LARGE-SCALE RESIDENTIAL DEVELOPMENT AT GLENAMUCK NORTH, KILTERNAN, DUBLIN 18

Ecological Impact Assessment Report

Durkan Carrickmines Developments Limited

Report no.: 01, Rev. 01
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1 INTRODUCTION

DNV was commissioned by Thornton O'Connor, on behalf of Durkan Carrickmines Developments Limited to undertake an Ecological Impact Assessment (EcIA) in relation to a Proposed Residential Development, at Glenamuck North, Kilternan, Dublin 18, hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

This EcIA 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 EcIA 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

All reporting and surveying have been carried out by qualified and experienced ecologists and environmental consultants.

EK has a BSc in Psychology from the University of Maryland, USA and an MSc in Biodiversity and Conservation from Trinity College Dublin. His experience includes desktop research, literature-scoping review, and report writing as well as vegetation surveys, rare species surveys, and habitat mapping. EK has contributed to the preparation of several AA Screenings, Ecological Impact Assessments (EcIA) and EIAR Biodiversity Chapters, as well as Biodiversity Net Gain (BNG) Reports.

BMcC is an experienced Ornithologist with a BSc in Planning and Environmental management from the Technological University of Dublin (TUD) and 12 years of bird survey experience, including three years of professional Ornithology work. BMcC is a longstanding and active member of Bird Watch Ireland and is also the author of several articles in UK birding publication Birdwatch Magazine. BMcC is highly experienced in all survey methodologies and with surveying all species groups of Irish birds and migrants, having provided a range of 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.

HON, Project Ecologist with 4 years' experience in consultancy, has a B.A. in Zoology from Trinity College Dublin. Experience in consulting includes the preparation of ecological assessments, most frequently for Stage I and Stage II Appropriate Assessment (AA) and Biodiversity Chapters for Environmental Impact Assessment Reports (EIAR), desktop studies, field surveys and data analysis (QGIS). Field survey experience includes terrestrial mammal surveys, ornithology surveys, habitat surveys, marine mammal surveys and aquatic surveys.

SOB has a B.A. in Zoology from Trinity College Dublin and a M.Sc. Hons. in Wildlife Conservation and Management from University College Dublin, and has experience in desktop research, report writing, and literature scoping-review, as well as practical field and laboratory experience (Pollinator surveying, sampling and identification, habitat surveying, invasive species surveying, etc.). SOB has prepared Stage I and Stage II Appropriate Assessment (AA) Reports, Invasive Species Surveys, Ecology Statements, EcIAs, and Biodiversity Chapters of Environmental Impact Assessment Reports (EIARs).

BL, Principal Ecologist with over a decade of experience in both the private and public sectors, and holds an MSc in Environmental Consultancy and a BSc in Marine and Freshwater Biology and is a member of the Chartered Institute of

Ecology and Environmental Management (MCIEEM). Ben has led ecological input on a wide range of projects including residential developments, transport infrastructure, renewable energy, and conservation initiatives. His expertise spans project and team management, ecological survey design, planning support, and report preparation. Notable projects include managing ecological assessments for a 500-home development in Devon, leading ornithological work for a solar farm near Tamar Estuaries SPA and overseeing biodiversity planning for enhancements at Longleat Safari Park. He is licensed for protected species work and trained in field identification, first aid, and railway safety.

1.2 Relevant Legislation and Policy Context

An EcIA 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 EcIA is undertaken as part of an EIA process it is subject to the EIA Regulations (under the Planning and Development Regulations 2001-2023). An EcIA is not a statutory requirement, however it is a best practice evaluation process. This EcIA 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.
- 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:

- Dún Laoghaire-Rathdown County Development Plan 2022 – 2028.
- Dún Laoghaire-Rathdown Biodiversity Action Plan (BAP) 2021 – 2025.

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

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The Proposed Development Site, as seen in Figure 1, is located on a current greenfield site at Glenamuck North, Kilternan, Dublin 18. The Site is primarily bounded by the recently constructed Glenamuck District Distributor Road (GDDR) to the south and playing pitches to the northwest and northeast. The Glenamuck north stream passes from the south of the Site up through the east of the Site, while a tributary of the Carrickmines stream flows along the north boundary of the Site. The surrounding lands are mainly residential in nature.

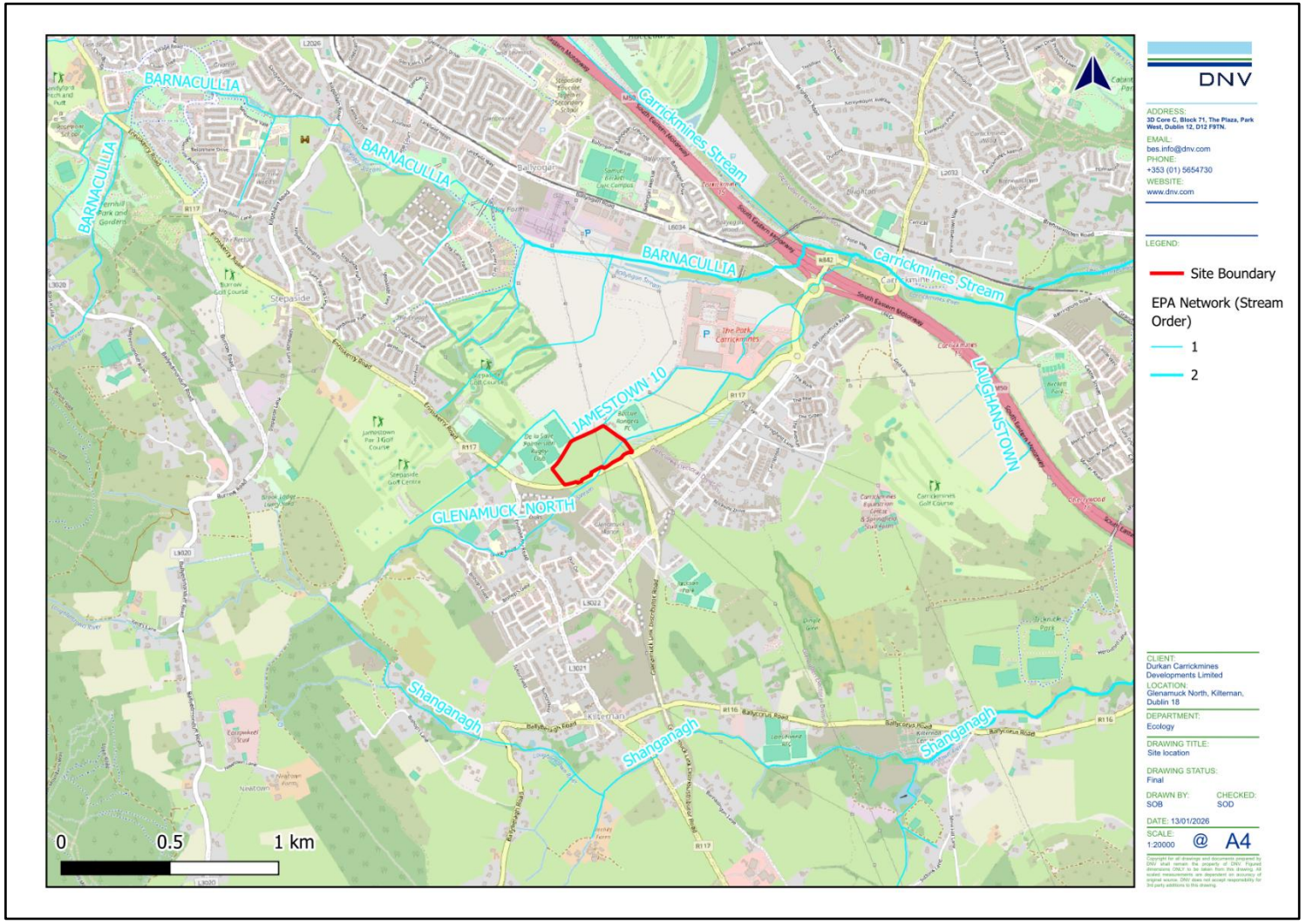

FIGURE 1. SITE LOCATION.

2.2 Proposed Development Description

Durkan Carrickmines Developments Limited intend to apply for permission for a Large-Scale Residential Development at a site in the townland of Glenamuck North, Kilternan, Dublin 18. The site is generally bounded by the Glenamuck District Distributor Road to the south, which is recently constructed (to be known as the Kilternan Road); agricultural land to the west; De La Salle Palmerstown Football Club and the future Jamestown Park to the north; and Bective Rangers Football Club to the east.

Road works are proposed to the approved Glenamuck District Roads Scheme (ACP Ref. HA06D.303945) to provide access to the development from the Kilternan Road which will include any necessary tie-ins to the existing footpath and cycle track.

The development will principally consist of the construction of a creche (c. 571 sq m) and 219 No. residential units comprising 69 No. houses (51 No. 3 -bed units and 18 No. 4-bed units), 108 No. apartments (38 No. 1-bed units, 31 No. 2-bed units and 39 No. 3-bed units) and 42 No. duplexes (11 No. 1-bed units, 9 No. 2-bed units, and 22 No. 3-bed units). The Proposed Development will range in height from 2 No. to 4 No. storeys.

The development also provides car, bicycle and motorcycle parking; bin storage; ancillary storage; private balconies, terraces and gardens; hard and soft landscaping; boundary treatments; lighting; substations; and all other associated site works above and below ground.

FIGURE 2. PROPOSED SITE LAYOUT. DRAWING NO. COWLDS-MCORM-AR-XX-DR-P4-XX-1006 (MCORM, 2026).

2.2.1 Drainage and Water Supply

2.2.1.1 Surface water

As outlined in the Engineering Infrastructure Report and Stormwater Impact Assessment (Roger Mullarkey & Associates, 2026) accompanying this application, there is no known surface water drainage infrastructure within the Site of the Proposed Development, however there is an existing foul water trunk main crossing the Site parallel to the northern side of the Glenamuck Stream but this sewer has been diverted into the GDDR as part of the GDRS roads project and is no longer a live sewer. The recently constructed GDRS project has locally diverted the route of the existing Glenamuck Stream via a new box culvert passing beneath the distributor road and re-connecting with the existing stream path. Similarly, the GDRS has constructed a 2nd culvert at the downstream end of the Site.

The Proposed Development will have 2 no. surface water and 1no. foul water connection outfall points.

The surface water drainage is to be divided into 3 no. catchment areas, namely Catchment B1, Catchment B2, and Catchment B3, all of which will outfall to the Glenamuck stream. It is noted that the GDRS project is currently under construction adjacent to the Site and some of the service connections will be provided by that scheme. It has been stated by Dún Laoghaire-Rathdown County Council (DLRCC) that the GDRS project will be completed in Q1 of 2026. Therefore, the above noted connections will be live and available by the time this Proposed Development requires them, subject to a successful planning application.

The surface water drainage infrastructure for the Proposed Development will collect the rainfall on Site and will treat, attenuate, store and convey the storm water run-off via the proposed Sustainable Drainage Systems (SuDS) before outfalling to the Glenamuck Stream. A full SuDS treatment train approach has been implemented in accordance with the Construction Industry Research and Information Association (CIRIA) SuDS Manual, summarised as follows:

- Bio-Retention areas,
- Filter drains to rear of housing,
- Swales adjacent to roads where practically feasible,
- Tree pits where practically feasible,
- Intensive green roofs,
- Permeable paving to all parking spaces,
- Silt-trap/catchpit manholes,
- Hydrobrake limiting flow to the greenfield rate, and
- Stone lined voided arch retention storage devices.

2.2.1.2 Foul Drainage

As outlined in the Engineering Infrastructure Report and Stormwater Impact Assessment (Roger Mullarkey & Associates, 2025) accompanying this application, the proposed foul water system will have 1 no. outfall connection located in the southeast corner of the Site.

According to the EPA agglomeration zones (EPA, 2026), foul waters from the Proposed Development will be treated in Shanganagh-Bray Wastewater Treatment Plant (WwTP). Discharge from the Shanganagh-Bray WwTP was recorded as compliant with emission limit values set in the wastewater discharge licence during the most recent Annual Environmental Report (AER) (Uisce Éireann, 2023). In addition, discharge from the WwTP does not have an observable impact on the water quality or observable negative impact on the Water Framework Directive status.

2.2.2 Lighting Plan

As outlined in the Site Lighting Report (OCSC, 2026) accompanying this application, the lighting design strategy for the Proposed Development has considered the below:

- **Do not over light** - Where relevant guidance gives a range of illumination levels the lowest one which is appropriate shall be utilised. No lighting is proposed along the riparian corridor to protect bats and preserve dark corridors.

- **Luminance distribution** - The spread of light shall be kept near to or below the horizontal where possible.
- **Minimise UV light** - Selected luminaires shall emit minimal UV light. This can be achieved by selecting LED luminaires.
- **Lighting controls** - Consideration shall be made to when lighting is operational to reduce detrimental impacts on nocturnal animals.

2.2.3 Landscape Plan

As per the Landscape Design Statement (NMP Landscape Architecture, 2026) accompanying this application, it is proposed to retain 14 no. trees and 3,251.7m^2 of hedgerow at the Site, while 42 no. trees and 729.5m^2 of hedgerow will be removed to facilitate the Proposed Development. Most of the removed vegetation is due to the removal of the central vegetation at the Site. A total of 514 no. trees and 2,690m^2 of hedgerow are proposed to be planted at the Site as part of the Proposed Development.

It is also proposed to retain the Glenamuck Stream along the southeast of the Site and to enhance this riparian corridor with further tree and wetland planting to provide an ecological corridor along the Site. The tree species have been selected for longevity, suitability to local soil conditions and micro-climate, biodiversity (native species) and, where required, suitability for proximity to residential buildings, many of which are listed as part of the Pollinator Friendly Planting Code for the All-Ireland Pollinator Plan (NBDC, 2022). There will be a net gain of individual trees in order to improve the species mix and the proportion of native species on Site.

In line with section 2.2.1.1 above, the landscape surface water drainage strategy incorporates SuDS features and has been designed in line with best practice. The soft landscape will allow water to drain freely to recharge the ground water if not captured by filter drains before release. In addition, it is proposed to create several rain gardens on the courtyards and pocket parks on Site to capture surface water run-off. Bio-retention tree pits are proposed for the streets and have been detailed in coordination and collaboration with the Engineering Infrastructure Report and Stormwater Impact Assessment (Roger Mullarkey & Associates, 2026). The tree pits are designed with adequate depth to accommodate for large deluges and also allow for attenuation of water in case of drought.

A bioretention structure employs an engineered topsoil and is used to manage polluted urban rainfall run-off in street locations and carparks. The free-draining nature of engineered soils leads to the washing away of nutrients from the soil. The proportion of organic matter should be relatively high and replenished yearly by the application of a mulch layer of well composted green waste or shredded plant matter arising from maintenance.

The proposed Landscape Masterplan can be seen in Figure 3 below.

FIGURE 3. GENERAL ARRANGEMENT OF THE LANDSCAPE PLAN (NMP LANDSCAPE ARCHITECTURE, 2026).

2.3 Description of the Construction Phase

As outlined in the Construction Management Plan (CMP) (Meinhardt, 2025), it is currently anticipated that the construction of all units will be carried out in 7 phases of development. The Construction Phase will include:

- Enclosing the Site perimeter with hoarding, with specific details to be agreed with DLRCC. This hoarding will be erected along the proposed Site boundary, covering the full extent of the finished perimeter.
- The Site, currently a greenfield site, will be cleared prior to the commencement of construction.
- An in-depth breakdown of the construction sequencing and programme will be completed by the appointed main contractor and submitted to DLRCC upon planning approval and prior to the commencement of construction.
- It is currently anticipated that the construction of all units will be carried out in 7 phases of development, with the proposed order of construction of key elements as follows:
    - Site Setup.
    - Demolitions.
    - Earthworks, (including cut and fill as appropriate).
    - Construction of substructure / foundations.
    - Installation of new storm and foul drainage systems to integrate with the existing infrastructure.
    - Provision of water supply infrastructure and other utilities.
    - Construction of super structure to buildings in sequence.
    - Roof and façade finishes.
    - Internal fit out.
    - External site works (landscaping / paving).

For the duration of the construction works, the maximum allowable working hours will be 07:00-19:00, Monday to Friday (excluding bank holidays), and 08:00-14:00 on Saturday's. Work will not be permitted on Sunday's or public holidays without prior written approval from DLRCC.

2.4 Description of the Operational Phase

The Operational Phase will comprise residential use that is consistent with the existing land use in the area.

3 METHODOLOGY

This EcIA 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, carried out in January 2026, relied on the following sources:

- Information on species records[1] and distributions, obtained from the National Biodiversity Data Centre (NBDC) at *maps.biodiversityireland.ie*;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at *gis.epa.ie*;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at *www.gsi.ie*;
- Information on the network designated conservation sites, site boundaries, qualifying interests and conservation objectives, obtained from the 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 developments, or developments awaiting decision, in the vicinity of the Proposed Development from the National Planning Application Database available at: *https://housinggovie.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.

3.2.1 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

[1] The Site of the Proposed Development lies within the 10km grid square O22, the 2km grid square O22B, and the 1km grid squares O2023. Records from the last 20 years from available datasets are given in the relevant sections of this report.

the squares according to its suitability for various bat species. The scores are divided into five qualitative categories of suitability, namely:

- 0.0000000 - 13.000000: Low
- 13.000001 - 21.333300: Low – Medium
- 21.333301 - 28.111099: Medium
- 28.111100 - 36.444401: Medium – High
- 36.444402 - 58.555599: High

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):

> "*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 EcIA 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/); and
    - Other internationally designated sites e.g., UNESCO Biosphere's.
- Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

3.5 Field Surveys

3.5.1 Habitat Surveys

Habitat surveys of the Site were conducted by DNV on the 26th July 2024, with a ground truthing survey undertaken on the 30th January 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.

3.5.2 Invasive Species Surveys

Invasive species surveys were carried out in conjunction with the habitat surveys on the 26th July 2024 and 30th January 2025. This included a detailed search for signs or any invasive flora or fauna with a particular focus on those listed on the Third Schedule of SI No. 477/2011, 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 the 26th July 2024, with a ground truthing survey undertaken on the 30th January 2025. The aim of the inspections 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 at the 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 of 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 of 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

Bat Habitat Suitability Assessments were carried out in conjunction with the roost assessments on 26th July 2024 and 30th January 2025. These assessments 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 Activity Surveys

The Site was assessed by an experienced ecologist in relation to the potential bat foraging habitat and commuting routes. The activity surveys were undertaken to best practice guidance (Collins, 2023 and Marnell et al., 2022) during times of suitable weather conditions, as detailed in Table 1 below. The bat activity transect route and bat survey points are outlined in Figure 4 below, with this route alternated during each survey to capture bat activity throughout the Site at different times.

