighting. <u>Operational Phase:</u> Disturbance due to increased human activity.	<i>Negative</i> <i>Negative</i> <i>Negative</i> <i>Negative</i>	<i>Local</i> <i>Local</i> <i>Local</i> <i>Local</i>	<i>Permanent</i> <i>Permanent</i> <i>Short-term</i> <i>Permanent</i>	<i>Significant</i> <i>Significant</i> <i>Slight</i> <i>Slight</i>	Mitigation 8: Avoidance of Accidental Entrapment Mitigation 5: vegetation Clearance Mitigation 6: Construction Phase Lighting Mitigation 7: Noise reduction	Enhancement 5: Log Piles for Small Mammals and Invertebrates. Biodiversity Enhancement by Design: Additional habitats provided by proposed landscaping at the Site	Imperceptible

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
Amphibians	Local Importance (Higher Value)	Construction Phase: Direct mortality from loss of breeding habitat	Negative	Local	Short-term	Significant	Mitigation 5: Vegetation Clearance	Enhancement 4: Log Piles/ Reptile and Amphibian Hibernacula	Imperceptible
		Entrapment in construction related rubbish.	Negative	Local	Permanent	Significant	Mitigation 8: Avoidance of Accidental Entrapment		
		Operational Phase: None identified	None	None	None	None	Best practice development standards outlined in various sections of the CEMP.		
Common Lizard	Local Importance (Higher Value)	Construction Phase: Entrapment in construction related rubbish. Additional risk of injury or death during vegetation clearance.	Negative	Local	Permanent	Significant	Mitigation 5: Vegetation Clearance	Enhancement 4: Log Piles/ Reptile and Amphibian Hibernacula	Imperceptible
		Operational Phase: Disturbance due to increased human activity	Negative	Local	Permanent	Slight	Mitigation 8: Avoidance of Accidental Entrapment		
							Best practice development standards outlined in various sections of the CEMP.		

9 CONCLUSION

It is considered that, provided the mitigation measures proposed within this report together with all best practice development standards as outlined in the OCEMP are carried out in full, there will be no significant negative impact to any KER habitat, species group or biodiversity as a result of the Proposed Development.

Additionally, the landscaping plan for the Proposed Development was designed to include green space areas, tree planting, shrub, native hedgerow, and native wildflower meadows. The ecological value of this Site is very likely to be increased considering the current Site has extremely limited vegetation. Therefore, the Proposed Development will improve the overall ecological value of the Site.

10 REFERENCES

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11 APPENDICES

11.1 Appendix I - 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 2 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 A1).

TABLE A1: 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.
3. 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.
4. 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.
5. 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.

Fingal Development Plan 2023-2029

Policies and objectives of the Fingal Development Plan (CDP) 2023-2029 that are of relevance to this Screening Report are outlined below:

- Policy GINHP5:** *"Develop the green infrastructure network to ensure the conservation and enhancement of biodiversity, including the protection of European Sites, the provision of accessible parks, open spaces and recreational facilities (including allotments and community gardens), the sustainable management of water, the maintenance of landscape character including historic landscape character and the protection and enhancement of archaeological and heritage landscapes."*

- **Objective GINHO2:** “Reduce fragmentation and enhance the resilience of Fingal’s green infrastructure network by strengthening ecological links between urban areas, Natura 2000 sites, proposed Natural Heritage Areas, parks and open spaces and the wider regional network by connecting all new developments into the wider green infrastructure network.”
- **Policy GINHP12:** “Protect areas designated or proposed to be designated as Natura 2000 sites (i.e., Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, and Refuges for Fauna.”
- **Objective GINHO27:** “Support the National Parks and Wildlife Service, in the maintenance and achievement of favourable conservation status for the habitats and species in Fingal by taking full account of the requirements of the Habitats and Birds Directives, in the performance of its functions.”
- **Objective GINHO28:** “Ensure that development does not have a significant adverse impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Habitat Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats.”
- **Policy GINHP17:** “Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e., Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); also known as European sites) including any areas that may be proposed for designation or designated during the lifetime of this Plan.”
- **Objective GINHO35:** “In accordance with Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities 2010, any plans or projects that are likely to have a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects, are subject to a screening for Appropriate Assessment unless they are directly connected with or necessary to the management of a Natura 2000 site.
- **Objective GINHO79:** “Ensure that there is appropriate public access to the coast including the provision of coastal walkways and cycleways, while taking full account of the need to conserve and enhance the natural and cultural heritage of the coast and the need to avoid significant adverse impacts on European Sites and species protected by law, through Screening for Appropriate Assessment, and examine the designation of traditional walking routes thereto as public rights of way.”

