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Preliminary Ecological Appraisal Report

PRESENTED TO

Sonas

Proposed Refuge Development at Kilcross, Sandyford, Co. Dublin

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Environmental Consultancy Services

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1 INTRODUCTION

Enviroguide Consulting was commissioned by Sonas to undertake a Preliminary Ecological Appraisal (PEA) in relation to a proposed refuge development at Kilcross, Sandyford, Co. Dublin, hereafter referred to as 'Proposed Development' or 'Site' when referring to the site area of the Proposed Development.

This PEA provides a summary of ecological surveys carried out on Site in order to provide a rapid assessment of the features present e.g., habitats and species; particularly those protected by national and international legislation or those that are considered to be of particular nature conservation importance on or adjacent to the Site. This report will describe the baseline ecology of the Site, with emphasis on habitats, flora and fauna, and includes recommendations in relation to further survey works required, outline mitigation measures and outline enhancement measures required where appropriate. The report follows Guidelines for Preliminary Ecological Appraisal by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017) and supplemented by the National Roads Authority (2009) guidelines for Assessment of Ecological Impacts of National Road Schemes.

The purpose of this PEA is to:

- Set out the methodologies used to inform the ecological surveys.
- Identify Key Ecological Receptors (KERs) and ecological constraints within the Zone of Influence (ZOI) of the Proposed Development.
- 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 and highlight measures to offset same.
- Identify further ecological surveys and investigation, where necessary, to inform a full Ecological Assessment (EcIA) of the Site.
- Highlight opportunities for ecological enhancement.

According to the best practice guidelines (CIEEM, 2017) a PEA is ordinarily only suitable for a planning submission where no ecological constraints are identified relating to the project. However, should ecological constraints be identified, then the effects of the Development on same should be assessed within a separate EcIA report, which would supersede this PEA.

A flowchart (CIEEM, 2017) is included in Appendix 1 below, which sets out the approach to ecological assessment, highlighting the role of PEA within that process.

1.1 Quality Assurance and Competence

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

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

All surveying and reporting have been carried out by qualified and experienced ecologists and environmental consultants. EK, Graduate Ecologist with Enviroguide, authored this report and undertook the desktop research and authored this Report. BT, Ecologist with Enviroguide undertook the field surveys and co-authored this Report.

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.

BT has a B.Sc. in Environmental Biology (Hons) and a PhD in Marine Ecology from University College Dublin, and a wealth of experience in desktop research, literature scoping-review, and report writing, as well as practical field experience (habitat mapping surveys, intertidal surveys, vantage point surveys, winter bird surveys, fresh water macro-invertebrate identification etc.). BT has experience in compiling Biodiversity Chapters of Environmental Impact Assessment Reports (EIARs), AA screening and NIS reports, and in the overall assessment of potential effects to ecological receptors from a range of developments.

1.2 Relevant Legislation and Policy Context

A PEA is a process of identifying, quantifying, and evaluating potential effects of development-related or other actions on habitats, species and ecosystems (CIEEM, 2017).

A PEA is not a statutory requirement; however, it is a best practice evaluation process for rapid (preliminary) ecological assessment of a Proposed Development. The PEA will inform the applicant on baseline ecological conditions at the Site, and if any mitigations, recommendations, or ecological surveys and reporting are required.

There are several 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 2015.
- The Planning and Development Act 2000.
- National Biodiversity Plan 2017-2021.

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 designated under the Habitats Directive. 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.

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

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The Site is located within the Kilcross Estate, Sandyford, Co. Dublin (Figure 1). The Site currently comprises an area of amenity grassland, located within the zoned residential area of Kilcross Estate (Figure 2). The Site is accessed via the R117 road which links the Site to Dundrum to the north and Sandyford village to the south. The surrounding lands are primarily residential and retail developments. The M50 motorway is located approximately 50m north of the Site. A Nationally designated site; Fitzsimons Wood pNHA (001753) is located approximately 150m southwest of the Site, and is accessed via the Kilcross Estate.