TABLE 1. BAT ACTIVITY SURVEYS UNDERTAKEN AT THE PROPOSED DEVELOPMENT SITE.

Survey Date	Sunset	Start Time	End Time	Conditions
24th September 2024	19:17	19:15	21:30	Dry, calm, clear conditions, with temperatures ranging from 10°C to 11°C.
12th June 2025	21:53	21:50	23:50	Dry, calm, clear conditions, with temperatures ranging from 14°C to 17°C.
15th July 2025	21:45	21:40	23:55	Dry, calm, clear conditions, with temperatures ranging from 16°C to 18°C.

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 along a predesigned transect route with regular point counts.

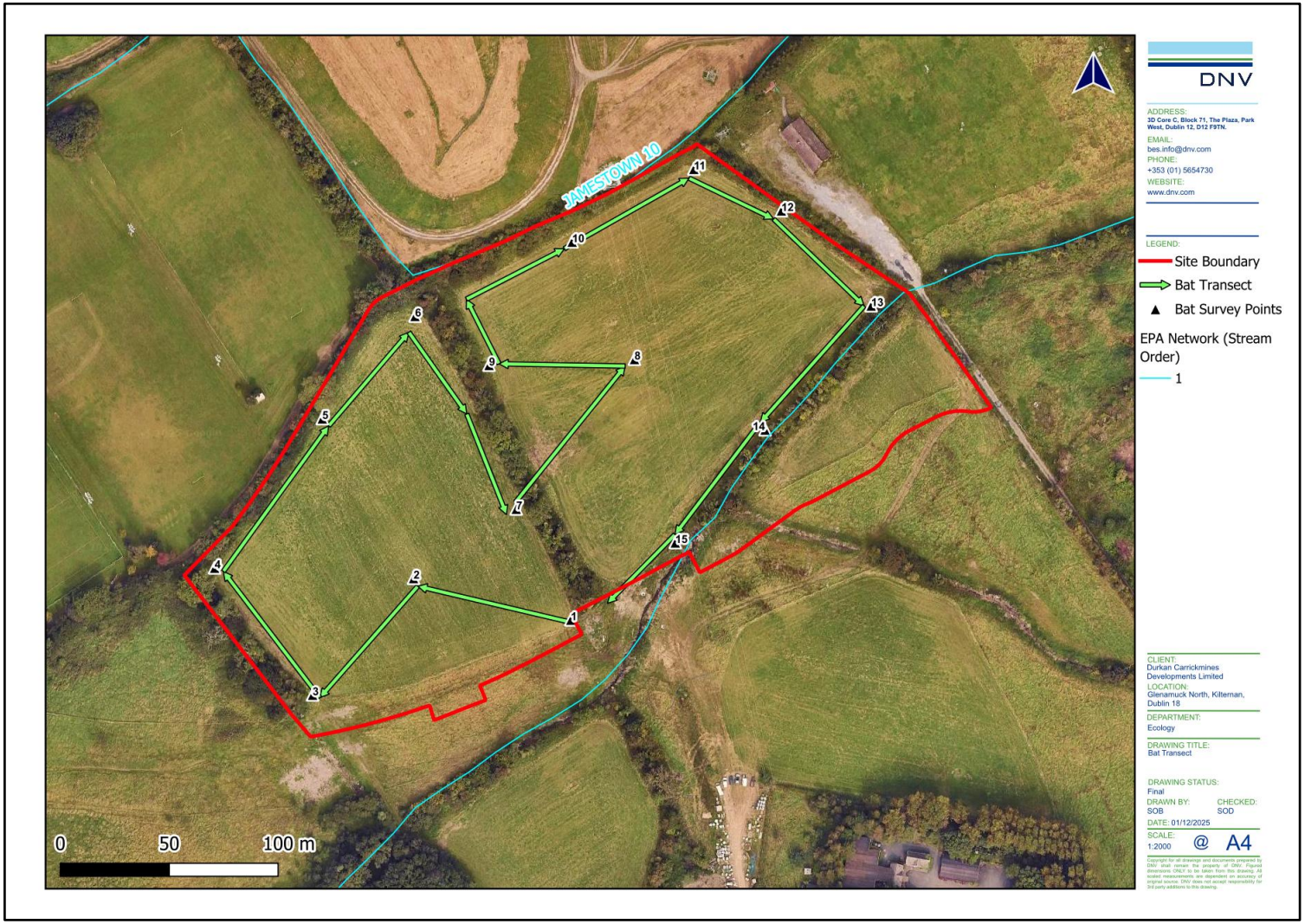

FIGURE 4. BAT ACTIVITY TRANSECT ROUTE AND SURVEY POINTS.

3.5.3.4 Data Analysis

Species were identified from recordings using Elekon's BatExplorer software (Version 2.1.10.1). 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 (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 the 26th July 2024 to inform an evaluation of the on-site habitats for bird species. Additionally, all bird species encountered during the survey were recorded and activity noted where possible.

3.5.4.2 Wintering Bird Scoping Survey

A wintering bird scoping survey was carried out on the 30th January 2025 to scope out the breeding and non-breeding bird potential at the Site based on habitats. Additionally, all bird species encountered during the survey were recorded and activity noted where possible.

3.5.4.3 Breeding Bird Surveys

To inform an evaluation of the on-site habitats for breeding bird species, three breeding bird survey visits were undertaken on the mornings of the 1st May 2025, 29th May 2025, and 30th June 2025. All survey visits to the Site were completed in the early morning, commencing at or near dawn and lasting approximately four hours in duration.

3.5.5 Amphibian Survey

A targeted amphibian survey was carried out on the 20th March 2025. The Site, with particular focus on the drainage ditches present, was searched for signs of amphibians, such as the presence of adults or spawn clumps.

3.5.6 Other Fauna

General fauna surveys of the Site were carried out in conjunction with the other field surveys on the 26th July 2024 and 30th January 2025. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. Furthermore, the Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and the National Road Authority (NRA, 2005). This survey also considered protected or notable fauna that may occur within the Site or in the adjacent lands, but for which no historical records from the relevant grid square(s) exist or no targeted surveys were carried out.

3.6 Ecological Assessment

This EcIA has been undertaken following the methodology set out in Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 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 Appendix II. 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 further within this EcIA. Those evaluated as higher local value or above are identified as Key Ecological Receptors (KERs).

3.6.2 Impact Assessment

As per the NRA guidelines, impact assessment is only undertaken of KERs. The assessment of the potential impact of the Proposed Development on the identified KERs was carried out with regard to the criteria outlined in the EPA Guideline (EPA, 2022), presented in Appendix III. 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 EcIA 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 EcIA, 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.
- While no spring bat activity surveys were carried out on Site, a total of three activity surveys have been carried out on Site between the months of June and September, along with ground-based habitat suitability and roost assessments. In addition, precautionary mitigation and enhancement measures outlined in section 6 below will act to mitigate potential impacts to the bats within the surrounding environment. As such, it is considered that the lack of a spring survey is not a significant limitation to this assessment.

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 of the Proposed Development is located within the Ovoca-Vartry Catchment (Catchment ID: 10) and the Dargle_SC_010 sub-catchment (Sub-catchment ID: 10_5) (EPA, 2026).

Two first order tributaries of the Carrickmines Stream, both mapped by the EPA as Carrickmines Stream_010 (EU Code: IE_EA_10C040350), pass through the north and south boundaries of the Site, namely the Jamestown Stream in the north and Glenamuck Stream to the south. These watercourses intersect 575m northeast of the Site and flow into the Carrickmines Stream 1.4km northeast of the Site of the Proposed Development.

The Carrickmines Stream flows east for approximately 3.3km before joining the Shanganagh 4th Order river. The Shanganagh then flows east for 1.7km before discharging into the Southwest Irish Sea at Killiney Bay (HA_10).

The Water Framework Directive (WFD) ecological status of the Carrickmines Stream in the vicinity of the Site (including the Jamestown Stream and the Glenamuck Stream tributaries) is classified as '*Good*' quality for the 2019 – 2024 monitoring period and was '*Not At Risk*' of failing to meet its WFD objectives for the same period.

The Shanganagh River (Shanganagh_010) is classified as being of '*Good*' quality for the 2019 – 2024 monitoring period and was '*Not At Risk*' of failing to meet its WFD objectives for the same period (EPA, 2026). The ultimate receiving waterbody in this network, Southwest Irish Sea (HA_10), was of '*Good'* status for the 2019 – 2024 monitoring period and was considered to be '*Not at Risk*' of not meeting its WFD objectives. (EPA, 2026).

The EPA water quality monitoring data for the stations on the Carrickmines Stream located closest to the Site are summarised in Table 2. The reported Q-value results from the most recently available station data in 2024 indicate that water quality in the Carrickmines Stream proximal to the Site is 'Good'.

TABLE 2. EPA MONITORING STATIONS AND ASSIGNED Q VALUES.

EPA Monitoring Station name	Station Code	Location from Site	Distance from Site	Assigned Q value
Carrickmines Stream - u/s Overpass	RS10C040350	Downstream	3.5km E	4 'Good'
Carrickmines Stream - At Commons Road	RS10S010600	Downstream	4.6km E	4 'Good'

The Site of the Proposed Development is situated on the Wicklow (EU Code: IE_EA_G_076) groundwater body. The bedrock aquifer beneath the Site is '*Locally Important Aquifer – Bedrock which is Moderately Productive only in Local Zones'* and comprises '*Granites & other Igneous Intrusive rocks* (GSI, 2026). The level of vulnerability to groundwater contamination from human activities beneath the Site is '*High*' (GSI, 2026).

The bedrock units underlaying the Site are classified as *8, Granite, granodiorite* which are classified as *Caledonian (Silurian-Devonian)* in age (GSI, 2026). The soil beneath the Site is mapped as Clonroche/Urban (EPA, 2026). The quaternary sediments beneath the Site are *'Till derived from granite'* and *'Tills derived from limestones'* (TGr & TLs; GSI, 2026) while the subsoil beneath the Site is mapped as '*Granite tills'* and *'Granite sands and gravels'* (A; EPA, 2026).

The Waterbody Status for river, groundwater, and coastal water bodies relevant to the Site as recorded by the EPA (2026) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are provided in Table 3.

TABLE 3. WFD RISK AND WATER BODY STATUS.

Waterbody Name	Water body; EU code	Location from Site	Distance from Site (km) as the crow flies	WFD water body status (2019-2024)	WFD 3rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
Carrickmines Stream_010	IE_EA_10C040350	Within Site	0	Good	Not at Risk	Within /Downstream
Shanganagh_010	IE_EA_10S010600	East	3.8	Good	Not at Risk	Downstream
Groundwater Bodies						
Wicklow	IE_EA_G_076	N/A	N/A	Good	At Risk	Underlying GWB
Coastal waterbodies						
Southwest Irish Sea – Killiney Bay (HA_10)	IE_EA_100_0000	East	5.3	Good	Not at Risk	Downstream of Site

4.2 Designated Sites

4.2.1 European sites – Appropriate Assessment

All European sites potentially linked to the Proposed Amendments have been identified and fully assessed in the AA Screening Report (Stage 1 AA) accompanying this submission under separate cover. A summary of the AA conclusions is given below.

"*The Proposed Development at Glenamuck North, Kilternan, Dublin 18 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 ***may be excluded*** *that the Proposed Development will have a significant effect on any of the European sites listed below:*

- *Rockabill to Dalkey Island SAC (003000)*
- *Dalkey Islands SPA (004172)*

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, can be excluded in light of the above listed European sites' conservation objectives. Thus, there is no requirement to proceed to Stage 2 of the Appropriate Assessment process; and the preparation of a NIS is not required."

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

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 2.

4.2.2.1.1 Direct Pathways

4.2.2.1.1.1 HYDROLOGICAL PATHWAYS

During the Construction Phase of the Proposed Development, surface water run-off containing silt/sediments or other pollutants could inadvertently flow into the Carrickmines Stream and flow downstream. As such, there is a potential, weak hydrological pathway via surface water run-off to Loughlinstown Wood pNHA (001211) and Dalkey Coastal Zone and Killiney Hill pNHA (001206).

The Site is located within the transition zone of Dublin Bay UNESCO Biosphere, as detailed in 4.2.2.1.1.3 below. While this zone is designated primarily for sustainable social and economic development, areas of the downstream Carrickmines Stream and Shanganagh River are comprised of the buffer zone of Dublin Bay UNESCO Biosphere, which is 82km² of public and private green spaces such as parks, greenbelts and golf courses. As such, there is a potential, weak hydrological pathway via surface water run-off to Dublin Bay UNESCO Biosphere.

No other designated sites are hydrologically connected to the Proposed Development.

4.2.2.1.1.2 HYDROGEOLOGICAL PATHWAYS

Potential discharges to ground could potentially migrate vertically downward to the underlying bedrock aquifer and laterally within the aquifer to the downgradient receiving surface waterbodies, i.e., the Carrickmines Stream, contributing to the hydrological pathway to the Irish Sea downstream of the Site. Dingle Glen pNHA (001207) lies closest to the Site, located 675m to the southeast of the Site, however this pNHA is slightly elevated above the Site as the intervening distance slopes gently north, and as such any potential discharges to ground will likely enter the Carrickmines Stream. In addition, Dingle Glen pNHA (001207) is a dry valley and is not designated based on ground-water dependent habitats. As such, no direct hydrogeological pathways to any designated sites exist.

4.2.2.1.1.3 AIR AND LAND PATHWAYS

The Site is located within the transition zone of Dublin Bay UNESCO Biosphere. The transition zone is the outer zone, where sustainable social and economic development is strongly promoted. It covers 173 km^2 and includes residential communities, harbours, ports and industrial and commercial areas, with the goal of fostering a sustainable economy and society for people living and working in the area.

No other air or land pathways from the Proposed Development to any designated sites were identified, as the distance between the Site and the nearest designated site, Dingle Glen pNHA (001207) approx. 825m southeast) is deemed sufficient to exclude any potential for impacts from increases in noise, lighting and/or dust or other airborne pollutants.

4.2.2.1.2 Indirect Pathways

4.2.2.1.2.1 HYDROLOGICAL PATHWAYS

According to the EPA Agglomeration areas (EPA, 2026), foul waters from the area of the Site are treated in Shanganagh-Bray WwTP before being discharged into the Irish Sea. The primary discharge point of Shanganagh WwTP is located approximately 1.6km from the shore where Dalkey Coastal Zone and Killiney Hill pNHA (001206) is located, and as such there is a considerable marine buffer.

In addition, the most recent Annual Environmental Report for Shanganagh WwTP (EPA, 2024) states that the WwTP has a capacity of 44,937 Population Equivalents (PE) remaining and is not expected to exceed capacity

within the next three years. Therefore, foul water loading from the Proposed Development will not have an observable impact on the quality of effluent from Shanganagh WwTP.

Thus, this pathway is deemed weak and insignificant and it can be concluded that there are no connections between the Proposed Development and any designated site via foul water discharge.

4.2.2.1.2.2 AIR AND LAND PATHWAYS

No significant indirect pathways (e.g., disruptions to migratory paths) were identified.

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 4 and Figure 5. 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 4. 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 (as the crow flies)	Designation Rationale / Site Description	Potential Pathway to receptors
Internationally Designated Sites			
Dublin Bay UNESCO Biosphere	Overlapping the Site boundary	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.	While the Proposed Development is located within the transition zone of this UNESCO site, there is a potential hydrological pathway to the buffer zone via the Carrickmines Stream.
Proposed Natural Heritage Areas			
Loughlinstown Wood pNHA (001211)	3.7km E	This site is located about 4km north of Bray, on the east side of the main Dublin-Bray road. It is on the north bank of the Shanganagh River at Loughlinstown. The wood was originally planted but following substantial regeneration, has produced woodland of natural character in age structure and form. The western end retains a high canopy of Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*) and some elm (*Ulmus* spp.), with Holly	While unlikely as most of the habitats within this pNHA are terrestrial habitats, there is a potential hydrological pathway via the Carrickmines Stream and the Shanganagh River, the latter of which flows through this pNHA.

Site Name & Code (Receptor)	Distance to Site of Proposed Development (as the crow flies)	Designation Rationale / Site Description	Potential Pathway to receptors
		(*Ilex aquifolium*) and Cherry Laurel (*Prunus laurocerasus*) below. There is little regeneration in this part of the wood. There is a gradation into a dense thicket of bramble (*Rubus* spp.), and trees such as Ash (*Fraxinus excelsior*), Blackthorn (*Prunus spinosa*) and Hazel (*Corylus avellana*) occur here. A stand of Gorse (*Ulex europaeus*) occurs at the eastern end of the site. The valley floor has much Alder (*Alnus glutinosa*) and some willows (*Salix* spp.). The introduced Giant Hogweed (*Heracleum mantegazzianum*) has spread along the banks of the river. The site is used for amenity purposes, with signposting and information leaflets available. Dumping and littering is a problem within the site. This site is a good example of demesne-type mixed woodland. It is now used chiefly for amenity purposes.	
Dalkey Coastal Zone and Killiney Hill pNHA (001206)	5.2km E	This site includes the coastal stretch from Scotman's Bay to south of White Rock, the Dalkey Island group and Dalkey Sound, and Killiney Hill. Killiney Hill is at the edge of the Wicklow mountain intrusion and so it is formed of a mixture of granite and mica schist. It provides one of the best exposed junctions of these rock types, on the beach at White Rock, at which minerialisation has taken place due to contact metamorphism. The minerals include biotite, andelusite and garnet, with aplite and pegmatite veins also exposed. The seaward parts of Killiney Hill have in addition a covering of calcareous glacial drift. The rocky shore is mainly of granite. Dalkey Sound and its environs have been highly regarded as a valuable marine collecting area for many years. The Sound is especially noteworthy for the occurrence of west and south coast invertebrates. Species taken include squat lobsters (*Galathea* spp.), swimming crabs (*Portunus* spp.) and the crawfish *Palinurus vulgaris*. The area is also noted for the occurrence of gymnoblastic hydroids, with the rare *Antedon bifida* being taken regularly. Some rare European species which occur	Potential hydrological pathway via the Carrickmines Stream and the Shanganagh River.