Fingal Biodiversity Action Plan 2023-2030

The Fingal Biodiversity Action Plan (BAP) 2023-2030 is set out to protect and improve biodiversity through six topics:

- Delivery of the Ecological Network across Fingal;
- Building for Biodiversity;
- Climate change adaption and mitigation;
- Agri environment schemes and rewilding;
- Research & monitoring; and
- Raising awareness.

Note that the BAP is still in the consultation phase, and only a draft version has been made available online.

11.2 Appendix II - Value of Ecological Resources

The criteria outlined in the table below, taken from the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* published by the NRA, were used for assigning value to designated sites, habitats and species within the Site of the Proposed Development and surrounding area.

TABLE A2.1. DESCRIPTION OF VALUES FOR ECOLOGICAL RESOURCES BASED ON GEOGRAPHIC HIERARCHY OF IMPORTANCE (NRA, 2009B).

Importance	Criteria
International Importance	- ‘European Site’ including Special Area of Conservation (SAC), Site of Community Importance (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation. - 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: - o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or - o 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; and/or a National Park. - Resident or regularly occurring populations (assessed to be important at the national level) of the following: - o Species protected under the Wildlife Acts; and/or - o Species listed on the relevant Red Data list. - o 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: - o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; - o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; - o Species protected under the Wildlife Acts; and/or - o Species listed on the relevant Red Data list. - o 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: - o Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; - o Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; - o Species protected under the Wildlife Acts; and/or o - o Species listed on the relevant Red Data list. - o 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.

11.3 Appendix III - EPA Impact Assessment Criteria

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 A3.1. 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).

11.4 Appendix IV - Site Photographs



Photograph 1. *GS2 habitat at the Site of the Proposed Development.*



Photograph 2. *ED3 habitat at the existing access gate at the northern boundary of the Site.*



Photograph 3. *GS2 habitat at the Site and WL2 habitat along the eastern boundary of the Site.*



Photograph 4. *WL2 habitat along the eastern boundary of the Site.*



Photograph 5. *FW4 and WL1 habitats at the southeastern section of the Site.*



Photograph 6. *FW4 habitat in the southern section of the Site.*



Photograph 7. *MWD1 at the southwest section of the Site.*



Photograph 8. *WL2 habitat along the eastern boundary of the Site and WS1 habitat at the northwestern section.*

11.5 Appendix V - Bat Detector Metadata

11.5.1 Activity Transect 1

Recording	Timestamp	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Latitude [WGS84]	Longitude [WGS84]
24670011_1	21/08/2025 21:02	Soprano pipistrelle	10	54.2	93.2	53.3	5	83	53.46177	-6.20672
24670012	21/08/2025 21:02	Soprano pipistrelle	18	53.2	93.6	52.4	4	80	53.46177	-6.20673
24670014_1	21/08/2025 21:02	Common pipistrelle	25	44.9	54.8	44	7	90	53.46176	-6.20673
24670015	21/08/2025 21:04	Common pipistrelle	10	47.5	73.2	46	5	90	53.46142	-6.20663
24670016	21/08/2025 21:04	Common pipistrelle	7	48.8	70.9	46.8	4.7	90	53.4614	-6.20661
24670017	21/08/2025 21:04	Common pipistrelle	35	46.2	63.9	44.9	6	100	53.46137	-6.2066
24670018	21/08/2025 21:04	Common pipistrelle	10	45.6	66.7	45	5	110	53.46138	-6.20659
24670019	21/08/2025 21:05	Common pipistrelle	15	46.6	69.8	45.4	5	100	53.4614	-6.2066
24670020_1	21/08/2025 21:05	Common pipistrelle	2	48	64.3	46.9	4	82	53.46141	-6.20658
24670021	21/08/2025 21:05	Common pipistrelle	4	47.7	60.2	46.9	4	113	53.46139	-6.20659