2.2 Proposed Development Description

The Proposed Development will consist of a 12 apartment (6 no. one-bed and 6 no. two-bed) refuge complex for victims of domestic violence (Figure 3 and Figure 4). Each apartment will consist of a kitchen/dining area, bathroom, shower room, storage cupboards, balconies and external garden space. The Proposed Development will also provide common space for meeting rooms, staff offices and areas for initial counselling and necessary medical attention for both clients and staff on duty.

2.2.1 Drainage and Water Supply

2.2.1.1 Surface water

The ground conditions at the Site are poor and therefore, an attenuated system is considered most appropriate for this Site. Surface water from the Site will drain into an attenuation tank beneath courtyard at the centre of the Site (Figure 5). The surface water will discharge through a 225mm drain via hydrobrake before joining the existing surface water system of the Kilcross estate to the north west of the Site (Figure 5). A petrol and silt interceptor will be included in the proposed surface water system prior to discharge to the existing network (per comms with Dara Magee of AOCA, 07/02/2024). The existing surface water network discharges into the Slang Stream (EPA Code:09S04) to the west of the Site before ultimately flowing into Grand Canal Dock and Dublin Bay (per comms Mr. Jonathan Grant, Senior Executive Technician within Dun Laoghaire - Rathdown, 06/09/2023).

2.2.1.1.1 Sustainable Drainage Systems (SuDS) measures incorporated into the surface water design

Permeable Paving: Permeable paving will form part of the project design to facilitate direct surface water drainage to ground and reduce the volume of surface water which will be directed towards the existing network.

Green roof: Approximately 410m^2 of intensive green roofing will be provided on site. Green roofs help reduce pressure on the stormwater network by retaining rainfall and releasing it over a longer period of time. They also provide biodiversity benefits to for birds and pollinators.

2.2.1.2 Foul Drainage

Foul water is drained from the Site via a 225mm foul sewer, before joining the existing foul network within Kilcross estate to the northwest of the Site (Figure 5). The foul network ultimately terminates at Ringsend Wastewater Treatment Plant (WwTP).

2.3 Description of the Construction Phase (12 months)

The construction works will involve stripping of existing topsoil at the Site, excavations for foundation and traditional construction techniques.

All construction works will occur in a single phase which is estimated to take 12 months to complete. During the general excavation of the foundations there will be additional heavy goods vehicle (HGV) movements to and from the Site. All suitable material will be used for construction and fill activities where possible and appropriate. A tower crane will be erected to hoist materials on Site in the construction of the Proposed Development. Two excavators and four dumper trunks will be required on Site. Several mitigation measures for noise, dust, litter and other environmental nuisances associated with the Construction Phase will be outlined in the Construction and Environmental Management Plan (CEMP).

No public personnel, be it pedestrian or vehicular, will be permitted to enter the Site. Appropriate signage will be positioned at approach roads to the Site area so as to inform the public of the Site activities.

For the duration of the proposed infrastructure works it is envisaged that the maximum working hours shall be 08:00 to 18:00 Monday to Saturday (excluding bank holidays), subject to the restrictions imposed by the local authorities. No working will be allowed on Sundays and Public Holidays unless express permission is obtained from the Local Authority.

2.4 Description of the Operational Phase (Indefinite)

It's expected that the refuge will provide employment for 6-10 permanent staff and provide accommodation for 30-35 residents of this facility during the Operational Phase. The facility will be open 24 hours a day, seven days per week with limited emergency services available at night.