Site Name & Code (Receptor)	Distance to Site of Proposed Development (as the crow flies)	Designation Rationale / Site Description	Potential Pathway to receptors
		are members of the Order Nudibranchia and the Spiny Starfish (*Marthasterias glacialis*). Dalkey Island lies c. 400m off Sorrento Point. The island is low-lying, the highest point at c.15m is dominated by a Martello Tower. Soil cover consists mainly of a thin peaty layer, though in a few places there are boulder clay deposits. Vegetation cover is low, consisting mainly of grasses. No woody plants have become established, probably due to constant grazing by goats. Dense patches of bracken (*Pteridium aquilinum*) and Hogweed (*Heracleum sphondylium*) occur in places. Lamb Island lies to the north of Dalkey Island, attached at low-tide by a line of rocks. It has a thin soil cover and some vegetation, mainly grasses, Common Nettle (*Urtica dioica*) and Hogweed. Further north lies Maiden Rock, a bare angular granite rock up to 5m high. There is no vegetation cover. Muglins, a small granite rock, lies about 1km north-east of Dalkey Island. A small lighthouse is on the rock. Herring Gulls nest on Dalkey Island (17 pairs in 1986), Lamb Island (29 pairs in 1986) and Muglins (207 nests in 1982). Great Black-backed Gull nests on Dalkey Island (maximum 62 nests in 1982-88), and two pairs of Lesser Black-backed Gull nested there in 1981. Common Terns breed annually on Maiden Rock, with a maximum of 54 nests between 1980 and 1986. One pair of Arctic Tern bred on Maiden Rock in several years and in 1986 two pairs of Roseate Terns nested but were unsuccessful. Manx Shearwater is suspected of breeding on Dalkey Island. Shelduck, Mallard and Oystercatcher nest on Dalkey and Lamb Island. Meadow and Rock Pipits breed on Dalkey Island. Maiden Rock is an important autumn roosting site for up to 2,000 terns, including Roseates from the Rockabill colony. In autumn and winter Dalkey Island is an evening roosting site for Cormorants, Shags, Curlew and large gulls. Up to 50 Turnstones and 15 Purple Sandpipers occur in winter.	

Site Name & Code (Receptor)	Distance to Site of Proposed Development (as the crow flies)	Designation Rationale / Site Description	Potential Pathway to receptors
		Killiney Hill is a complex of coastal heath and mixed woodland. The woods are mostly planted and include Sycamore (*Acer pseudoplatanus*), Horse Chestnut (*Aesculus hipposcastanum*), some oak (*Quercus* spp.), Ash (*Fraxinus excelsior*) and Holly (*Ilex aquifolium*). The ground flora is mainly Ivy (*Hedera helix*) and bramble (*Rubus* spp.) but there are some areas with more typical woodland species such as Wood-sorrel (*Oxalis acetosella*) and Herb-Robert (*Geranium robertianum*). Many of the rock surfaces on the open and bushy areas on the east side of the summit of the hill are roches mountonnes while near the summit spodumene is found in a small scarp exposure. This results in an interesting flora, with Wood Vetch (*Vicia sylvatica*), Climbing Corydalis (*Corydalis claviculata*) and Wild Madder (*Rubia peregrina*) growing amongst the Gorse (*Ulex europaeus*). The shallow soils overlying the rock support a community of winter annuals and early flowering perennials such as Spring Squill (*Scilla verna*) and Wild Onion (*Allium vineale*). The drift banks above and below the railway have warm shallow soils. Here grow scarce plants such as Bloody Crane's-bill (*Geranium sanguineum*), Bee Orchid (*Ophrys apifera*), Sea Stork's-bill (*Erodium maritimum*) and clovers (*Trifolium ornithopodioides*, *T. striatum* and *T. scabrum*). The naturalised Silver Ragwort (*Senecio cineraria*) is widespread. Up to five pairs of Fulmar breed on the cliffs below the railway line. Kestrel breeds in the area, as well as Stonechat. This site represents a fine example of a coastal system with habitats ranging from the sub-littoral to coastal heath. The flora is well developed and includes some scarce species. The islands are important bird sites. The site also has geological importance.	

Site Name & Code (Receptor)	Distance to Site of Proposed Development (as the crow flies)	Designation Rationale / Site Description	Potential Pathway to receptors
Dingle Glen pNHA (001207)	825m SE	Dingle Glen is situated approximately 5km west of Killiney. It is a dry valley formed by a glacial lake overflow channel. Formerly cleared of vegetation, a woodland cover is now regenerating, with pioneer species of Holly (*Ilex aquilifolium*), Blackthorn (*Prunus spinosa*), and willows (*Salix* spp.). Individual trees of Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Sessile Oak (*Quercus petraea*) and Spindle (*Euonymus europaeus*) occur. The woodland ground flora is represented by Foxglove (*Digitalis purpurea*), Wood Avens (*Geum urbanum*), Wood Melic (*Melica uniflora*) and Bugle (*Ajuga reptans*). Trees and shrubs are mostly restricted to the valley bottom. On the slopes above, a heathy vegetation is dominated by Gorse (*Ulex europaeus*) and Bracken (*Pteridium aquilinum*). Other species include Wood Sage (*Teucrium scorodonia*), Bell Heather (*Erica cinerea*), Navelwort (*Umbillicus rupestris*), English Stonecrop (*Sedum anglicum*), Heath Bedstraw (*Galium saxatile*), Heath-grass (*Danthonia decumbens*), Great Wood-rush (*Luzula sylvatica*) and Climbing Corydalis (*Corydalis claviculata*). The importance in this site lies in the variety of habitats within a relatively small area. The site is secluded and not subject to much disturbance.	No pathways identified.

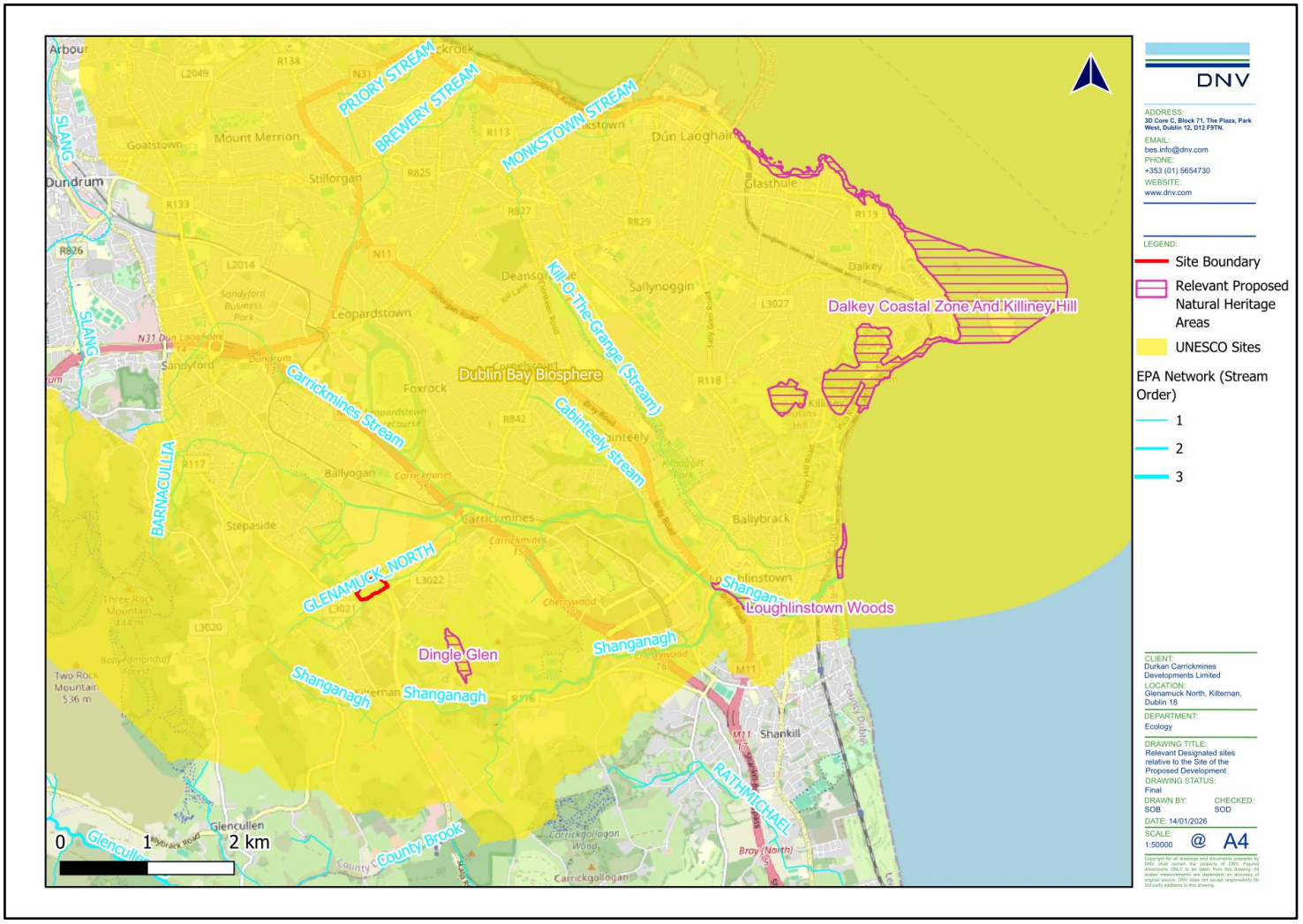

FIGURE 5. LOCATION OF DESIGNATED SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD IN RELATION TO THE PROPOSED DEVELOPMENT.

4.3 Habitats

The habitats present within the Site, as recorded in the survey area during the field survey, are described in this section. Site photographs of these habitats are included in Appendix 11.4 and a map of the habitats is presented in Figure 6.

4.3.1 Improved Agricultural Grassland (GA1)

The majority of the Site is composed of Improved Agricultural Grassland (Figure 6, Photograph 1). This area is dominated by perennial ryegrass (*Lolium perenne*) and white clover (*Trifolium repens*), though some ruderal species such as dandelion (*Taraxacum officinale agg.*), willow herb (*Chamaenerion angustifolium*), cleavers (*Gallium aparine*), butterbur (*Petasites hybridus*), and common thistle (*Cirsium vulgare*) grow in this habitat, particularly at field margins (Photograph 7).

4.3.2 Treelines (WL2)

The Site is bordered on the west and north by treelines, and the two fields comprising the main portion of the Site are also separated by a treeline (Photograph 1,2). Species noted in treelines include frequent ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*) and occasional grey willow (*Salix cinerea*). At a lower height of growth, holly (*Ilex aquifolium*), and hawthorn (*Crataegus monogyna*) were noted in the western and northern treelines. The central treeline is dominated by ash, much of which is subject to ash dieback.

A scrub layer was noted beneath the treeline habitats, comprising bramble (*Rubus fruticosus agg.*), ivy (*Hedra helix*), common hogweed (*Heracleum sphondylium*), curly dock (*Rumex crispus*), and common ragwort (*Jacobaea vulgaris*).

It is noted that the majority of the underlayer was removed after the initial Site visit on the 26th of July 2024 and before the second Site visit on the 30th of January 2025 (Photograph 6) as part of the general upkeep of the Site by the landowner.

4.3.3 Hedgerow (WL1)

A line of hedgerow exists along the eastern Site boundary (Photograph 3). The hedgerow includes grey willow, hawthorn, elder (*Sambucus nigra*), and some individual ash and sycamore trees. A scrub understory, comprising the species noted in treeline habitats above, was observed during the initial Site walkover on the 26th of July 2024. This had been removed at the time of the second Site walkover on the 30th of January 2025. Gappy hedgerow habitat also exists along the banks of the Glenamuck Stream.

4.3.4 Lowland Depositing River (FW2)

The Glenamuck Stream, tributary to the Carrickmines Stream, passes through the south of the Site (Photograph 4). Works by the GDRS have culverted and diverted the stream in the area of the Site. The Johnstown Stream passes along the northern Site boundary (Photograph 5). This stream has been channelized with stone banks in the area of the Site.

FIGURE 6. MAP OF HABITATS PRESENT AT THE PROPOSED DEVELOPMENT SITE.

4.4 Species and Species Groups

4.4.1 Flora

4.4.1.1 Rare and Protected Flora

4.4.1.1.1 Desk Studies Results

The Site of the Proposed Development is located within the Ordnance Survey 10km grid square (O22), 2km grid square (O22B), and 1km grid square (O2023). Species records from the NBDC online database for these grid squares were studied for the presence of rare and/or protected species within the last 20 years. A total of three protected bryophyte species were recorded within the 10km grid square within the last 20 years, however, the closest of these species have been recorded in a disused mine in Ballycorus, located 2.7km southeast of the Site of the Proposed Development.

An additional 11 regionally extinct, vulnerable, and near threatened plant species occurred within the 10km grid square (O22) (Table 5), however there are no recordings within the 2km or 1km grid squares.

The FPO Bryophytes database was also checked for rare and protected flora records within the vicinity of the Proposed Development. No additional rare and/or protected bryophyte records exist within the vicinity of the Proposed Development.

TABLE 5. RECORDS OF RARE OR PROTECTED FLORA FOR THE SURROUNDING 10KM GRID SQUARE ASSOCIATED WITH THE SITE FROM THE NBDC.

Name	Grid Square	Date of last record	Database	Designation
Lesser Copperwort (*Cephaloziella massalongoi*)	O22	13/04/2008	Bryophytes of Ireland	Flora Protection Order 2022 Schedule C (Liverworts) Threatened Species: Vulnerable
Petalwort (*Petalophyllum ralfsii*)	O22	11/02/2009	Bryophytes of Ireland	EU Habitats Directive – Annex II Flora Protection Order 2022 Schedule C (Liverworts)
Lead-moss (*Ditrichum plumbicola*)	O22	13/04/2008	Bryophytes of Ireland	Flora Protection Order 2022 Schedule B (Mosses) Threatened Species: Endangered
Corn Marigold (*Glebionis segetum*)	O22	24/07/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened
Dense-flowered Fumitory (*Fumaria densiflora*)	O22	08/06/2017	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Regionally Extinct
Dwarf Mallow (*Malva neglecta*)	O22	27/08/2015	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened

Green Field-speedwell (*Veronica agrestis*)	O22	07/04/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened
Irish Whitebeam (*Sorbus hibernica*)	O22	16/07/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Vulnerable
Meadow Crane's-bill (*Geranium pratense*)	O22	06/07/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Vulnerable
Pale Flax (*Linum bienne*)	O22	21/05/2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened
Sea-kale (*Crambe maritima*)	O22	11/04/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened
Strawberry-tree (*Arbutus unedo*)	O22	16/01/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened
Upright Brome (*Bromopsis erecta*)	O22	27/08/2015	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Threatened Species: Near threatened
Potato Bryum (*Bryum bornholmense*)	O22	13/04/2008	Bryophytes of Ireland	Threatened Species: Near threatened

4.4.1.1.2 Field Survey Results

No rare or protected flora were observed at the Site during this survey.

4.4.1.2 Invasive Species

4.4.1.2.1 Desk Studies Results

There are records for 26 species of flora considered to be invasive within the 10 grid square which encompasses the Site of the Proposed Development, with five of these records being within the 2km square grid (O22B) and three records within the 1km grid square (O2023). Details of these records are listed in Table 6.

TABLE 6. RECORDS OF INVASIVE SPECIES OF FLOWERING PLANT FOR THE SURROUNDING 10KM (O22), 2KM (O22B), AND 1KM (O2023) GRID SQUARES ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Grid square	Date of last record	Source	Designations
American Skunk-cabbage *(Lysichiton americanus)*	O22	28/03/2022	National Invasive Species Database	Medium Impact Invasive Species EU Regulation No. 1143/2014 Regulation S.I. 477 (Ireland)

Species	Grid square	Date of last record	Source	Designations
Butterfly-bush *(Buddleja davidii)*	O22	27/09/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
	O22B	11/05/2013		
Canadian Fleabane (*Conyza canadensis*)	O22	04/08/2024	National Invasive Species Database	Medium Impact Invasive Species
Canadian Waterweed (*Elodea canadensis*)	O22	07/07/2009	River Biologists' Database (EPA)	High Impact Invasive Regulation S.I. 477 (Ireland)
Cherry Laurel *(Prunus laurocerasus)*	O22	28/02/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Species
Common Broomrape (*Orobanche minor*)	O22	25/06/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Floating Pennywort (*Hydrocotyle ranunculoides*)	O22	18/01/2018	National Invasive Species Database	High Impact Invasive Regulation S.I. 477 (Ireland)
German-ivy (*Delairea odorata*)	O22	13/08/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	EU Invasive Alien Species Regulation No. 1143/2014
Giant Hogweed *(Heracleum mantegazzianum)*	O22	29/06/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	High Impact Invasive Species Regulation S.I. 477 (Ireland)
	O22B	30/04/2009	National Invasive Species Database	
	O2023	30/04/2009	National Invasive Species Database	
Himalayan Balsam *(Impatiens glandulifera)*	O22	31/07/2009	National Invasive Species Database	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Himalayan Honeysuckle (*Leycesteria formosa*)	O22	16/08/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Himalayan Knotweed (*Persicaria wallichii*)	O22	25/11/2017	National Invasive Species Database	Medium Impact Invasive Species Regulation S.I. 477 (Ireland)
Hottentot-fig (*Carpobrotus edulis*)	O22	24/07/2017	National Invasive Species Database	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Japanese Knotweed *(Reynoutria japonica)*	O22	27/05/2023	Vascular plants: Online Atlas of	High Impact Invasive Species Regulation S.I. 477 (Ireland)

Species	Grid square	Date of last record	Source	Designations
			Vascular Plants 2012 Onwards	
	O22B	30/04/2009	National Invasive Species Database	
	O2023	30/04/2009	National Invasive Species Database	
Least Duckweed (*Lemna minuta*)	O22	11/10/2015	National Invasive Species Database	Medium Impact Invasive Species
	O22B	11/05/2013	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	
New Zealand Pigmyweed (*Crassula helmsii*)	O22	26/09/2014	National Invasive Species Database	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Nuttall's Waterweed (*Elodea nuttallii*)	O22	31/12/2007	National Invasive Species Database	High Impact Invasive Species Regulation S.I. 477 (Ireland)
Russian-vine (*Fallopia baldschuanica*)	O22	07/01/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Sea-buckthorn (*Hippophae rhamnoides*)	O22	22/06/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species Regulation S.I. 477 (Ireland)
Spanish Bluebell (*Hyacinthoides hispanica*)	O22	03/05/2025	National Invasive Species Database	Regulation S.I. 477 (Ireland)
Sycamore *(Acer pseudoplatanus)*	O22	27/02/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Three-cornered Garlic *(Allium triquetrum)*	O22	05/05/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species Regulation S.I. 477 (Ireland)
Traveller's-joy (*Clematis vitalba*)	O22	27/09/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Turkey Oak (*Quercus cerris*)	O22	16/01/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species
Wall Cotoneaster (*Cotoneaster horizontalis*)	O22	28/05/2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Medium Impact Invasive Species

Species	Grid square	Date of last record	Source	Designations
Winter Heliotrope (*Petasites fragrans*)	O22	27/02/2025	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Low Impact Invasive Species
	O22B	31/01/2018	National Invasive Species Database	
	O2023	31/01/2018	National Invasive Species Database	

4.4.1.2.2 Field Survey Results

A single Giant Hogweed (*Heracleum mantegazzianum*) individual was noted along the northeastern corner of the central treeline on the initial Site walkover on the 26th of July 2024 (Photograph 7). This individual plant had been removed by the landowner prior to the Site visit on the 30th of January 2025.