24670022	21/08/2025 21:05	Common pipistrelle	8	48.1	75.8	47.3	6	90	53.46137	-6.20659
24670023	21/08/2025 21:05	Common pipistrelle	8	47.7	72.8	47	5	256	53.46138	-6.20659
24670024_1	21/08/2025 21:06	Common pipistrelle	7	53.5	67.2	48.4	3	396	53.4614	-6.2066
24670025	21/08/2025 21:06	Common pipistrelle	11	48.9	97.5	48	4	90	53.4614	-6.20659
24670026	21/08/2025 21:06	Common pipistrelle	20	49.2	103.9	47.6	3	80	53.46139	-6.20657
24670027_1	21/08/2025 21:06	Common pipistrelle	20	48.1	67.4	47.2	5	90	53.46139	-6.20658
24670027_2	21/08/2025 21:06	Soprano pipistrelle	1	52.9	67.5	48.8	4.3	0	53.46139	-6.20658
24670028	21/08/2025 21:06	Common pipistrelle	15	48.1	91.4	47.4	5	90	53.46139	-6.2066
24670029	21/08/2025 21:07	Common pipistrelle	39	48.9	64.4	48	4	85	53.46137	-6.20658
24670030_1	21/08/2025 21:07	Leisler's bat	4	21.7	22.6	20.5	11.3	300	53.46138	-6.20658
24670031	21/08/2025 21:07	Common pipistrelle	13	42.5	48.7	41.6	9	208	53.46136	-6.20659
24670033	21/08/2025 21:09	Common pipistrelle	13	47.2	91.8	46.4	4	90	53.46135	-6.20659
24670036_2	21/08/2025 21:12	Common pipistrelle	1	49.1	72	48.4	4.8	0	53.4613	-6.20607

24670037	21/08/2025 21:12	Common pipistrelle	4	50.3	59.8	47.8	6.1	159	53.46128	-6.20602
24670039_1	21/08/2025 21:13	Common pipistrelle	9	47.2	84.5	46	3	149	53.4613	-6.20573
24670043_1	21/08/2025 21:14	Common pipistrelle	3	48	59.3	45.3	4.4	179	53.46131	-6.20565
24670044_1	21/08/2025 21:14	Common pipistrelle	12	47	85.8	45	3	90	53.46132	-6.20565
24670045	21/08/2025 21:14	Common pipistrelle	15	47	60	45.7	3	90	53.46132	-6.20565
24670046_1	21/08/2025 21:14	Common pipistrelle	6	47.5	64.4	46	3	60	53.46132	-6.20565
24670047_1	21/08/2025 21:14	Common pipistrelle	6	46.5	70.6	45.1	3	139	53.46132	-6.20565
24670049_1	21/08/2025 21:15	Common pipistrelle	9	47.3	60	45.9	3	114	53.46132	-6.20566
24670050_1	21/08/2025 21:15	Common pipistrelle	4	47.8	65.1	45.5	4.5	231	53.46131	-6.20566
24670050_2	21/08/2025 21:15	Common pipistrelle	3	19.9	29.1	12	2.8	999	53.46131	-6.20566
24670051_1	21/08/2025 21:15	Common pipistrelle	8	46.6	61.5	44.8	3	80	53.46133	-6.20567
24670052	21/08/2025 21:16	Common pipistrelle	7	46.4	95.8	44.4	4	60	53.46132	-6.20568
24670053	21/08/2025 21:16	Common pipistrelle	8	46.6	69.1	45.3	3	117	53.46133	-6.20569