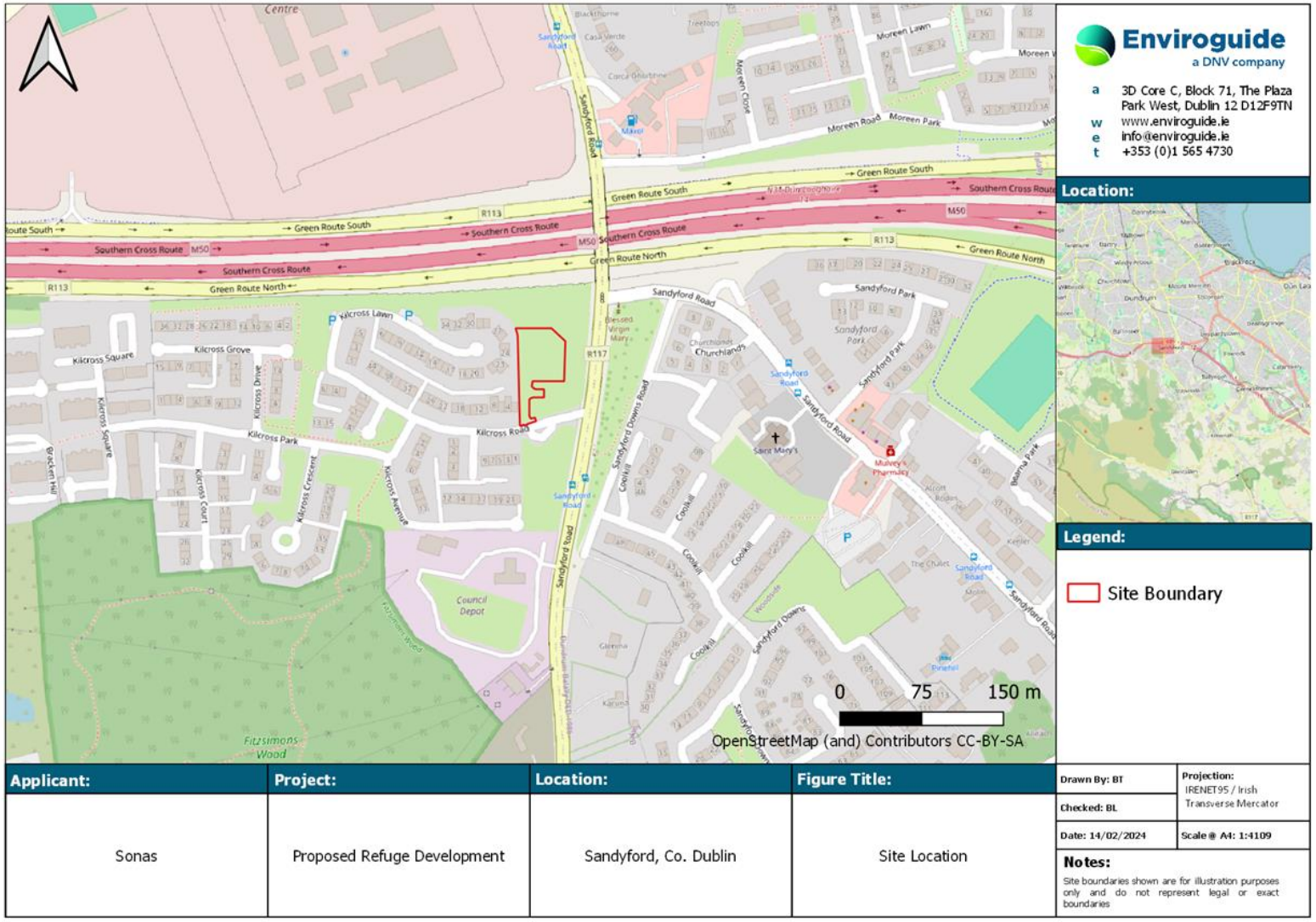

FIGURE 1. SITE LOCATION

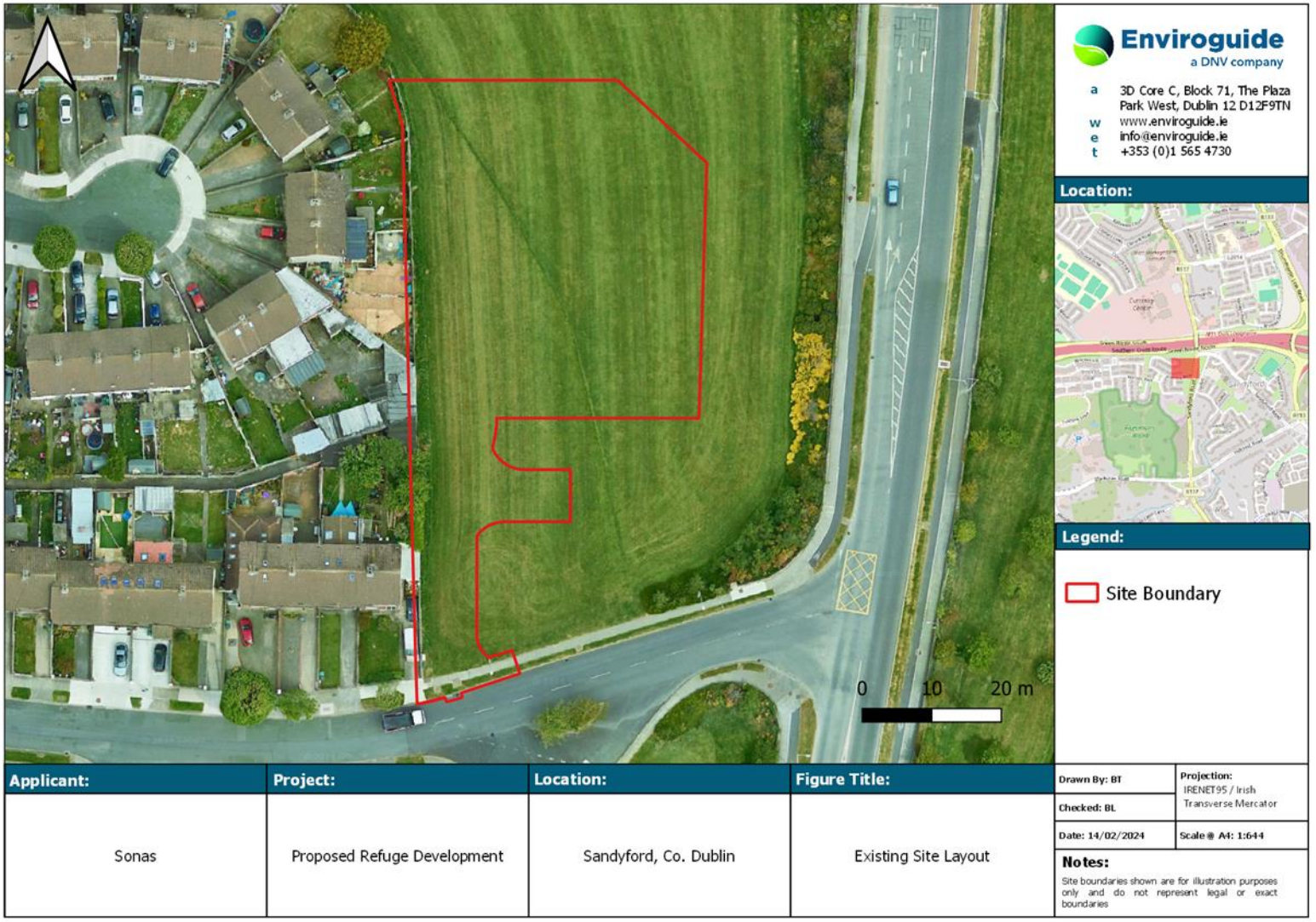