No other invasive floral species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011) were recorded at the Site.

4.4.2 Bats

4.4.2.1 Desk Study Results

A total of seven bat species have been recorded within the 10km (O22) grid square which encompasses the Site, with four of these species recorded in the 2km (O22B) grid square, and none in the 1km (O2023) grid square. Details of these records are listed in Table 7.

TABLE 7. RECORDS OF BATS FOR THE SURROUNDING 10KM (O22) AND 2KM (O22B) GRID SQUARES ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Grid Square	Date of last record	Database	Designation
Brown Long-eared Bat (*Plecotus auritus*)	O22	14/05/2023	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Acts
Common Pipistrelle (*Pipistrellus pipistrellus*)	O22	14/05/2023	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Acts
	O22B	19/05/2022		
Daubenton's Bat *(Myotis daubentonii)*	O02	27/04/2021	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Acts
Leisler's bat *(Nyctalus leisleri)*	O02	14/05/2023	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Acts
	O22B	19/05/2022		
Nathusius's Pipistrelle (*Pipistrellus nathusii*)	O22	09/05/2023	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Acts
Natterer's Bat *(Myotis nattereri)*	O02	14/06/2018	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Acts
	O22B	14/06/2018		

Species	Grid Square	Date of last record	Database	Designation
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	O02	14/05/2023	National Bat Database of Ireland	EU Habitats Directive - Annex IV Wildlife Acts
	O22B	19/05/2022		

The Proposed Development Site (indicated in the black box in Figure 7) is located within an area of medium bat suitability (26.56). The species with the highest individual suitability scores for this area of the Site is common pipistrelle (*Pipistrellus pipistrellus*) with a score of 45, followed by Natterer's bat *(Myotis nattereri)* with a suitability score of 42. The suitability index for specific bat species is presented in Table 8.

TABLE 8. LANDSCAPE SUITABILITY INDEX FOR INDIVIDUAL BAT SPECIES WITHIN THE 5KM GRID SQUARE (SOURCE: NBDC). THOSE SPECIES THAT HAVE BEEN RECORDED IN THE NBDC DATABASE WITHIN THE O22 10KM GRID SQUARE ARE HIGHLIGHTED IN GREEN.

Bat Species	Suitability Index (west area of Site)
Soprano pipistrelle *(Pipistrellus pygmaeus)*	40 (High)
Brown longed-eared bat *(Plecotus auritus)*	31 (Medium-High)
Common pipistrelle *(Pipistrellus pipistrellus)*	45 (High)
Lesser horseshoe bat *(Rhinolophus hipposideros)*	0 (Low)
Lesser noctule *(Nyctalus leisleri)*	40 (High)
Whiskered bat *(Myotis mystacinus)*	19 (Low-Medium)
Daubenton's bat *(Myotis daubentonii)*	19 (Low-Medium)
Nathusius' pipistrelle (*Pipistrellus nathusii*)	3 (Low)
Natterer's bat *(Myotis nattereri)*	42 (High)

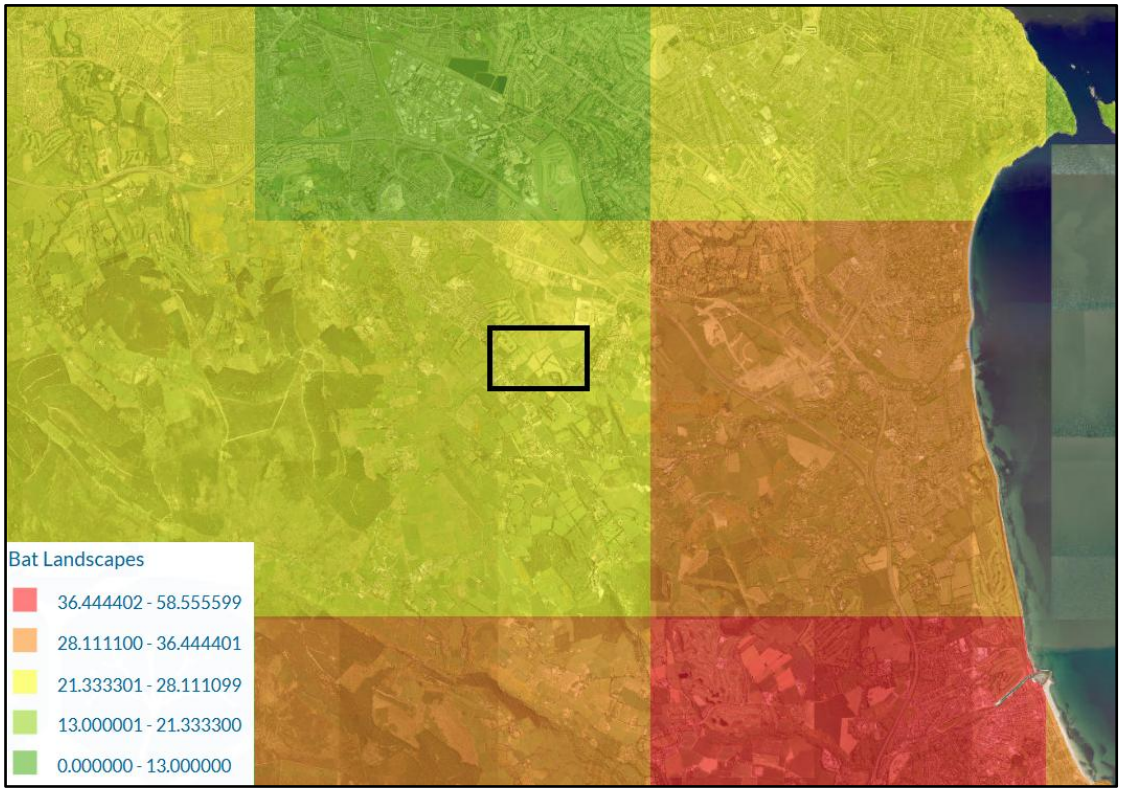

FIGURE 7. BAT LANDSCAPE SUITABILITY MODEL (ALL BATS) SURROUNDING THE PROPOSED DEVELOPMENT SITE (ADAPTED FROM NBDC).

4.4.2.2 Field Survey Results

4.4.2.2.1 Bat Roost Assessment and Habitat Suitability

No buildings exist on or immediately adjacent to the Site. The trees and woodland adjacent to the Site were assessed for Potential Roost Features (PRFs) and found to have no PRFs. Therefore, their overall roost potential was assessed as NONE (Collins, 2023).

The treeline and hedgerow habitat on Site was deemed to offer Moderate foraging and commuting habitat for bats, particularly as these habitats connect to the wider environment to the north and west of the Site.

4.4.2.2.2 Bat Activity Surveys

In total, three distinct species were recorded commuting and foraging throughout the Site during the three activity surveys, namely common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), and Leisler's bat (*Nyctalus leisleri*) (Table 9). In addition, *Myotis* sp. were recorded on Site.

Common pipistrelle was the most commonly recorded throughout all three surveys, making up almost 74% of all records on Site and just over 78% of all calls, and was observed foraging and commuting along the linear vegetation throughout the Site, namely the treelines along the boundaries and intersecting the Site. Feeding buzzes were consistently recorded for both this species and soprano pipistrelle, confirming foraging on Site. Soprano pipistrelle was the next most recorded species on Site at 15% and also comprised 15% of calls. This species was also primarily observed foraging along the treelines on Site. Leisler's bat was the third most recorded species on Site at 11%, and made up almost 7% of calls with commuting activity recorded over the grasslands and treelines on Site. There was one record of *Myotis* sp. commuting along the south of the Site along the hedgerow during the September 2024 survey.

The locations of each record of bat throughout each survey can be seen in Figure 8, Figure 9, and Figure 10, respectively.

TABLE 9. SUMMARY OF BAT ACTIVITY RECORDED ON BAT DETECTOR (NON BAT "NOISE" RECORDS REMOVED) DURING TRANSECT SURVEYS.

Species	Common name	Number of Recordings	Number of Calls
24th September 2024			
Pipistrellus pipistrellus	Common Pipistrelle	83	2337
Nyctalus leisleri	Leisler's Bat	27	471
Pipistrellus pygmaeus	Soprano Pipistrelle	17	349
Myotis spec.	*Myotis* spec.	1	22
12th June 2025			
Pipistrellus pipistrellus	Common Pipistrelle	63	798
Pipistrellus pygmaeus	Soprano Pipistrelle	14	275
Nyctalus leisleri	Leisler's Bat	2	4
15th July 2025			
Pipistrellus pipistrellus	Common Pipistrelle	97	3117
Pipistrellus pygmaeus	Soprano Pipistrelle	18	534
Nyctalus leisleri	Leisler's Bat	8	75

FIGURE 8. BAT ACTIVITY SURVEY RESULTS – 24TH SEPTEMBER 2024.

FIGURE 9. BAT ACTIVITY SURVEY RESULTS – 12TH JUNE 2025.

FIGURE 10. BAT ACTIVITY SURVEY RESULTS – 15TH JULY 2025.

4.4.3 Birds

4.4.3.1 Desk study Results

A total of 160 bird species have been recorded within the O22 10 km grid square. Of these, 51 are amber listed birds and 28 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 species are either green listed, considered invasive, or without designation due to being rare visitors to Ireland.

TABLE 10. DETAILS OF AMBER AND RED LISTED BIRD SPECIES WITHIN THE 10KM GRID SQUARE (O22).

Species	Date of record	BoCCI Status
Barn Owl *(Tyto alba)*	10/05/2021	Red
Bar-tailed Godwit (*Limosa lapponica*)	01/03/2021	Red
Black-necked Grebe (*Podiceps nigricollis*)	22/03/2012	Red
Black-tailed Godwit (*Limosa limosa*)	31/12/2011	Red
Common Scoter (*Melanitta nigra*)	19/01/2017	Red
Curlew *(Numenius arquata)*	13/05/2025	Red
Dunlin (*Calidris alpina*)	06/02/2015	Red
Eider (*Somateria mollissima*)	22/06/2021	Red
Golden Plover (*Pluvialis apricaria*)	31/12/2011	Red
Grey Wagtail (*Motacilla cinerea*)	27/02/2023	Red
Kestrel (*Falco tinnunculus*)	24/10/2021	Red
Kittiwake (*Rissa tridactyla*)	19/01/2017	Red
Lapwing (*Vanellus vanellus*)	13/05/2025	Red
Meadow Pipit (*Anthus pratensis*)	13/05/2025	Red
Oystercatcher (*Haematopus ostralegus*)	06/05/2025	Red
Purple Sandpiper (*Calidris maritima*)	17/01/2025	Red
Razorbill (*Alca torda*)	07/04/2023	Red
Red Kite (*Milvus milvus*)	26/05/2023	Red
Redshank (*Tringa totanus*)	27/03/2023	Red
Redstart (*Phoenicurus phoenicurus*)	30/12/2019	Red
Redwing (*Turdus iliacus*)	20/01/2023	Red

Species	Date of record	BoCCI Status
Scaup (*Aythya marila*)	31/12/2011	Red
Shoveler (*Anas clypeata*)	31/12/2011	Red
Snipe (*Gallinago gallinago*)	15/04/2021	Red
Stock Dove (*Columba oenas*)	31/12/2011	Red
Swift (*Apus apus*)	25/06/2025	Red
Woodcock (*Scolopax rusticola*)	31/12/2011	Red
Yellowhammer (*Emberiza citrinella*)	02/04/2023	Red
Arctic Tern (*Sterna paradisaea*)	24/07/2024	Amber
Black Guillemot (*Cepphus grylle*)	28/05/2024	Amber
Black-headed Gull *(Chroicocephalus ridibundus)*	24/07/2024	Amber
Brambling *(Fringilla montifringilla)*	16/03/2018	Amber
Common Guillemot (*Uria aalge*)	16/05/2025	Amber
Common Gull *(Larus canus)*	01/05/2023	Amber
Common Sandpiper *(Actitis hypoleucos)*	24/07/2012	Amber
Common Tern (*Sterna hirundo*)	16/05/2025	Amber
Coot *(Fulica atra)*	03/01/2018	Amber
Cormorant *(Phalacrocorax carbo)*	06/05/2025	Amber
Fulmar (*Fulmarus glacialis*)	06/08/2020	Amber
Gannet (*Morus bassanus*)	15/06/2024	Amber
Garganey (*Spatula querquedula*)	13/05/2025	Amber
Goldcrest *(Regulus regulus)*	31/01/2025	Amber
Great Crested Grebe *(Podiceps cristatus)*	25/03/2020	Amber
Great Northern Diver (*Gavia immer*)	17/03/2018	Amber
Greenfinch *(Chloris chloris)*	26/02/2023	Amber
Herring Gull *(Larus argentatus)*	23/11/2023	Amber
House Martin *(Delichon urbicum)*	16/05/2025	Amber

Species	Date of record	BoCCI Status
House Sparrow *(Passer domesticus)*	25/12/2024	Amber
Kingfisher *(Alcedo atthis)*	23/01/2024	Amber
Lesser Black-backed Gull *(Larus fuscus)*	22/12/2022	Amber
Light-bellied Brent Goose (*Branta bernicla hrota*)	31/12/2011	Amber
Linnet *(Linaria cannabina)*	27/05/2023	Amber
Little Gull (*Hydrocoloeus minutus*)	02/01/2024	Amber
Little Tern (*Sternula albifrons*)	05/07/2016	Amber
Mallard *(Anas platyrhynchos)*	02/04/2023	Amber
Manx Shearwater (*Puffinus puffinus*)	10/06/2024	Amber
Mediterranean Gull (*Ichthyaetus melanocephalus*)	17/01/2025	Amber
Mute Swan *(Cygnus olor)*	10/05/2025	Amber
Red-breasted Merganser (*Mergus serrator*)	09/01/2016	Amber
Red-throated Diver (*Gavia stellata*)	19/02/2021	Amber
Ringed Plover *(Charadrius hiaticula)*	21/04/2023	Amber
Roseate Tern (*Sterna dougallii*)	24/07/2012	Amber
Sand Martin *(Riparia riparia)*	10/05/2025	Amber
Sandwich Tern (*Thalasseus sandvicensis*)	06/05/2025	Amber
Shag (*Gulosus aristotelis*)	30/04/2025	Amber
Shelduck (*Tadorna tadorna*)	05/06/2016	Amber
Skylark *(Alauda arvensis)*	15/05/2020	Amber
Spotted Flycatcher *(Muscicapa striata)*	16/05/2021	Amber
Starling *(Sturnus vulgaris)*	17/05/2025	Amber
Storm Petrel (*Hydrobates pelagicus*)	07/08/2010	Amber
Swallow *(Hirundo rustica)*	18/05/2024	Amber
Teal *(Anas crecca)*	26/02/2023	Amber
Tree Sparrow *(Passer montanus)*	15/06/2021	Amber

Species	Date of record	BoCCI Status
Tufted Duck *(Aythya fuligula)*	22/10/2016	Amber
Turnstone (*Arenaria interpres*)	06/05/2025	Amber
Wheatear (*Oenanthe oenanthe*)	27/03/2023	Amber
Whooper Swan *(Cygnus cygnus)*	31/12/2011	Amber
Wigeon (*Mareca penelope*)	31/12/2011	Amber
Willow Warbler *(Phylloscopus trochilus)*	13/05/2025	Amber

4.4.3.2 Field Survey Results

4.4.3.2.1 Preliminary Walkover Survey

During the Site walkover on the 26th of July 2024, robin (*Erithacus rubecula*), wood pigeon (*Columba palumbus*), jackdaw (*Coloeus monedul*), linnet (*Linaria cannabina*), and pied wagtail (*Motacilla alba yarrellii*) were observed. Of these, only linnet is amber listed according to BoCCI (Gilbert et al. 2021), as seen in Table 11 below.

TABLE 11. PRELIMINARY SCOPING SURVEY RESULTS.

Species	Habitat	Number and Activity	BoCCI Status (2021)
Robin (*Erithacus rubecula*)	Scrub (WS1)	Individual observed foraging throughout scrub.	Green
Wood pigeon (*Columba palumbus*)	Improved Agricultural Grassland (GA1)	Recorded foraging throughout grassland on Site.	Green
Pied wagtail (*Motacilla alba yarrellii*)	Improved Agricultural Grassland (GA1)	Observed commuting through the grassland on Site.	Green
Jackdaw (*Coloeus monedul*)	Improved Agricultural Grassland (GA1)	Multiple birds recorded foraging on Site and in flight over the Site.	Green
Linnet (*Linaria cannabina*)	Scrub (WS1)	Small flock recorded commuting throughout the scrub on Site	Amber

4.4.3.2.2 Wintering Bird Scoping Survey

During the Wintering Bird Scoping Survey conducted on the 30th of January 2025, several bird species were observed. Species and activity observed are listed in Table 12.

While amber-listed, gulls (*Larus* sp.) were recorded flying over the Site and not utilising the Site of the Proposed Development. None of the species observed on Site are target wintering bird species associated with designated sites within the ZOI of the Proposed Development. The Site does not provide suitable wintering habitat for SCI waterbird species, such as brent goose (*Branta bernicla*), because of the mixed sward height of fields on Site. In addition, due to the baseline disturbance caused by the GDRS construction within the vicinity of the Site, the Site does not provide significant foraging habitat for these species.

TABLE 12. WINTERING BIRD SCOPING SURVEY RESULTS.

Species	Habitat	Number and Activity	BoCCI Status (2021)
Magpie (*Pica pica)*	Treeline (WL2)	Perching	Green
Mistle Thrush (*Turdus viscivoru*)	Treeline (WL2)	Two individuals observed perching in treeline	Green
Hooded Crow (*Corvus cornix*)	Treeline (WL2)	Perching	Green
Gull Sp. (*Larus sp.*)	N/A	Observed flying over Site	Amber

4.4.3.2.3 Breeding Bird Surveys

During the Breeding Bird Surveys, a total of 21 bird species were recorded at the Site, with most of these species either a confirmed or probable breeder on Site (Table 13). The bird species recorded are primarily green-listed species, with five species amber-listed, and one species red-listed (Gilbert et al. 2021). Three of the amber-listed species were recorded as fly overs, and were not observed utilising the habitats at the Site.