24670054	21/08/2025 21:16	Myotis spp.	8	50.5	90.2	47	3	99	53.46133	-6.20568
24670055	21/08/2025 21:16	Myotis spp.	11	47.4	77.7	45.3	3	198	53.46134	-6.20568
24670056	21/08/2025 21:17	Common pipistrelle	7	49.5	56.3	48	2	433	53.46134	-6.20568
24670057	21/08/2025 21:17	Common pipistrelle	14	47.1	90.3	45.7	3	173	53.46134	-6.20568
24670058_1	21/08/2025 21:18	Common pipistrelle	10	47.3	62.7	46.1	3	80	53.46133	-6.20567
24670059	21/08/2025 21:18	Common pipistrelle	9	47.3	81.4	45.7	3	104	53.46132	-6.20566
24670060_1	21/08/2025 21:18	Common pipistrelle	6	46.6	62.6	45.2	3	158	53.46132	-6.20567
24670061	21/08/2025 21:19	Common pipistrelle	11	46.2	67.3	45	3	60	53.46133	-6.20566
24670062_1	21/08/2025 21:19	Common pipistrelle	14	46.4	64.7	45.5	3	151	53.46133	-6.20566
24670063	21/08/2025 21:19	Common pipistrelle	15	46.3	64.7	45.2	3	85	53.46133	-6.20567
24670064	21/08/2025 21:19	Common pipistrelle	1	45	65.3	44.3	4.3	0	53.46134	-6.20567
24670065	21/08/2025 21:20	Soprano pipistrelle	6	54.1	93.6	52.3	3	80	53.46133	-6.20567
24670066	21/08/2025 21:20	Soprano pipistrelle	19	53.6	94.9	52.1	3	70	53.46133	-6.20568

24670067	21/08/2025 21:21	Soprano pipistrelle	10	52.2	86.8	51.4	5	147	53.46135	-6.20565
24670068_1	21/08/2025 21:21	Soprano pipistrelle	5	52	65.3	51	3	365	53.46136	-6.20562
24670069_2	21/08/2025 21:21	Soprano pipistrelle	1	54	64.1	52.9	2.7	0	53.46138	-6.20559
24670070	21/08/2025 21:21	Soprano pipistrelle	14	53.7	77.9	52.5	3	80	53.46139	-6.20558
24670071_1	21/08/2025 21:21	Soprano pipistrelle	11	53.3	69.2	52.4	3	167	53.46142	-6.20555
24670072_1	21/08/2025 21:21	Common pipistrelle	16	45.7	85.7	44.1	4	190	53.46144	-6.20553
24670073_2	21/08/2025 21:21	Soprano pipistrelle	1	54.4	67.5	53.3	3.2	0	53.46148	-6.20551
24670076_1	21/08/2025 21:24	Common pipistrelle	10	47.8	63.2	46.7	2	90	53.46154	-6.2051
24670077	21/08/2025 21:24	Common pipistrelle	10	47.2	65	45.9	3	90	53.46153	-6.20508
24670078	21/08/2025 21:25	Soprano pipistrelle	6	52.1	70.6	51.1	3	154	53.46153	-6.2051
24670080	21/08/2025 21:36	Common pipistrelle	8	46.7	84.7	45.6	5	90	53.46178	-6.20448
24670084	21/08/2025 21:38	Common pipistrelle	20	43.5	49	42.7	7	110	53.46178	-6.20447
24670090	21/08/2025 21:45	Common pipistrelle	20	46.4	65.8	45.5	6	105	53.46208	-6.20456