FIGURE 2. EXISTING SITE LAYOUT

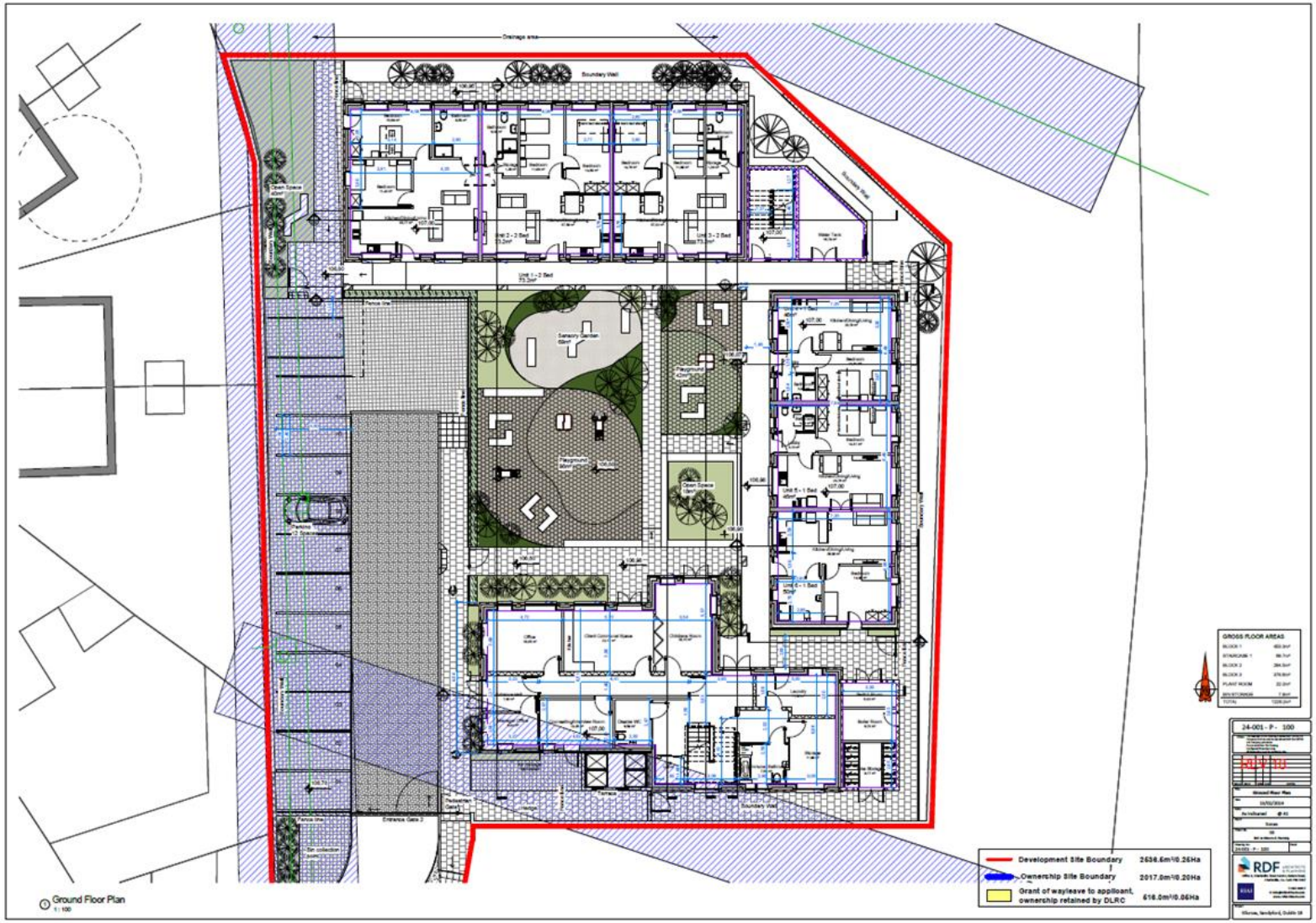

FIGURE 3. PROPOSED SITE LAYOUT (RDF ARCHITECTURE DRG NO: 24-001-P-010)

FIGURE 4. SECTIONS AND ELEVATIONS (RDF ARCHITECTURE DRG NO: 24-001-P-310)