TABLE 13. BIRD SPECIES RECORDED DURING THE BREEDING BIRD SURVEYS UNDERTAKEN AT THE SITE.

Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
Blackbird	*Turdus merula*	Green	1st May 2025 29th May 2025 30th June 2025	Confirmed (Recently fledged young)
Blackcap	*Sylvia atricapilla*	Green	30th June 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Blue Tit	*Cyanistes caeruleus*	Green	1st May 2025 29th May 2025 30th June 2025	Confirmed (Recently fledged young)
Chaffinch	*Fringilla coelebs*	Green	1st May 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Dunnock	*Prunella modularis*	Green	1st May 2025 29th May 2025 30th June 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Goldcrest	*Regulus regulus*	Amber	29th May 2025 30th June 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Goldfinch	*Carduelis carduelis*	Green	1st May 2025 30th June 2025	Confirmed (Recently fledged young)
Hooded Crow	*Corvus cornix*	Green	29th May 2025 30th June 2025	Possible breeding. Species observed in breeding season in suitable nesting habitat

Species	Scientific name	BoCCI Status	Dates recorded	Breeding Activity
Jackdaw	*Corvus monedula*	Green	1st May 2025	Possible breeding. Species observed in breeding season in suitable nesting habitat
Linnet	*Linaria cannabina*	Amber	29th May 2025	Non-breeding. Flyover.
Magpie	*Pica pica*	Green	1st May 2025 29th May 2025 30th June 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Meadow Pipit	*Anthus pratensis*	Red	30th June 2025	Possible breeding. Species observed in breeding season in suitable nesting habitat
Robin	*Erithacus rubecula*	Green	1st May 2025 30th June 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Rook	*Corvus frugilegus*	Green	1st May 2025 29th May 2025 30th June 2025	Probable breeding. Pair observed in suitable nesting habitat in breeding season
Starling	*Sturnus vulgaris*	Amber	1st May 2025 29th May 2025	Non-breeding. Flyover.
Stonechat	*Saxicola torquatus*	Green	29th May 2025 30th June 2025	Confirmed (Recently fledged young) + pair of adults.
Swallow	*Hirundo rustica*	Amber	29th May 2025 30th June 2025	Non-breeding. Flyover.
Whitethroat	*Sylvia communis*	Green	30th June 2025	Recently fledged juveniles with two adults, although, it seems likely that these birds fledged near, but not on the Site.
Willow Warbler	*Phylloscopus trochilus*	Amber	1st May 2025	Possible breeder. Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Woodpigeon	*Columba palumbus*	Green	1st May 2025 29th May 2025 30th June 2025	Possible breeding. Species observed in breeding season in suitable nesting habitat
Wren	*Troglodytes troglodytes*	Green	1st May 2025 29th May 2025 30th June 2025	Possible breeding. Species observed in breeding season in suitable nesting habitat

4.4.3.3 Evaluation

Considering the variety of bird species recorded both in the historical records and during the various field surveys, it is considered that the Site contains resident and regularly occurring, locally important populations of bird species, particularly breeding birds, protected under the Wildlife Act.

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, 20 mammal species (eleven native and nine non-native or invasive) were recorded within the 10km (O22) grid square which encompass the Proposed Development Site.

TABLE 14. RECORDS OF TERRESTRIAL MAMMALS (NATIVE AND NON-NATIVE) FOR THE SURROUNDING 10KM (O22) GRID SQUARE ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Date of last record	Source	Designation
NATIVE SPECIES			
Badger *(Meles meles)*	18/08/2017	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Hedgehog *(Erinaceus europaeus)*	01/10/2023	Hedgehogs of Ireland	Wildlife Act 1976 (as amended)
Irish Hare *(Lepus timidus subsp. hibernicus)*	28/05/2021	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Irish Stoat *(Mustela erminea subsp. hibernica)*	06/06/2023	Irish Stoats of Ireland	Wildlife Act 1976 (as amended)
Otter *(Lutra lutra)*	12/09/2018	Mammals of Ireland 2016-2025	EU Habitats Directive - Annex II & IV Wildlife Act 1976 (as amended)
Pine Marten *(Martes martes)*	26/04/2023	Mammals of Ireland 2016-2025	EU Habitats Directive - Annex V Wildlife Act 1976 (as amended)
Pygmy Shrew *(Sorex minutus)*	21/10/2018	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Red Deer *(Cervus elaphus)*	16/07/2015	Atlas of Mammals in Ireland 2010-2015	Wildlife Act 1976 (as amended)
Red Fox *(Vulpes vulpes)*	25/03/2023	Mammals of Ireland 2016-2025	Not legally protected
Red Squirrel *(Sciurus vulgaris)*	07/02/2023	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
Wood Mouse *(Apodemus sylvaticus)*	19/08/2017	Mammals of Ireland 2016-2025	Wildlife Act 1976 (as amended)
NON-NATIVE/INVASIVE SPECIES			
Brown Rat *(Rattus norvegicus)*	21/12/2022	Mammals of Ireland 2016-2025	High Impact Invasive Species Regulation S.I. 477/2011 (Ireland) – Offshore Islands Only
Fallow Deer *(Dama dama)*	30/05/2018	Mammals of Ireland 2016-2025	High Impact Invasive Species Regulation S.I. 477/2011 (Ireland) - Specified provisions of Regulations 49 and 50
Feral Goat (*Capra hircus*)	26/12/2017	Mammals of Ireland 2016-2025	High Impact Invasive Species
Grey Squirrel *(Sciurus carolinensis)*	26/10/2024	National Invasive Species Database	Medium Impact Invasive Species

Species	Date of last record	Source	Designation
Hazel Dormouse (*Muscardinus avellanarius*)	26/04/2020	Mammals of Ireland 2016-2025	Non-native
House Mouse (*Mus musculus*)	31/12/2018	Mammals of Ireland 2016-2025	High Impact Invasive Species
Rabbit *(Oryctolagus cuniculus)*	02/07/2017	Mammals of Ireland 2016-2025	Medium Impact Invasive Species
Raccoon (*Procyon lotor*)	24/08/2014	National Invasive Species Database	High Impact Invasive Species
Sika Deer *(Cervus nippon)*	16/09/2018	Mammals of Ireland 2016-2025	High Impact Invasive Regulation S.I. 477/2011 (Ireland)

4.4.4.2 Field Survey Results

No evidence of large rare or protected mammals was recorded within the Site. A single fallow deer (*Dama dama*) was noted within the vicinity of the Proposed Development during the Site walkover on the 26th July 2024. This individual was observed near the wooded area to the southwest Site boundary across the GDDR, with deer tracks and droppings, as well as droppings likely belonging to rabbit (*Oryctolagus cuniculus*) or Irish hare (*Lepus timidus hibernicus*) observed across the Site on both surveys.

The Glenamuck stream in the area of the Site is not considered suitable for otter (*Lutra lutra*), however otter is known to inhabit the Carrickmines stream downstream of the Proposed Development.

No mammal dens were observed within the Site itself or within 50m of the Site.

4.4.4.3 Evaluation

The Site is considered to be of local importance (lower value) for larger mammal species such as badger and pine marten due to their lack of presence and lack of or limited suitable habitat on Site. However, the Site is considered to be of local importance (higher value) for smaller mammal species, such as hedgehog and pygmy shrew, and also otter, due to the hydrological connection to downstream otter populations.

4.4.5 Amphibians

Both common frog *(Rana temporaria)* and smooth newt *(Lissotriton vulgaris)* have been recorded within the 10km (O22) grid square which encompasses the Site of the Proposed Development, with frog also recorded in the 2km (O22B) grid square. The habitats observed on Site were not suitable for breeding smooth newt as it typically prefers more established watercourses, particularly small, vegetated, non-linear ponds of less than 200m^2 between 0.5m – 1.0m deep.

No signs of adult frogs or spawn clumps were recorded during the March 2025 survey. The Site is not considered to offer breeding habitat on Site due to the lack of standing or pooling water, however, due to the presence of the Glenamuck Stream on Site, there is suitable foraging and commuting habitat for frog at the Site. As such, it is assumed that locally important populations of frog may be present at the Site.

4.4.5.1 Evaluation

It is considered the Site is of local importance (higher value) for frog, due to the suitable breeding habitat on Site.

4.4.6 Reptiles

Common lizard *(Zootoca vivipara)* has been recorded within the 10km (O22) grid square encompassing the Site of the Proposed Development. However, there is suitable habitat for this species present as brash piles within the

Site may offer suitable resting/hibernacula habitat for reptiles. As no targeted surveys for lizard were carried out, it is assumed under the precautionary principle that this species may be present at the Site.

4.4.6.1 Evaluation

Under the precautionary principle, the Site is deemed to be of local importance (higher value) for lizard due to the suitable terrestrial habitats recorded on Site.

4.4.7 Fish

There are records of European eel (*Anguilla anguilla*) and Atlantic cod (*Gadus morhua*), both of which are protected under the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic, with eel recorded downstream of the Site along the Shanganagh River just before it discharges to the Irish Sea and cod was recorded within the Irish Sea. In addition, the Shanganagh River is a known salmonid watercourse, and while there are no watercourses on Site that could support these notable fish species, the Site is hydrologically linked to this river. As such, the fish assemblage of the Shanganagh River will be considered as part of this EcIA.

4.4.7.1 Evaluation

The Site is deemed to be of local importance (higher value) for the fish assemblage within the downstream watercourses due to the hydrological connection to the Shanganagh River.

4.4.8 Other Fauna

4.4.8.1 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*) – Nearest recording is 15km to the southwest but no hydrological links and no suitable waterbodies present within the Site.
  - Freshwater Pearl Mussel (*Margaritifera margaritifera*) – Nearest known records from Co. Wicklow, no hydrological connection. The Carrickmines Stream and Shanganagh River are not listed as a *M. margaritifera* sensitive areas.
  - Natterjack Toad (*Epidalea calamita*) – Distribution restricted to few coastal sites.
  - Kerry Slug (*Geomalacus maculosus*) – Distribution restricted to south and west of Ireland.

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			
Loughlinstown Wood pNHA (001211) **Dalkey Coastal Zone and Killiney Hill pNHA (001206)**	National Importance	Hydrologically linked to the Site of the Proposed Development via surface water run-off.	**Yes**
HABITATS			
Improved Agricultural Grassland (GA1)	Local Importance (Lower Value)	Low diversity grassland habitat of low biodiversity value.	No
Hedgerows (WL1)	Local Importance (Higher Value)	Linear mature habitat along the east of the Site which acts as an ecological corridor on Site and offers foraging, commuting, and nesting habitat for local wildlife. This boundary habitat will be retained as part of the Proposed Development.	**Yes**
Treelines (WL2)	Local Importance (Higher Value)	Linear mature habitat which acts as an ecological corridor on Site and offers foraging, commuting, and nesting habitat for local wildlife. Parts of this habitat, namely the vegetation within the centre of the Site, will be removed to facilitate the Proposed Development.	**Yes**
Drainage Ditches (FW4)	Local Importance (Higher Value)	Hydrologically linked to the Site via potential surface water run-off and acts as an ecological corridor. This habitat may be impacted by the Proposed Development.	**Yes**
Lowland Depositing River (FW2)	Local Importance (Higher Value)	Hydrologically linked to the Site via potential surface water run-off and acts as an ecological corridor. This habitat may be impacted by the Proposed Development.	**Yes**
FLORA			
Rare & Protected Flora	Local Importance (Lower Value)	No rare or protected flora were recorded during the field surveys. Unlikely to be present in notable numbers/densities.	No
Invasive Species	Negligible value	One Third Schedule invasive species recorded on Site.	**Yes**
NATIVE FAUNA			
Bat Assemblage	Local Importance (Higher Value)	Foraging and commuting habitat recorded on the Site of the Proposed Development, with several species recorded utilising the Site.	**Yes**

Species / Species Group	Evaluation	Rationale	Key Ecological Receptor (KER)
Wintering Bird Assemblage	Local Importance (Lower Value)	These species were not recorded on Site, with no suitable *ex-situ* habitat observed on Site.	No
Breeding Bird Assemblage	Local Importance (Higher Value)	Variety of red, amber and green listed species recorded at the Site during the surveys.	**Yes**
Badger	Local Importance (Lower Value)	This species was not recorded on Site, with limited suitable habitat on Site.	No
Otter	Local Importance (Higher Value)	While this species was not present at the Site, otter is known to occur in the Shanganagh River and Carrickmines Stream, downstream of the Site.	**Yes**
Pine Marten	Local Importance (Lower Value)	This species was not recorded at the Site. While pine marten is elusive and the animal itself is not typically observed during walkover surveys, this species is associated with woodland habitats, which are not present on Site, and therefore the Site is not considered to have the potential to support locally important populations of this species.	No
Fox	Local Importance (Lower Value)	Not legally protected in Ireland. No evidence of dens on Site.	No
Hedgehog	Local Importance (Higher Value)	Suitable habitats present for these small native mammals at the Site. Therefore, Site has potential to support locally important populations of any of these species.	**Yes**
Irish Stoat			
Irish hare			
Pygmy Shrew			
Amphibians	Local Importance (Higher Value)	Suitable habitats on Site to support frog. Therefore, Site has potential to support locally important populations of this species. No suitable habitats recorded for smooth newts.	**Yes**
Common Lizard	Local Importance (Higher Value)	Suitable habitats are present particularly within scrub and brash habitat. Therefore, Site has potential to support locally important populations of this species.	**Yes**
Fish assemblage	Local Importance (Higher Value)	No suitable habitat present within the Site, however notable fish species may be present in the Shanganagh River, which is hydrologically linked to the Site, and may support locally important populations of aquatic species.	**Yes**

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 DESING 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: • Bio-Retention areas, • Filter Drains to rear of housing, • Swales adjacent to roads where practically feasible, • Tree pits where practically feasible, • Permeable paving to all parking spaces, • Silt-trap/catchpit manholes, • Rainwater butts, • Hydrobrake limiting flow to the greenfield rate, and • Stone lined voided arch retention storage devices.	The SuDS features included in the Project Design will ensure the surface water discharge from the Proposed Development is reduced to greenfield run-off rates. These features will be implemented as part of the surface water drainage design.
Landscape Design: • Native hedgerow and tree planting and retention, • Wetland/bio-retention planting, • Pollinator-friendly ground cover planting.	Maintenance of floral biodiversity at the Site will act to provide forage for invertebrates, and in turn wildlife that feeds on these species, along with berries produced by the tree and shrub species on Site. A minimum 10m buffer will be maintained from the Glenamuck stream on Site.

5.2 Construction Phase

5.2.1 Impacts on Designated sites

Both the Loughlinstown Wood pNHA (001211) and the Dalkey Coastal Zone and Killiney Hill pNHA (001206) lie 4.9km and 6.6km downstream of the Site along the Carrickmines Stream and Shananagh River, respectively. The buffer zone of the Dublin Bay UNESCO site also lies downstream of the Proposed Development. While unlikely, during the Construction Phase, surface water from the Site containing silt, sediment, and contaminants may enter the Glenamuck north stream along the south of the Site and travel downstream to these designated sites and potentially impact water quality. As such, surface water discharges associated with the Construction Phase of the

Proposed Development may have the potential to cause *negative*, *short-term*, *slight* impacts to downstream designated sites in the absence of suitable mitigation.

5.2.2 Impacts on Habitats and Flora

As outlined in section 2.2.3 above, 42 no. trees and 729.5m^2 of hedgerow will be removed to facilitate the Proposed Development. The removal of these habitats is considered to have *negative*, *permanent*, *moderate* impacts on the local ecology during the Construction Phase of the Proposed Development.

The Glenamuck north stream will be retained and enhanced as part of the Proposed Development. In the absence of appropriate mitigation measures, surface water discharges associated with the Construction Phase of the Proposed Development may have the potential to cause *negative*, *short-term*, *significant* impacts to this watercourse in the absence of suitable mitigation.

Surface water discharges associated with the Construction Phase of the Proposed Development may have the potential to cause *negative*, *short-term*, *moderate* impacts to downstream watercourses in the absence of suitable mitigation.

Invasive species should be removed from the Site to avoid further spread within and offsite. Species such as giant hogweed can grow into large stands and out-compete native species and is listed as a Third Schedule invasive species. As such, spread off Site can be defined as a *long-term, negative, significant* impact at a local level if unmitigated.

5.2.3 Impacts on Native Fauna

5.2.3.1 Bats

Construction works will typically be confined to daylight hours and night-time lighting will therefore not be required during the Construction Phase of the Proposed Development. However, where portable lighting is required, there is potential for a *negative, short-term, moderate* impact on bats in the locality through the loss of foraging resources and construction related disturbance including construction related lighting at the Site.

There will also be a permanent loss of foraging and commuting habitat due to the removal of the central vegetation from the Site, however the majority if the boundary vegetation will be retained as outlined in 2.2.2 section and Figure 3 above. As such, the loss of this vegetation which act as an ecological corridor through the Site will result in a *negative*, *permanent*, *moderate* effect on bats at a *local* scale.

5.2.3.2 Birds

There will be some loss of suitable breeding and foraging habitat for birds at the Site of the Proposed Development through the removal of the trees and agricultural lands on Site. This could have a *negative, permanent, moderate* impact on birds in the locality due to the loss of this foraging and nesting habitat.

The increased noise and dust levels associated with the Construction Phase of the Proposed Development may have the potential to disturb birds within the vicinity of the Site and cause *negative, short-term, slight* impacts to local bird populations.

5.2.3.3 Mammals (excluding bats)

Surface water discharges associated with the Construction Phase of the Proposed Development may have the potential to cause *negative*, *short-term*, *moderate* impacts to otter which are present within the downstream watercourses through the potential reduction in prey availability should water quality impacts alter fish supplies, in the absence of suitable mitigation.

Disturbance of species due to lighting, noise and dust generated during the Construction Phase, is possible and, as such, a precautionary approach is adopted with these disturbances representing potential *negative*, *short-term*, *slight* impacts at a *local* scale.

Small mammal species, particularly hedgehog, have the potential to become trapped in trenches and entangled in construction materials such as netting and plastic sheeting, as well as other waste materials, causing entrapment and injury or death. This constitutes a *negative*, *short-term*, *moderate* impact at a *local* level.

5.2.3.4 Amphibians

Surface water discharges associated with the Construction Phase of the Proposed Development may have the potential to cause *negative*, *short-term*, *moderate* impacts to amphibians which may be present within the Glenamuck north stream in the absence of suitable mitigation.

There will be some loss of foraging and commuting habitat for amphibians potentially present at the Site of the Proposed Development through the removal of grassland and vegetation on Site, and disturbance of species during the Construction Phase due to increase in noise and dust is possible. This could have a *negative*, *permanent*, *moderate* impact on this species in the locality.