24670095	21/08/2025 21:53	Common pipistrelle	16	46	54.8	45.4	6	96	53.4624	-6.2046
24670096	21/08/2025 21:53	Common pipistrelle	13	47.6	68.5	46.3	5	100	53.4624	-6.2046
24670100	21/08/2025 21:57	Leisler's bat	3	22	22.4	19	14.2	213	53.4623	-6.20565
24670110_1	21/08/2025 22:13	Soprano pipistrelle	22	51.2	52	50.5	6	96	53.46196	-6.20535
24670116_1	21/08/2025 22:21	Common pipistrelle	6	46.9	57.9	45.9	5	110	53.46163	-6.20559
24670117	21/08/2025 22:21	Common pipistrelle	11	46.4	73.4	44.9	5	231	53.46163	-6.20559
24670119_1	21/08/2025 22:27	Soprano pipistrelle	14	54.4	57.9	53.7	6	100	53.46174	-6.20621

11.5.2 Activity Transect 2

Recording	Timestamp	Species Text	Calls [#]	Mean Frequency [kHz]	Peak Frequency [kHz]	Mean Frequency [kHz]	Max Frequency [kHz]	Mean Frequency [kHz]	Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Latitude [WGS84]	Longitude [WGS84]
24640015	04/09/2025 20:52	Leisler's bat	2	19.5		32.3		15.2		4.5	492	53.46237	-6.20463
24640016	04/09/2025 20:52	Leisler's bat	3	22		23.6		18		9.6	897	53.46237	-6.20459
24640018	04/09/2025 20:59	Common pipistrelle	14	46.7		68.3		46		5	210	53.46242	-6.20457
24640031	04/09/2025 21:37	Common pipistrelle	11	48.8		67.6		47.7		6	183	53.46132	-6.20557

24640034	04/09/2025 21:43	Leisler's bat	8	25.5	26.2	24.4	7.7	450	53.46129	-6.20643
24640035	04/09/2025 21:44	Soprano pipistrelle	31	55.9	68.2	54.6	5	95	53.46128	-6.20643
24640045	04/09/2025 21:48	Common pipistrelle	4	47.3	49.1	46.4	6	420	53.46128	-6.20642
24640048	04/09/2025 21:51	Leisler's bat	5	23.3	24.2	21.1	12	405	53.4614	-6.2066
24640049	04/09/2025 21:51	Leisler's bat	7	25	28	24.1	10	263	53.4614	-6.20662
24640050	04/09/2025 21:51	Common pipistrelle	9	28.4	54	27.1	9	120	53.46142	-6.20664

11.5.3 Activity Transect 3

Recording	Timestamp	Species Text	Calls [#]	Mean Frequency [kHz]	Peak Frequency [kHz]	Mean Frequency [kHz]	Max Frequency [kHz]	Mean Frequency [kHz]	Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Latitude [WGS84]	Longitude [WGS84]
24250004_1	29/09/2025 19:24	Common pipistrelle	13	47.7		66.8		46.6		6	90	53.46219	-6.20643
24250005	29/09/2025 19:24	Common pipistrelle	21	47.8		70.7		46.7		6	90	53.46218	-6.20645
24250006_1	29/09/2025 19:24	Common pipistrelle	21	48.1		61.9		46.6		5	90	53.46217	-6.20645
24250007	29/09/2025 19:24	Common pipistrelle	13	47.8		62.8		46.6		5	90	53.46216	-6.20644
24250008	29/09/2025 19:24	Common pipistrelle	3	48.3		60.1		47.4		5.7	95	53.46217	-6.20645