5.2.3.5 Reptiles

There is a potential risk of injury or death to any lizards which may be present on the Site during vegetation removal or by becoming entrapped in construction-related rubbish, which constitutes a *negative, short-term, moderate* impact at a *local* level.

5.2.3.6 Fish

Surface water discharges associated with the Construction Phase of the Proposed Development may have the potential to cause *negative*, *short-term*, *moderate* impacts to fish species downstream of the Site in the absence of suitable mitigation.

5.3 Operational Phase

5.3.1 Impacts on Habitats and Flora

While unlikely, construction machinery and imported soils and other materials may contain invasive plant materials, and as such, there is potential for accidental introduction of invasive plant species on Site during construction works. This could have a *negative*, *long-term*, *significant* impact should these species establish at the Site.

As outlined in section 2.2.2 above, it is proposed to retain 14 no. trees and 3,251.7m^2 of hedgerow at the Site, and a total of 514 no. trees and 2,690m^2 of hedgerow are proposed to be planted as part of the Proposed Development. This planting will act to increase native biodiversity and the Site and will also increase general habitat diversity. This has the potential to result in a *positive*, *permanent*, *moderate* impact after a period of establishment.

5.3.2 Impacts on Native Fauna

5.3.2.1 Bats

Given the presence of lighting in the immediate surrounding environment (i.e. the adjacent residential units), the local bat population associated with more urban environments, such as pipistrelles and Leisler's bat, would be expected to be habituated to a level of artificial light spill (Roche et al., 2014). However, the bat-friendly lighting measures in line with the Bat Conservation Trust guidelines on artificial lighting and bats (BCT, 2023) will be incorporated into the lighting design plan and are outlined below:

- 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 (<2700 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.
- 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. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- Light shields will be used to reduce light spill, particularly the boundary habitats such as the treeline to the north of the Site, and direct it only to where it is needed.

As such, the potential impact to bats within the vicinity of the Proposed Development as a result of the increase in lighting on Site is considered to be *negative, permanent, slight* at a local level.

The proposed planting included as part of the landscaping to take place on Site will offer potential increases in suitable commuting and foraging habitat for bats, particularly along the enhanced riparian habitat on Site. As such, the likely impact is considered *positive*, *permanent*, *slight* at a *local* level due to habitat creation.

5.3.2.2 Birds

No significant impacts on birds are anticipated during the Operational Phase. The proposed planting included as part of the landscaping to take place on Site will offer potential commuting, foraging, and nesting habitat for local birds. As such, the likely impact is considered *neutral* on the overall bird assemblage.

5.3.2.3 Mammals (excluding bats)

Noise, increase in light, and potential physical disturbance due to increased human presence associated with the Operational Phase has the potential to cause a *negative, permanent, moderate* impact to small mammals in the absence of suitable mitigation.

5.3.2.4 Amphibians

No significant effects on amphibians within the Glenamuck north stream are anticipated during the Operational Phase. SuDS measures, including bio-retention areas, filter drains, swales, tree pits, permeable paving, silt-trap/catchpit manholes, rainwater butts, hydrobrakes, and stone lined voided arch retention storage devices, have been incorporated into the design to treat and minimise surface water run-off from the Site. Therefore, the potential impact on local amphibians within this watercourse during the Operational Phase of the Proposed Development via water quality deterioration is considered to be *imperceptible.*

5.3.2.5 Reptiles

No significant impacts on lizards are anticipated during the Operational Phase. The proposed planting included as part of the landscaping to take place on Site will offer potential increases in suitable commuting, foraging, and nesting habitat for local reptiles. As such, the likely impact is considered *positive*, *permanent*, *slight* at a *local* level due to habitat creation.

5.3.2.6 Fish

No significant effects on aquatic species such as fish downstream of the Site are anticipated during the Operational Phase. SUDS measures, including bio-retention areas, filter drains, swales, tree pits, permeable paving, silt-trap/catchpit manholes, rainwater butts, hydrobrakes, and stone lined voided arch retention storage devices, have been incorporated into the design to treat and minimise surface water run-off from the Site. Therefore, the potential impact on aquatic species such as fish within downstream watercourses during the Operational Phase of the Proposed Development via water quality deterioration is considered to be *imperceptible.*

5.4 Do Nothing Impact

Under the do-nothing scenario, most of the habitats at the Site of the Proposed Development would continue to evolve. The treelines, hedgerow and watercourse habitats would continue to serve as biodiversity corridors, providing habitat connectivity, along with nesting/roosting and foraging habitat for birds and mammals. The grassland would also continue to provide foraging and commuting habitat for local wildlife and pollinators.

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.

- Dún Laoghaire-Rathdown County Development Plan 2022 – 2028.
- Dún Laoghaire-Rathdown Biodiversity Action Plan (BAP) 2021 – 2025.

No specific projects or plans within the Dún Laoghaire-Rathdown County Development Plan (CDP) 2022 – 2028 were identified that could act in-combination with the Proposed Development and cause adverse effects on the KERs identified in this Report. Additionally, the CDP has directly addressed the protection, enhancement and incorporation of biodiversity through specific Policies and Objectives, as well as through its Development Management Standards (see Appendix I for details). The Dún Laoghaire-Rathdown Biodiversity Action Plan 2021 – 2025 is set out to protect and improve biodiversity in the Southeast Dublin area, and as such will not result in negative in-combination effects with the Proposed Development.

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.

It is noted that the majority of the developments within the vicinity of the Site of the Proposed Development are applications granted for primarily residential developments. The larger developments in the vicinity of the Proposed Development are outlined in Table 17:

TABLE 17. GRANTED AND PENDING DEVELOPMENT APPLICATIONS WITHIN 500 M OF THE PROPOSED DEVELOPMENT. LOCATION AND DISTANCE GIVEN IS RELATIVE TO THE PROPOSED DEVELOPMENT.

Planning Reference	Planning Authority	Status	Location
LRD25A/0984/WEB	**Dún Laoghaire–Rathdown County Council**	**Registered Application**	**Immediately south**
Development Description Permission for a Large-Scale Residential Development at a site measuring c. 3.27 Ha in the townland of Glenamuck North in Kilternan, Dublin 18. The site is generally bounded by: the recently constructed Glenamuck District Distributor Road to the north (to be known as the Kilternan Road); the under construction Glenamuck Link Distributor Road to the east (to be known as the Kilternan–Glenamuck Link Road); Glenamuck Manor and a residential dwelling (known as 'Westgate'), its associated outbuildings and wider land holding to the south; and a residential dwelling (known as 'Shaldon Grange') and its wider landholding located to the west. Road works are proposed to the approved Glenamuck District Roads Scheme (ABP Ref. HA06D.303945) to provide access to the development from the Kilternan Road. The Kilternan Road access point will include works, inclusive of any necessary tie-ins, to the footpath and cycle track to create a side road access junction incorporating the provision of uncontrolled pedestrian and cyclist crossing across the side road junction. A surface water outfall pipe (225 mm) is also proposed to pass through land to the north of the site, including the future Kilternan Road. The total site area including the development site, road works and infrastructure works measures c. 3.32 Ha. The development will principally consist of the construction of 135 No. residential units, comprising 65 No. houses (9 No. 2-bed units, 46 No. 3-bed units and 10 No. 4-bed units) and 70 No. duplex units (21 No. 1-bed units, 22			

No. 2-bed units and 27 No. 3-bed units). The proposed development will principally range in height from 2 No. to 4 No. storeys.

The development also provides: car, bicycle and motorcycle parking spaces; bin storage; ancillary storage; private balconies, terraces and gardens; hard and soft landscaping; boundary treatments; lighting; substations; and all other associated site works above and below ground.

LRD25A/0985/WEB	**Dún Laoghaire–Rathdown County Council**	**Registered Application**	**50m southeast**

Development Description

Permission for a Large-scale Residential Development (LRD) at a site measuring c.2.8 hectares known as Ashwood Farm located on Glenamuck Road South, Carrickmines, Dublin 18. The site also has direct frontage to the Glenamuck District Distributor Road, which forms the north-west boundary. The development will consist of: i) Demolition of an existing dwelling and removal of a building ruin with a total combined area of 291sq.m; ii) Construction of 144 residential units : A) 70 apartments in a single block, 6-storeys in height, incorporating 35 no. 1-bed units and 35 no. 2-bed units, all with private amenity space in the form of ground level terraces or balconies at upper levels; B) 16 duplexes 3-storeys in height, including 8 no. 2-bed units and 8 no. 3-bed units, all with private amenity space at ground or first floor terraces; and C) 58 houses of 3-storeys in height, including 36 no. 3-bed townhouses and 22 no. 4-bed houses, all with private amenity space in the form of rear gardens and/or second-floor terraces; iii) Provision of c.5,015sq.m of public open space, and a communal amenity area of c.607sq.m; iv) Vehicular access to the development will be via the existing access at Glenamuck Road South, and vehicular access will be provided or facilitated to neighbouring properties east of the site; v) The provision of new pedestrian and cycle connections to Glenamuck Road South and the Glenamuck District Distributor Road, as well as a new pedestrian link to the adjoining Willow Glen estate to the east, with potential future pedestrian links to the west also facilitated; vi) A total of 318 bicycle parking spaces and 135 car parking spaces; vii) Provision of surface water attenuation, SuDS measures and connections to facilitate services including to the existing watermain at Glenamuck Road South and to the existing foul drainage network at the Glenamuck District Distributor Road; viii) All associated site and infrastructural works, inclusive of drainage and utilities infrastructure, ESB substation, bike and bin stores, hard and soft landscaping, boundary treatments, internal roads, cycle paths and footpaths, and public lighting.

D25A/0794/WEB	**Dún Laoghaire–Rathdown County Council**	**Registered Application**	**360m southwest**

Development Description

Permission for a new detached sports related building comprising a steel structure clad externally, containing 5 new indoor padel tennis courts with associated toilets, storage and small office on entry to the building, new onsite waste water treatment system serving the building and all associated site development works.

ABP-306160-19	**An Coimisiún Pleanála**	**Grant Permission**	**280m south**

Development Description

Demolition of 'Greenmount' and 'Dun Óir', construction of 197 no. residential units (62 no. houses, 135 no. apartments) and associated site works.

D21A/0143	**Dún Laoghaire–Rathdown County Council**	**Grant Permission**	**Immediately east**

Development Description

Permission is sought for development consisting of the demolition of the existing residential dwelling and associated outbuildings including the glasshouses and existing ruins with permission also sought for site

clearance works including removal of existing spoil, tanks, walls and timber fences and all associated site works necessary to facilitate the development.

APB-314057-22	**An Coimisiún Pleanála**	**Grant Permission**	**365m southeast**

Development Description

Permission for residential development of 4 no. units, to comprise (a) demolition of part existing house and shed, (b) alterations to the remaining existing detached single storey house including new fenestration, (c) construction of 1 no. further detached single storey house and 2 no. semi-detached two storey houses, and (d) associated site works including on-site surface water attenuation, utility service connections on Glenamuck Road, closing on existing gateway and provision of new cul-de-sac roadway from Glenamuck Road, car parking, boundary walls and fences, and landscaping.

LRD24A/0718/WEB	**Dún Laoghaire–Rathdown County Council**	**Grant Permission**	**20m south**

Development Description

P Lonergan and Sons Limited intends to apply for permission for a Large-Scale Residential Development comprising amendments to a previously permitted Strategic Housing Development (An Bord Pleanála Ref. 312214-21) with a total application site area of c.3.32Ha (with a substantive residential site development area of c. 2.96Ha), on lands located off Enniskerry Road (R117), Kilternan, Dublin 18, principally bounded by existing undeveloped land to the north and east; the adjoining Shaldon Grange residential property and associated lands (Protected Structure) to the south and Enniskerry Road to the west. The application site also includes limited frontage to Glenamuck Road to the south-east.

The proposed development consists of internal and external modifications to the 4 no. apartment blocks (Blocks A, B, C, and D), all located in the northern portion of the subject site, as granted under An Bord Pleanála Ref. 312214-21, comprising: Provision of additional storey at each block (resulting in a maximum height of 5 storeys at these 4 no. blocks) each containing 3 no. new units at new Fourth Floor Level; Amendments to permitted Third Floor layout at each block, to provide 1 no. additional unit at this floor in each block; Minor amendments to layout of Ground Floor to Third Floor Levels including alterations to main entrances, terraces/balconies, location of lift shaft, introduction of smoke shaft, and all associated rationalisation of internal arrangements; Changes to floor-to-ceiling height at each floor; Modifications to elevations (including amendments to opes, materials, and finishes); Revisions to roof arrangement to facilitate the provision of PV panels; Amendments to site layout plan including minor reorientation of blocks and revised cycle and car parking arrangements; and all associated ducting, cabling, site lighting, hard and soft landscaping, changes in levels, and site development works above and below ground.

The proposed 16 no. new apartment units (8 no. 1-bedroom and 8 no. 2-bedroom units) will be in addition to the 130 no. units previously permitted under An Bord Pleanála Ref. 312214-21, resulting in 146 no. residential units in total within the scheme (130 no. permitted units + 16 no. new proposed units).

The proposed amendments also result in an overall revised unit mix comprising 36 no. 1-bedroom, 60 no. 2-bedroom, 11 no. 3-bedroom units, 25 no. 4-bedroom units, and 14 no. 5-bedroom units.

The total gross floor area will increase from c. 16,394 sqm to c. 17,816 sqm as a result of the proposed amendments.

The above-listed planning applications were accompanied by the relevant environmental assessments that detail the potential impacts and the mitigation measures required to ensure the developments do not have a significant effect on local biodiversity, alone or in-combination with other developments. In addition, Dún Laoghaire–Rathdown County Council will evaluate the potential ecological and environmental impacts of each application.

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 or linked 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. Both the CMP and Construction and Environmental Management Plan (CEMP) have been prepared prior to works commencing on Site.

TABLE 18. SUMMARY OF BEST PRACTICE STANDARDS AND MITIGATION. 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 DLRDCC prior to works. Appropriate storage of fuels, oils and other chemicals, designated refuelling 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 sections 6.2.1.1 and 6.2.1.2
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 (wastewater, water supply, electrical, gas and telecommunications) to be made by authorized and qualified people.	Yes – See sections 6.2.1.1.

Pest Control	Vermin control layout plan with bait traps in strategic locations.	No.
Site Compound Facilities and Parking	Location to be agreed with DLRDCC 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 EPA's 2021 Publication – '*Best Practice Guidelines for the Preparation of Resources & Waste Management Plans for Construction & Demolition Projects*.	Yes – See section 6.2.2.3.
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 '*Trees in Relation to Design, Demolition and Construction – Recommendations*'; 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.	No.
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.	No.

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

6.2.1.1 Mitigation 1: Standard Surface Water Protection Measures

AS outlined in the CEMP (DNV, 2025b), the surface water 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 into nearby drains or drainage ditches during the Construction Phase).

The following mitigation measures will protect surface waters during the Construction Phase of the Proposed Development.

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 and the contractor will cooperate fully with the Environment Section of Dún Laoghaire–Rathdown County Council in this regard.

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.

The following standard measures will be implemented by the appointed Contractor (unless otherwise stated) to protect surface water during the Construction Phase of the Proposed Development:

- With the exception of rainfall, there will be no direct discharge of water to watercourses or ground during the construction phase of the Proposed Development.
- There may be a temporary increase in the exposure of the underlying shallow groundwater during excavation works. Where necessary, surface water run-off will be prevented from entering open excavations with sandbags or other approved methods proposed by the appointed contractor. Furthermore, the appointed contractor will ensure that machinery does not enter the groundwater if encountered during construction.
- The Main Contractor will ensure that any run-off from the site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment (e.g., settlement or hydrocarbon interceptor). Surface water run-off from areas stripped of topsoil and surface water collected in excavations will be directed to temporary onsite settlement ponds / silt busters where measures will be implemented to capture and treat sediment laden run-off prior to discharge at a controlled rate.
- Where dewatering of shallow groundwater is required or where surface water run-off must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock.
- Unauthorised discharge of water (groundwater / surface water run-off) to ground, drains or watercourses will not be proposed. The Main Contractor will ensure that the discharge of water to ground, drains or watercourses will be in accordance with the necessary discharge licences issued by Uisce Éireann under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from DLRCC under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.
- Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released to ground or to drains. Existing surface water drainage, if any, located along public roads will be protected for the duration of the works to ensure that any untreated wastewater generated onsite does not enter the public sewers.
- Any imported materials (i.e., aggregate materials) will be placed onsite in designated locations and double handling will be avoided. Where this is not possible, designated temporary material storage areas will be used.
- Temporary stockpiled materials will be managed in accordance with the procedures outlined in the CEMP order to prevent run-off generation and wind-whipping of dust and placement of stockpiles on impermeable areas.
- Stockpiles of loose materials pending re-use onsite or removal offsite will be located as far as feasible from receiving waterbodies (a minimum set back of 20m from watercourses will be maintained) and will

be appropriately sealed / covered and a silt fence or bunding will be installed around it to ensure no soils and sediments are washed out overland to the existing surface water networks.

- The performance of all surface water management measures including settlement ponds and silt fences will be monitored to ensure that they remain functional throughout construction phase of the Proposed Development. Where necessary, maintenance will be carried out to ensure that the measures continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by the Environmental Manager. As a minimum, the surface water management measures will be checked weekly and after periods of heavy rainfall to ensure they remain fit for purpose and a record of these checks will be kept and signed off. It is noted that the frequency of monitoring will depend on the stage of works, and local environmental conditions. The frequency of checks will be increased during critical works including the initial commissioning works, during concrete pours and after storm events.
- Precast concrete will be utilised where possible. However, where in-situ pours are required pumping of concrete will be monitored to ensure that there is no accidental discharge. All work will be carried out in the dry and effectively isolated from any drains. The production, transport, and placement of all cementitious materials will be strictly planned and supervised by the Main Contractor. A suitable risk assessment for wet concreting will be completed prior to works being carried out.
    - All ready-mixed concrete will be delivered to the site by truck. Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed. Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening. Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete.
    - Concrete batching will take place offsite and surplus concrete will be returned to batch plant after completion of a pour. Under no circumstances is any excess concrete to be disposed of onsite. Wash down and wash out of concrete trucks will take place into a container located within a controlled bunded area which will then be emptied into a skip. The Main Contractor will dispose of all alkaline wastewaters and contaminated stormwater offsite in accordance with best practice procedures and all relevant waste management legislation.
- A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As the risk of the break-out of silt laden run-off is higher during these weather conditions, no work will be carried out during such periods, where possible.
- Where required, wheel washing facilities will be provided at the entry / exit point to the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. Where necessary, additional measures (e.g., hardcore/stone surfaces along haul routes to prevent dirt and debris on wheels) will also be provided for site vehicles. The wheel wash will be maintained in a satisfactorily operational condition during all periods of construction. Wheel washings will be contained and treated prior to removal offsite in accordance with all relevant statutory legislation.
- Refuelling of plant and machinery onsite will take place in accordance with the refuelling procedures.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed offsite in accordance with best practice procedures. Residual soil will be tested to validate that all potentially contaminated material has been removed.
- All drainage and water supply works will be in accordance with the Uisce Éireann Code of Practice for Wastewater and Water Supply, the Wastewater Infrastructure Standard Details (Document Number: IW-CDS-5030-01) and the Water Infrastructure Standard Details (Document Number: IW-CDS-5020-01). Drain inlets will be protected with a drain guard designed to filter oil and silt from stormwater run-off. sandbags will be placed around the inlet to provide additional protection from sediment. Inlet protection can only be removed once all construction activity that could generate sediment or result in emissions of other pollutants such as chemicals and fuel has ceased in a given location and the drainage infrastructure is operational (e.g., to allow for the discharge of stormwater from the roofs of newly constructed and completed dwellings into the stormwater network).

Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s), the contents of which will periodically be tankered offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by

tankering of waste offsite by an appropriately authorised contractor. Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by Uisce Éireann.

All open waterbodies at the site (i.e., the Glenamuck_North) will be protected for the duration of the works.

A minimum 10m buffer will be retained from the Glenamuck stream. Site traffic will only be permitted within this buffer to facilitate near stream works for the construction of the proposed bridge crossing.

Buffer zones will be established by erecting a silt fencing or bunding along the length of the Glenamuck stream with cognisance to IFI Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016). Silt fencing will comprise wooden posts and double walled geotextile membrane buried in an 'L' shape to a minimum depth of 250mm. The silt fencing will act in filtering any potential surface water run-off from the Site generated during the proposed works and will be retained in place for the duration of the Construction Phase until the development is complete. Heras fencing will be installed in front of the silt fencing at the Site to prevent "Site creep", the progressive movement of site activities towards this silt fence. The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how this silt curtain is to be installed and maintained throughout the construction phase.

The silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed Development. Where necessary, maintenance will be carried out on the fences to ensure that they continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by the Environmental Manager. The frequency of monitoring will depend on the stage of works, and local environmental conditions. Daily checks may be appropriate during the initial site clearance, during works in the vicinity of the open waterbodies and during and after storm events. Weekly or bi-weekly checks may be appropriate at other times

All works carried out in or adjacent to the Glenamuck stream will adhere to the IFI Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016), the TII Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008) and CIRIA C648 Control of Water Pollution from Linear Construction Projects (CIRIA, 2006).

All near stream works will include the following measures:

- The stream crossings will be implemented as per a method statement developed by the appointed contractor in advance of construction works commencing and agreed with IFI as required.
- Entry to the Glenamuck stream by vehicles will not be permitted, while vehicle usage along the banks will be restricted as much as practicable. Any machines working in close proximity of the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- Works will be carried out from the bank side, as best practice in-stream works will be restricted to the period 1st July through 30th September, to comply with the seasonal restrictions in salmonid rivers.
- Silt fences and other sediment control measures will be utilised as required to prevent sedimentation in the Glenamuck stream.
- Regular monitoring of water quality upstream and downstream of the works area will be undertaken to detect any changes and take corrective actions if necessary.
- Existing vegetation will be preserved where possible and replant disturbed areas promptly to stabilise soil and reduce erosion.

Furthermore, works during the construction of the outfalls to the Glenamuck stream will include the following measures:

- The outfall headwalls will be constructed from precast concrete to allow their construction offsite, while hoisting of the structure will be carried out from the site side of the riverbank.
- Once excavations for the outfall trenches are complete, the base and sides of the trenches will be seeded with a native wetland wild flora seed mix, which will be allowed to establish for a 6-8-week period prior to the outfall trench becoming operational and receiving surface waters from the onsite drainage network. This is a grass mix with some wildflower elements which will aid the overall biodiversity approach/green infrastructure and provide "green" erosion prevention of the outfall channel and prevent siltation of the Glenamuck stream.

6.2.1.2 Mitigation 2: Silt and Sediment Control

Silt and sediment have the potential enter the Glenamuck north stream from the Site during construction works if unmitigated against.

During the Construction Phase, machinery such as diggers have the potential to stir up sediment, especially during rainy periods. This sedimentation has the potential to be transferred to the nearby watercourse in the absence of mitigation measures.

The following mitigation measures will prevent silt and sediment originating at the Site from entering the Glenamuck north stream and downstream to the Carrickmines Stream and Shanganagh River.

- Silt fences will also be installed around any soil mounds / bunds.
- An Ecological Clerk of Works (ECoW) will be appointed to ensure best practices are carried out during any works carried out near the Glenamuck north stream.
- Prior to the commencement of operations, install silt traps within the existing drains and streams that connect with aquatic zones, either directly or indirectly through other relevant watercourses.
- Silt traps will be staggered along the length of the watercourse, and not only at the lower reaches towards its outflow.
- Silt trap design can vary, from depressions added to the watercourse bed, to log sections laid lengthways into the drain, to the use of geotextile barriers.
- Once silt traps and silt fences become functional, they will be checked regularly and maintained as necessary, in order to ensure continued effectiveness throughout operations.

6.2.1.3 Mitigation 3: In-Stream Works

As outlined in the WFD Assessment (DNV, 2026b) accompanying this application, a 20m buffer will be retained at all open waterbodies. Site traffic will only be permitted within this buffer to facilitate instream and near stream works for the construction of the proposed headwalls to receiving waterbodies (i.e., Glenamuck stream).

Buffer zones will be established by erecting silt fencing or bunding along the length of the open waterbodies (i.e., Glenamuck stream) with cognisance of IFI Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016). Silt fencing will comprise wooden posts and double walled geotextile membrane buried in an 'L' shape to a minimum depth of 250mm. The silt fencing will act in filtering any potential surface water run-off from the site generated during the proposed works and will be retained in place for the duration of the Construction Phase until the development is complete. Heras fencing will be installed in front of the silt fencing at the Site to prevent "site creep", the progressive movement of site activities towards this silt fence.

The silt fences will be monitored to ensure that they remain functional throughout the construction of the Proposed Development. Where necessary, maintenance will be carried out on the fences to ensure that they continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by the Environmental Manager. The frequency of monitoring will depend on the stage of works, and local environmental conditions. Daily checks may be appropriate during the initial site clearance, during works in the vicinity of the open waterbodies and during and after storm events. Weekly or bi-weekly checks may be appropriate at other times.

All instream works or works carried out in or adjacent to the Glenamuck stream will adhere to the IFI Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016), the TII Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008) and CIRIA C648 Control of Water Pollution from Linear Construction Projects (CIRIA, 2006).

All instream works will include the following measures:

- Entry to the surface water streams by vehicles will be avoided, while vehicle usage along the banks will be restricted as much as practicable. Any machines working in close proximity of the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fuels.
- Works will be carried out from the bank side, as best practice in-stream works will be restricted to the period 1st July through 30th September, to comply with the seasonal restrictions in salmonid rivers.

- Silt fences and other sediment control measures will be utilised as required to prevent sedimentation in the streams.
- Regular monitoring of water quality upstream and downstream of the works area will be undertaken by the ECoW to detect any changes and take corrective actions if necessary.
- Existing vegetation will be preserved where possible and replant disturbed areas promptly to stabilise soil and reduce erosion.

Furthermore, works during the construction of the outfalls to the Glenamuck stream will include the following measures:

- The outfall headwalls will be constructed from precast concrete to allow their construction offsite, while hoisting of the structure will be carried out from the Site side of the riverbank.
- Once excavations for the outfall trenches are complete, the base and sides of the trenches will be seeded with a native wetland wild flora seed mix, which will be allowed to establish for a 6–8-week period prior to the outfall trench becoming operational and receiving surface waters from the onsite drainage network. This is a grass mix with some wildflower elements which will aid the overall biodiversity approach/green infrastructure and provide "green" erosion prevention of the outfall channel and prevent siltation of the Glenamuck Stream.

6.2.1.4 Mitigation 4: Invasive Species Management

The non-native/invasive flora species recorded at the Site, namely giant hogweed, should be controlled/removed as per the appropriate best-practice guidelines and in consultation with the relevant qualified invasive species professional. Removal and disposal should be carried out in accordance with appropriate guidelines such as TII The Management of Invasive Alien Plant Species on National Roads –Technical Guidance (2020), with consideration given to the prevention of spread of these plants.

The following is extracted from TII (2020a):

Giant hogweed is a member of the carrot family (Apiaceae) and bears a close resemblance to the native and widespread Common hogweed (Heracleum sphondylium) or Wild angelica (Angelica sylvestris), although these species are rarely more than 1.5m tall. Giant hogweed is native to the Caucasus Mountains in south-west Asia. It is highly invasive due to its vigorous early-season growth, tolerance of shade and flooding, and its efficient production and dispersal of seeds. Individual plants live for 3–5 years, after which they set seed and die. They spread solely by seed, producing several thousand seeds per flower head. These seeds can be dispersed over short distances by wind, but they can be spread over considerably longer distances by rivers, streams, machinery and any movement of contaminated soil. The plant is highly tolerant of disturbed sites and can out-compete other vigorous weed species due to its height. As the plant frequently colonises river banks, it can increase the risk of soil erosion as it dies back in winter, leaving bare soil, which its shallow and branched taproot system cannot bind efficiently.

The stem and undersides of the leaves of Giant hogweed are coated with fine hairs that contain a phototoxic sap that renders skin sensitive to ultraviolet (UV) light. The slightest contact with the plant can result in the release of sap, which then gives rise to severe and painful blistering of the skin.

The reaction may take up to 24 hours to occur and may result in permanent recurrent phytophotodermatitis – a type of dermatitis that flares up in sunlight. As the plant hairs are extremely fine and brittle, they can pierce light clothing. In the event of contact with the sap, the skin should be covered to prevent exposure to sunlight and washed immediately with soap and water. ***Only competent and qualified (and suitably protected) persons shall be given the task of controlling Giant hogweed. Appropriate PPE with skin protection must be worn when undertaking any type of control with this plant****.*

Control

The control or management of any IAPS should be undertaken in the four distinct phases outlined in GE-ENV-01104. It is recommended that a suitably qualified ecologist or horticulturalist with sufficient training, experience and knowledge in the control of IAPS should be employed to assist in the planning and execution of control measures in relation to Giant hogweed. In addition, those involved in the control of Giant hogweed may be advised

to have access to the advice of a Registered Pesticide Advisor on the register established by the Minister for Agriculture, Food and the Marine pursuant to Regulation 4 of the Sustainable Use of Pesticides Regulations. All pesticide users must be registered and have the appropriate training necessary to carry out the proposed method of control.

The control of Giant hogweed should aim to eradicate the plant entirely or at minimum, prevent the plant from producing seed. As some seeds may remain viable for up to 15 years, control will require continued input over several years to be complete. Soil within 4m of established plants is likely to contain large numbers of seed from previous years' flowering and should not be transferred to other parts of a site unless as part of a targeted control measure (refer to GE-ENV-01104 Biosecurity Measures). The majority of seeds, however, are contained within the top 5cm of soil and most will only persist for 1–2 years (Booy, et al., 2015). Such soil and all vegetative material should not be stock-piled within 10m of any watercourse due to the risk of material being transferred by water.

Due to its phototoxic sap, a risk assessment must be prepared in advance of attempts at any control treatments. All operatives engaged in Giant hogweed control and personnel working on the site must be made fully aware of the phototoxic nature of the plants sap and its potential to result in permanent recurrent phytophotodermatitis. Personnel engaged in controlling Giant hogweed must wear complete PPE which includes gloves, goggles, head protection. Haulage contractors involved in transporting infected material to landfill and the landfill operators must similarly be made aware of the risks.

Infected material being transferred from the site must be covered to avoid accidental spillage and spread during transport. Monitoring of the site and subsequent follow-up control treatment of Giant hogweed seedlings will be required for a minimum of five years following treatment or after any soil disturbance at the site.

Chemical control

The use of herbicides for Giant hogweed control is effective but will require follow-up treatment to deal with seedling growth, even where the initial infestation of parental plants has been controlled. Where a site contains sensitive native vegetation, Giant hogweed is best controlled by injecting herbicide into the stem. Foliar spray application should be undertaken before the flowering stem has fully elongated in March or early April. A further herbicide treatment in September will kill any regrowth or late developing plants or seedlings. Any plants that have flowered, or are likely to flower, should be dead headed or chopped down before seeds are produced.

Physical control

All personnel engaged in control must be made aware of the serious health, safety and environmental risks associated with the plant and provided with complete PPE.

Young plants can be readily pulled or teased out of the soil using hand tools. This is best undertaken when the soil is moist following recent rain and care should be taken to extract the plants intact.

Where plants are larger than approximately 1.5m, the upper part can be cut back and the lower part of the stem used to lever the roots out. The central crown of the taproot must be removed to prevent the plant regenerating; small fibrous side roots that may remain in the ground cannot regenerate. Where plants are well-established, continuous germination of seedlings will occur following the removal of mature plants and periodic removal of these will be required to ensure ongoing control.

Seed heads on old stems should be removed and bagged. The flowering stem should then be cut to prevent any further regrowth.

Seedlings are best left for a few weeks to establish as they are easier to remove at this stage.

Follow-up removal and/or monitoring will be required for a minimum of five years to ensure complete control. Subsequent soil disturbance in the area however, may give rise to a new flush of seedlings. Mowers and strimmers must not be used as they tend only to stimulate additional budding on the root crown, do not reduce the plants rigour, and can flail sap onto operators.

Recommended Management

Due to the presence of only one plant, which was removed by the landowner at the Site, physical removal and off-site disposal of giant hogweed recommended where it occurs within the Proposed Development footprint. If physical removal is not feasible, combined chemical and physical control is the recommended management option. Treatment should be followed by a period of monitoring.

6.2.1.5 Mitigation 5: Biosecurity

It is also necessary to ensure that the potential spread of invasive alien species (IAS) into areas/sites where they are not present is prevented. Equally, this applies to the risk of contaminated material being brought onto the Site.

Unwashed construction equipment, plant and vehicles, and footwear can provide a vector for the spread of IAS within a site and from areas outside the site where infestation is present or where vector material potentially containing seed/root material is attached to plant. The following hygiene measures shall be undertaken:

- 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.
- Designated wash-down area to be located away from sensitive receptors such as watercourses, ditches, drains etc.
- Material/water left after vehicles have been pressure-washed must be contained, collected and disposed of appropriately (these waters must not under any circumstances be discharged to drains).

6.2.1.6 Mitigation 6: Tree Protection

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 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, stockpiling or machinery movement will be undertaken within these areas.

6.2.2 Protection of Fauna

6.2.2.1 Mitigation 7: Construction Phase Lighting

As a precautionary measure, no overnight lighting will be directed to the natural habitats bounding the Site, particularly retained treelines and riparian habitats. Where overnight lighting cannot be avoided in these areas due to health and safety concerns, the lighting within the Site during the Construction Phase 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 (BCT, 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 (<2700 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.

To minimise potential disturbance to local bats due to lighting during the Construction Phase, construction works will be carried out during normal daylight working hours, with no Sunday work generally permitted. Should any deviations from the above hours be required, the local authority will be notified.

6.2.2.2 Mitigation 8: Timing of Demolition/Vegetation Clearance

The preferred period for vegetation clearance is within the months of September and October to avoid the main breeding bird season as well as mammal hibernation.

To ensure compliance with the Wildlife Act 2000 as amended, any vegetation clearance will not take place within the nesting bird season (March 1st to August 31st, inclusive) to ensure that no significant impacts (i.e., nest/egg destruction, harm to juvenile birds) occur as a result of the Proposed Development. Where any removal of vegetation within this period is deemed unavoidable, a qualified Ecologist will be instructed to survey the vegetation prior to any removal taking place. Should nesting birds be found, then the area of habitat in question will be noted and suitably protected until the Ecologist confirms the young have fledged.

Table 19 provides guidance for when vegetation clearance is permissible. Information sources include The Herpetological Society of Ireland, the British Hedgehog Preservation Society's Hedgehogs and Development and The Wildlife (Amendment) Act, of 2000.

The preferred period for vegetation clearance is within the months of September and October. Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., hedgehog). Where this seasonal restriction cannot be observed, a check for active roosts and nests, will be carried out immediately prior to any Site clearance by an appropriately qualified ecologist and repeated as required to ensure compliance with legislative requirements.

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

<table>
<tr><th>Ecological Feature</th><th>Jan</th><th>Feb</th><th>March</th><th>April</th><th>May</th><th>June</th><th>July</th><th>Aug</th><th>Sept</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td>Breeding Birds</td><td colspan="2">Vegetation clearance permissible</td><td colspan="5"><u>Nesting bird season</u>

No clearance of vegetation permitted unless confirmed to be devoid of nesting birds by an ecologist.</td><td colspan="4">Vegetation clearance permissible</td></tr>
<tr><td>Hibernating mammals (namely Hedgehog)</td><td colspan="3"><u>Mammal hibernation season</u>

No clearance of vegetation unless confirmed to be devoid of hibernating mammals by an ecologist.</td><td colspan="6">Vegetation clearance permissible</td><td colspan="3"><u>Mammal hibernation season</u>

No clearance of vegetation permitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td></tr>
</table>

Amphibians	Amphibian Hibernation Season No habitat clearance permissible	Amphibian breeding season	Vegetation / Site clearance permissible	Amphibian Hibernation Season No habitat clearance permissible
Common Lizard	Lizard Hibernation Season No habitat clearance permissible	Active period Vegetation clearance permissible		Lizard Hibernation Season 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) 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.

6.2.2.3 Mitigation 9: Waste Management

As best-practice, all construction-related rubbish on-site e.g., plastic sheeting, netting etc. should be kept in a designated area on-site and kept off ground level so as to protect small fauna (such as small mammals and reptiles) from entrapment and death.

6.2.2.4 Mitigation 10: Pre-Commencement Mammal Survey

Prior to the commencement of works on Site, a targeted survey for protected mammals will be undertaken at the Site to ensure no transient protected mammals have created setts or dens on Site in the time between the submission of this application and the undertaking of construction works. In the unlikely event a mammal has established a sett or resting place at the Site, consultation will be sought with the NPWS.

6.3 Operational Phase

6.3.1 Protection of Habitats

6.3.1.1 Mitigation 11: 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.

Despite the measures identified in the CEMP for the importation of only clean materials, there is the potential for the inadvertent import of invasive species to the Site. If established, there is a risk of further spread both within and out of the Site.