24250009_1	29/09/2025 19:25	Common pipistrelle	3	48.6	59.9	47.6	5	95	53.46216	-6.20644
24250010_1	29/09/2025 19:25	Common pipistrelle	22	48.4	68	47.3	4	85	53.46213	-6.20651
24250011	29/09/2025 19:26	Common pipistrelle	16	47.9	102.4	46.9	6	90	53.46204	-6.2066
24250012	29/09/2025 19:26	Common pipistrelle	9	46.9	78.6	45.8	6	90	53.46201	-6.20665
24250013	29/09/2025 19:26	Common pipistrelle	25	48.8	107.8	47.1	5	80	53.46201	-6.20666
24250014	29/09/2025 19:26	Common pipistrelle	13	47.5	79.2	46.8	4	236	53.462	-6.20666
24250015	29/09/2025 19:26	Common pipistrelle	38	48.6	69.9	47.1	5	90	53.46201	-6.20667
24250016	29/09/2025 19:27	Common pipistrelle	30	49.2	125	46.8	4	60	53.46201	-6.20666
24250017	29/09/2025 19:27	Common pipistrelle	15	48	71.9	46.8	4	85	53.46201	-6.20664
24250018_1	29/09/2025 19:27	Common pipistrelle	13	48.4	62.7	47.6	4	70	53.46199	-6.20665
24250019	29/09/2025 19:27	Common pipistrelle	20	48	77.6	46.9	4	85	53.46199	-6.20665
24250020	29/09/2025 19:28	Common pipistrelle	20	48	164.4	47.1	7	636	53.46199	-6.20665
24250021	29/09/2025 19:28	Common pipistrelle	12	47.9	160.9	47.1	6	447	53.46199	-6.20665

24250022_1	29/09/2025 19:28	Common pipistrelle	8	49	67.5	48.1	3	80	53.462	-6.20664
24250023	29/09/2025 19:28	Common pipistrelle	24	47.8	69.7	46.6	5	90	53.462	-6.20664
24250024	29/09/2025 19:28	Common pipistrelle	12	47.7	145.2	46.8	5	254	53.46201	-6.20663
24250025	29/09/2025 19:29	Common pipistrelle	17	47.8	71.6	46.6	5	87	53.46202	-6.20662
24250026	29/09/2025 19:29	Common pipistrelle	13	49.6	62.1	47.7	3	173	53.462	-6.20665
24250027_1	29/09/2025 19:29	Common pipistrelle	12	47.8	55.5	46.9	4	100	53.462	-6.20665
24250028	29/09/2025 19:30	Common pipistrelle	23	47.9	65.4	47.1	4	94	53.46201	-6.20665
24250029	29/09/2025 19:30	Common pipistrelle	12	47.7	56.3	46.8	3	95	53.46201	-6.20665
24250030	29/09/2025 19:30	Common pipistrelle	14	48.3	96	47.1	4	90	53.46201	-6.20664
24250031	29/09/2025 19:31	Common pipistrelle	5	47.3	117.9	46.4	5	162	53.46201	-6.20664
24250033	29/09/2025 19:35	Common pipistrelle	13	47	76	46	4	90	53.46165	-6.20677
24250035	29/09/2025 20:03	Soprano pipistrelle	3	53.1	54	52.6	6	171	53.46155	-6.20488
24250042_1	29/09/2025 20:38	Leisler's bat	8	23.4	24.9	18.5	7.5	602	53.46247	-6.20453

24250043	29/09/2025 20:45	Soprano pipistrelle	13	54.1	70.7	53.4	5	90	53.46234	-6.20518
24250045	29/09/2025 20:53	Soprano pipistrelle	19	56.2	63	55	6	90	53.46224	-6.20588
24250046_1	29/09/2025 20:58	Common pipistrelle	18	43.6	44.4	40.7	9	190	53.46197	-6.20537
24250046_2	29/09/2025 20:58	Common pipistrelle	1	17.3	19.1	15.8	4.8	0	53.46197	-6.20537
24250047	29/09/2025 20:58	Common pipistrelle	13	48.3	67.9	47.3	5	100	53.46197	-6.20536
24250048	29/09/2025 21:05	Soprano pipistrelle	18	55	77.2	54.1	6	90	53.46166	-6.20557



About DNV

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Whether assessing a new ship design, optimizing the performance of a wind farm, analyzing sensor data from a gas pipeline or certifying a food company's supply chain, DNV enables its customers and their stakeholders to make critical decisions with confidence.

Driven by its purpose, to safeguard life, property, and the environment, DNV helps tackle the challenges and global transformations facing its customers and the world today and is a trusted voice for many of the world's most successful and forward-thinking companies.