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.

6.3.2 Protection of Fauna

6.3.2.1 Mitigation 12: Operational Phase Lighting

In accordance with the best practise bat-friendly lighting guidelines (BCT, 2023), the below measures are 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 (300K) has been 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

The below Biodiversity Enhancement Measures will be agreed upon with DLRDCC at the compliance stage of the post-planning process, following a successful application.

6.4.1 Enhancement 1: Hibernacula

It is recommended to enhance the proposed riparian habitat for small mammal, amphibian and reptile use by providing suitable refuge and hibernacula around it. It is recommended that 2-3 areas of hibernacula are provided within the northwest 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 ditch and treelines.

Hibernacula for small mammals, 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 11 for examples of finished hibernacula.

FIGURE 11. EXAMPLES OF SUITABLE AMPHIBIAN AND REPTILE HIBERNACULA AND REFUGIA.

6.4.2 Enhancement 2: Swift Box Scheme

It is proposed to include a minimum of 6 no. swift boxes or swift bricks on the building facade, as swifts are a social nesting species, on suitable buildings within the Proposed Development. These nest bricks will be installed at least 5m above the ground, in safe areas where they will not be disturbed. Care will be taken to ensure no obstacles or plate glass windows are located below the bricks.

Guidelines for the bird box scheme should also follow guidelines published by Swift Conservation Ireland, and those published by Birdwatch Ireland entitle “Saving Swifts” (2009/2010). The incorporation of swift bricks will help recover the declining swift population, which are now Red Listed in Ireland (Gilbert et al., 2021).

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.

It is 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 powered options are also 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 advise on set-up etc.

6.4.3 Enhancement 3: Bat Box Scheme

Four summer bat boxes (e.g., Schwegler Woodcrete 1FF design or similar) will be erected on Site as part of the Proposed Development. These bat boxes will be mounted on suitable trees within the treeline bordering the northwest of the Site along the riparian habitat. Alternatively, a permanent fixture such as a pole will be erected to support the bat boxes. The boxes will be installed as part of the landscaping works, so as to not 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 minimum height of 4 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.

6.4.4 Enhancement 4: Pollinator Habitat

Pollinator/insect habitat, as seen in Figure 12, will be created on Site by:

- Creating an earth bank.
- Scraping back some bare earth.
- Leaving some areas to grow wild, and/or
- By drilling holes 10cm deep in unvarnished wood for solitary bees.

FIGURE 12. EXAMPLES OF SOLITARY BEE HABITAT. EXTRACTED FROM HOW-TO-GUIDE: CREATING WILD POLLINATOR NESTING HABITAT (NBDC, 2016).

Large bee or insect hotels will not be installed. Guidance from the All -Ireland Pollinator Plan states "*Don't install a large bee or insect hotel. Large bee hotels are attractive to humans, but not great for pollinators. They can encourage the spread of disease and attract predators. Avoid anything bigger than an average-sized bird box. There are many other ways to provide nesting habitats for pollinators, such as providing wild areas of undisturbed long grass, and scraping back some bare earth. If you want to make a bee hotel, make sure it is small, and position it away from bird feeders so the insects aren't easy targets*." A link to a "How-to-guide Creating wild pollinator nesting habitat" is provided for the development management company to put these habitats in place: *How-to-guide-Nesting-2018-WEB.pdf (pollinators.ie)*. An appointed ecologist will oversee the creation of these habitats.

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.

The monitoring/surveys outlined below will be included in a Biodiversity Management Plan (BMP) for the Proposed Development, along with the detailed mitigation measures for the Construction and Operational Phases (sections 6.2 and 6.3) and Biodiversity Enhancement Measures (section 6.4).

In addition to the items listed below, this document should detail the landscape management operations for the Proposed Development, including cutting/trimming regimes and maintenance of bird and bat boxes (if applicable). This document will also be updated to reflect any follow-up survey results as they are carried out. The BMP will be prepared and agreed in consultation with a suitably qualified ecologist and Dún Laoghaire–Rathdown County Council.

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 (HIGHLIHGTED IN GREEN) OR BY THE DEVELOPMENT CONTRACTOR (NO HIGHLIGHT).

Measure	Monitoring
CONSTRUCTION PHASE	
Mitigation 1: Standard Surface Water Protection Measures	Ongoing monitoring by contractor and ECoW.
Mitigation 2: Silt and Sediment Control	Ongoing monitoring by contractor and ECoW.
Mitigation 3: In-Stream Works	Ongoing monitoring by contractor and ECoW.
Mitigation 4: Invasive Species Management	Ongoing monitoring ECoW.
Mitigation 5: Biosecurity	No monitoring required.
Mitigation 6: Tree protection	Ongoing monitoring by contractor or arborist.
Mitigation 7: Construction Phase Lighting	Monitoring by contractor.
Mitigation 8: Vegetation Clearance	ECoW will carry out pre-clearance amphibian survey, and also nesting surveys should works occur during nesting season. Ongoing monitoring by ECoW.
Mitigation 9: Waste Management	Ongoing monitoring by contractor.
Mitigation 10: Pre-Commencement Mammal Survey	ECoW will carry out pre-commencement survey.
OPERATIONAL PHASE	
Mitigation 11: Invasive Species Management	An Invasive Species Survey will be carried out by a qualified Ecologist during the next botanical season after soft landscaping has been completed.
Mitigation 12: Operational Phase Lighting	Monitoring by contractor.

ENHANCEMENTS	
Enhancement 1: Hibernacula	The placement and construction of these structures should be carried out under supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 2: Swift Brick Scheme	The location and placement of these structures should be carried out under the advisement and supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 3: Bat Box Scheme	The location and placement of these structures should be carried out under the advisement and supervision of an Ecologist to ensure they are fit for purpose.
Enhancement 4: Pollinator Habitat	The location and placement of these structures should be carried out under the advisement and supervision of an Ecologist to ensure they are fit for purpose.

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.

Key Ecological Resource	Evaluation	Potential Impact	Impact Without Mitigation				Proposed Mitigation / Mitigating Factors	Proposed Enhancements	Residual Impact
			Quality	Magnitude / Extent	Duration	Significance			
DESIGNATED SITES									
Dublin Bay UNESCO site	International Importance	**Construction Phase:** Deterioration of water quality from construction-related pollutants. **Operational Phase:** None identified.	*Negative* *none*	*Local* *none*	*Short-term* *none*	*Slight* *none*	**Mitigation 1:** Standard Surface Water Protection Measures **Mitigation 2:** Silt and Sediment Control **Mitigation 3:** In-Stream Works	None	**Imperceptible**
Loughlinstown Wood pNHA (001211) **Dalkey Coastal Zone and Killiney Hill pNHA (001206)**	National Importance	**Construction Phase:** Deterioration of water quality from construction-related pollutants. **Operational Phase:** None identified.	*Negative* *none*	*Local* *none*	*Short-term* *none*	*Slight* *none*	**Mitigation 1:** Standard Surface Water Protection Measures **Mitigation 2:** Silt and Sediment Control **Mitigation 3:** In-Stream Works	None	**Imperceptible**
HABITATS									
Hedgerows (WL1) Treelines (WL2)	Local Importance (Higher Value)	**Construction Phase:** Loss of habitat **Operational Phase:** None identified.	*Negative* *none*	*Local* *none*	*Permanent* *none*	*Moderate* *none*	**Mitigation 5:** Tree Protection Landscape design plan	None	**Imperceptible**

Glenamuck North Stream	Local Importance (Higher Value)	**Construction Phase:** Deterioration of water quality from construction-related pollutants. **Operational Phase:** Habitat creation.	*Negative* *Positive*	*Local* *Local*	*Short-term* *Permanent*	*Significant* *Significant*	**Mitigation 1:** Surface Water Protection **Mitigation 2:** Silt and Sediment Control **Mitigation 3:** In-Stream Works Best practice development standards. SuDS measures.	None	**Imperceptible**, following a period of establishment
All watercourses	Local Importance (Higher Value)	**Construction Phase:** Deterioration of water quality from construction-related pollutants. **Operational Phase:** None identified.	*Negative* *none*	*Local* *none*	*Short-term* *none*	*Moderate* *none*	**Mitigation 1:** Surface Water Protection **Mitigation 2:** Silt and Sediment Control **Mitigation 3:** In-Stream Works Best practice development standards. SuDS measures.	None	**Imperceptible**
All habitats	Local Importance	**Construction Phase:** Spread of Invasive Flora	*Negative*	*Local*	*Long-term*	*Significant*	**Mitigation 4:** Invasive Species Management	**Enhancement 4:** Pollinator Habitat	**Positive, Local, Permanent, Slight,** due to

	(Higher Value)	**Operational Phase:** Spread of Invasive Flora Creation of habitats	*Negative* *Positive*	*Local* *Local*	*Long-term* *Permanent*	*Significant* *Moderate*	**Mitigation 5:** Biosecurity **Mitigation 6:** Tree Protection **Mitigation 11:** Invasive Species Management Landscape design plan		enhancement of habitats and removal of invasive species
FAUNA									
Bat Assemblage	Local Importance (Higher Value)	**Construction Phase:** Loss of habitat due to lighting disruption of boundary habitats. Habitat loss **Operational Phase:** Loss of habitat due to lighting disruption of boundary habitats. Habitat creation.	*Negative* *Negative* *Negative* *Positive*	*Local* *Local* *Local* *Local*	*Short-term* *Permanent* *Permanent* *Permanent*	*Moderate* *Moderate* *Slight* *Slight*	**Mitigation 7:** Construction Phase Lighting **Mitigation 12:** Operational Phase Lighting Landscape design plan	**Enhancement 3:** Bat Boxes	**Positive, Local, Permanent, Slight,** due to creation of potential roost habitat
Breeding Bird Assemblage	Local Importance (Higher Value)	**Construction Phase:** Loss of foraging and nesting habitat. Disturbance from Construction activity. **Operational Phase:** Habitat creation.	*Negative* *Negative* *Neutral*	*Local* *Local* *Neutral*	*Permanent* *Short-term* *Neutral*	*Moderate* *Slight* *Neutral*	**Mitigation 8:** Vegetation Clearance	**Enhancement 2:** Swift Boxes	**Imperceptible**

Mammals	Local Importance (Higher value)	**Construction Phase:** Deterioration of water quality from construction-related pollutants. Risk of injury or death during vegetation clearance and / or entrapment in construction-related rubbish. Disturbance from Construction activity. **Operational Phase:** Disturbance due to human activity.	*Negative* *Negative* *Negative* *Negative*	*Local* *Local* *Local* *Local*	*Short-term* *Short-term* *Short-term* *Permanent*	*Moderate* *Moderate* *Slight* *Moderate*	**Mitigation 8:** Vegetation Clearance **Mitigation 9:** Waste Management **Mitigation 10:** Pre-Commencement Mammal Survey	**Enhancement 1:** Hibernacula	**Imperceptible**
Amphibians	Local Importance (Higher Value)	**Construction Phase:** Habitat loss due to deterioration of water quality from construction-related pollutants. Habitat loss. **Operational Phase:** None identified.	*Negative* *Negative* *none*	*Local* *Local* *none*	*Permanent* *Permanent* *none*	*Moderate* *Moderate* *none*	**Mitigation 1:** Surface Water Protection **Mitigation 2:** Silt and Sediment Control **Mitigation 3:** In-Stream Works **Mitigation 8:** Vegetation Clearance **Mitigation 9:** Waste Management Best practice development standards. SuDS measures.	**Enhancement 1:** Hibernacula	**Imperceptible**

Common Lizard	Local Importance (Higher Value)	**Construction Phase:** Risk of injury or death during vegetation clearance and / or entrapment in construction-related rubbish. **Operational Phase:** Habitat creation	*Negative* *Positive*	*Local* *Local*	*Short-term* *Permanent*	*Moderate* *Slight*	**Mitigation 8:** Vegetation Clearance **Mitigation 9:** Waste Management	**Enhancement 1:** Hibernacula	**Imperceptible**
Fish Assemblage	Local Importance (Higher Value)	**Construction Phase:** Risk of deterioration of water quality from construction-related pollutants. **Operational Phase:** None identified.	*Negative* *none*	*Local* *none*	*Permanent* *none*	*Moderate* *none*	**Mitigation 1:** Surface Water Protection **Mitigation 2:** Silt and Sediment Control **Mitigation 3:** In-Stream Works Best practice development standards. SuDS measures.	None	**Imperceptible**

9 CONCLUSION

It is considered that, provided the mitigation measures proposed within this report together with all best practice development standards 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.

Residual impacts are considered to be generally imperceptible on a local scale, with the habitats and species recorded on Site common and widespread throughout the surrounding landscape. It is considered that, provided the mitigation and enhancement measures proposed within this report together with all best practice development standards as outlined in the Schedule of Mitigation Measures are carried out in full, there will be no significant negative impact to any KER habitat, species group or overall biodiversity as a result of the Proposed Development.

Additionally, the enhancement of riparian habitat on Site, along with pollinator-friendly tree and ground planting, will provide foraging and commuting habitat for local wildlife, particularly smaller bird species, small mammals, and herpetofauna.

10 REFERENCES

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11 APPENDICES

11.1 Legislation and Policy

International Legislation

EU Birds Directive

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

EU Habitats Directive

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

Dún Laoghaire-Rathdown County Development Plan 2022-2028

Policies and objectives of the Dún Laoghaire-Rathdown County Development Plan 2022 – 2028 that are of relevance to this this EcIA are outlined below:

- **GIB11:** Coastal Area Feasibility Study. It is a Policy Objective to explore undertaking a comprehensive feasibility study on the recreational potential along the coastal area of the County, which comprehensively addresses recreational impact - including visitor numbers, mapping and surveying of sensitive habitats and species and identification of significant threats on European sites - and which would allow an assessment of any future proposals, alone or in combination, to assess impact on the coastal and marine zone within and adjacent to the County boundary. The Council will explore the possibility of carrying out this study with adjoining and/or coastal Local Authorities and/or other agencies.

- **GIB18:** Protection of Natural Heritage and the Environment. It is a Policy Objective to protect and conserve the environment including, in particular, the natural heritage of the County and to conserve and manage Nationally and Internationally important and EU designated sites - such as Special Protection Areas (SPAs), Special Areas of Conservations (SACs), proposed Natural Heritage Areas (pNHAs) and Ramsar sites (wetlands) - as well as non-designated areas of high nature conservation value known as locally important areas which also serve as 'Stepping Stones' for the purposes of Article 10 of the Habitats Directive.

- **GIB19:** It is a Policy Objective to ensure the protection of natural heritage and biodiversity, including European Sites that form part of the Natura 2000 network, in accordance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines.

- **GIB21:** It is a Policy Objective to protect and preserve areas designated as proposed Natural Heritage Areas, Special Areas of Conservation, and Special Protection Areas. It is Council policy to promote the maintenance and as appropriate, delivery of 'favourable' conservation status of habitats and species within these areas.

- **GIB22:** It is a Policy Objective to protect and promote the conservation of biodiversity in areas of natural heritage importance outside Designated Areas and to ensure that notable sites, habitats and features of biodiversity importance - including species protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979, the Habitats Directive 1992, Birds and Habitats Regulations 2011, Flora (Protection) Order, 2015, Annex I habitats, local important areas, wildlife corridors and rare species - are adequately protected. Ecological assessments will be carried out for all developments in areas that support, or have potential to support, features of biodiversity importance or rare and protected species and appropriate mitigation/ avoidance measures will be implemented. In implementing this policy, regard shall be had to the Ecological Network, including the forthcoming DLR Wildlife Corridor Plan, and the recommendations and objectives of the Green City Guidelines (2008) and 'Ecological Guidance Notes for Local Authorities and Developers' (Dún Laoghaire-Rathdown Version 2014).

- **GIB23:** It is a Policy Objective to protect the Ecological Network which will be integrated into the updated Green Infrastructure Strategy and will align with the DLR County Biodiversity Action Plan. Creating this network throughout the County will also improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. The network will also include non designated sites.

- **GIB25:** It is a Policy Objective to retain and protect hedgerows in the County from development, which would impact adversely upon them. In addition, the Council will promote the protection of existing site boundary hedgerows and where feasible require the retention of these when considering a grant of planning permission

for all developments. The Council will promote the County's hedgerows by increasing coverage, where possible, using locally native species and to develop an appropriate code of practice for road hedgerow maintenance. The Council will promote the protection of existing hedgerows when considering a grant of planning permission for all developments.

- **GIB28:** It is a Policy Objective to prepare an 'Invasive Alien Species Action Plan' for the County which will include actions in relation to Invasive Alien Species (IAS) surveys, management and treatment and to also ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).

Dún Laoghaire-Rathdown Biodiversity Action Plan 2021 – 2025

Dún Laoghaire-Rathdown Biodiversity Action Plan (BAP) is set out to protect and improve biodiversity, following five main themes:

1. Reaching a deeper understanding of our county's biodiversity.
    - **Objective 1** Strengthen the knowledge base for conservation, management, and sustainable use of biodiversity.
2. Making good decisions for biodiversity.
    - **Objective 2** Mainstream biodiversity into decision-making and improve the management of this valuable resource.
3. Powerful actions to protect biodiversity and us.
    - **Objective 3** Conserve and restore biodiversity and ecosystems and support ecosystem services in DLR, including coastal and marine.
4. Connecting people and nature and inspire a positive future.
    - **Objective 4** Increase awareness, training and appreciation of biodiversity, ecosystems and ecosystem services.
5. Strength in working together.

Objective 5 Strengthen the effectiveness of collaboration between all stakeholders for the conservation of biodiversity, including with Local Authority Biodiversity Officers, Local Authority Waters Programme (LAWPRO), the National Biodiversity Data Centre, BirdWatch Ireland, NPWS and other State Bodies.

11.2 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 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 Site Photographs

Photograph 1. Improved agricultural grassland (GA1) on Site. Central treeline (WL2) visible in the background. 30/1/2025

Photograph 2. Treelines (WL2) on Site. 30/1/2025

Photograph 3. Hedgerows on Site (WL1). 30/1/2025

Photograph 4. Glenamuck Stream (FW2) culverted along southern Site boundary. 30/1/2025

	
Photograph 5. Johsntown Stream (FW2) on northern Site boundary. 30/1/2025	**Photgraph 6. Scrub layer beneath treelines present on first walkover, since cleared. 26/7/2024**
	
Photograph 7. Invasive Giant Hogweed noted on Site on first walkover, since removed. 26/7/2024	

About DNV

DNV is the independent expert in risk management and assurance, operating in more than 100 countries. Through its broad experience and deep expertise DNV advances safety and sustainable performance, sets industry benchmarks, and inspires and invents solutions.

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.