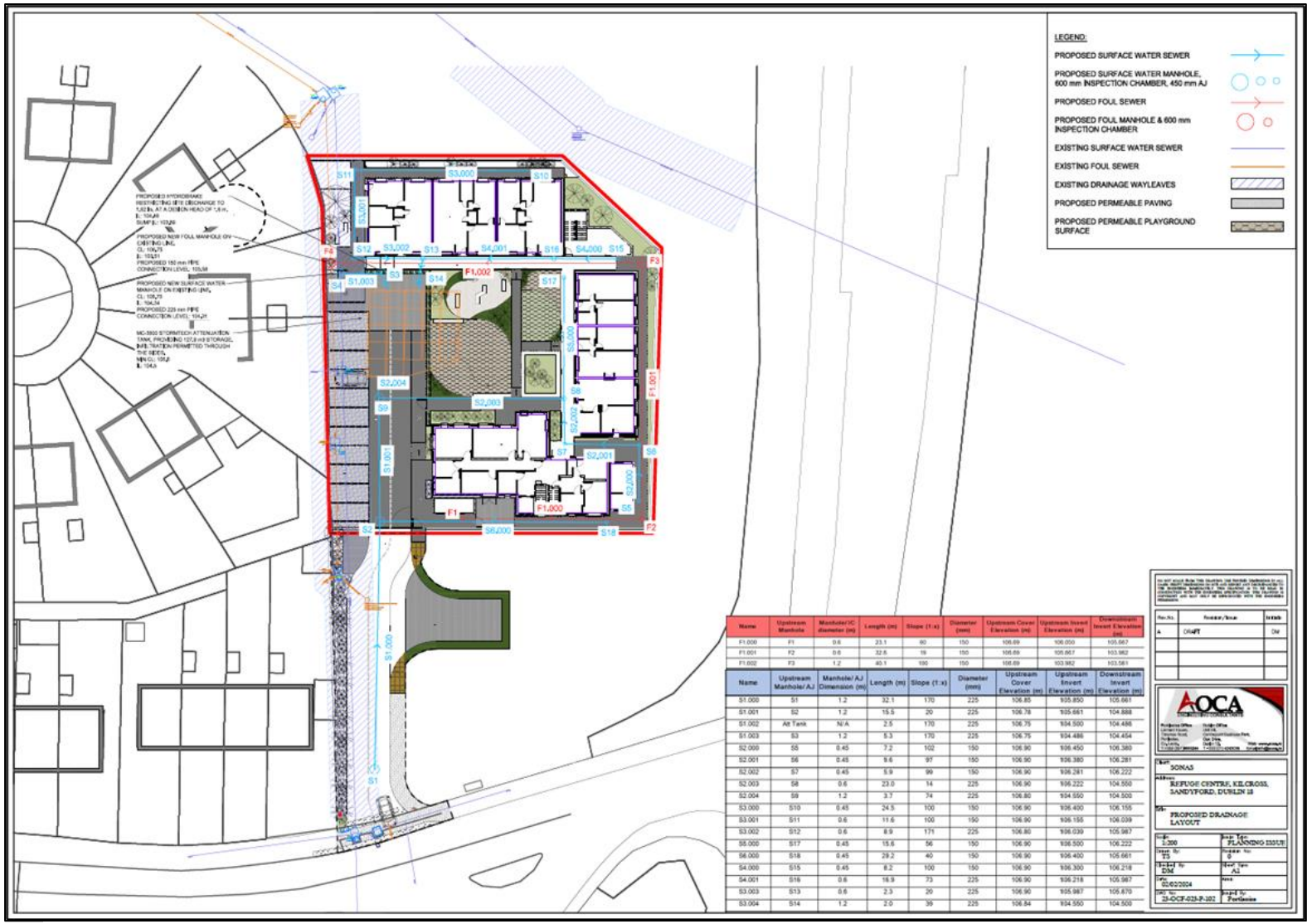

FIGURE 5.EXISTING AND PROPOSED DRAINAGE NETWORK AT THE SITE (AOCA DRG NO. 23-OCF-023-P-102)

3 METHODOLOGY

This PEA has been undertaken to identify any ecological constraints to development of the Site, identify further ecological surveys and investigations necessary to inform a full EcIA of the Site (if necessary), and highlight opportunities for ecological enhancement. Where potential for a risk to the environment is identified, recommendations for avoidance and/or mitigation measures are made on the basis that by deploying these measures the risk is eliminated or reduced to an insignificant level.

This section details the steps and methodology employed to undertake a PEA of the Site.

3.1 Scope of Assessment

The specific objective of this PEA is to:

- Set out the methodologies used to inform the ecological surveys;
- Identify the likely ecological constraints within the Zone of Influence (ZOI) of the Proposed Development;
- Identify further ecological surveys and investigation, where necessary, to inform a full Ecological Impact Assessment (EcIA) of the Site;
- Highlight opportunities for ecological enhancement; and
- Identify any mitigation measures likely to be required.

3.2 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources pertaining to the Site's natural environment. The desk study, completed in September 2023, 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; and,
- Information on the extent, nature and location of the Proposed Development, provided by the applicant and/or their design team.

[1] The Site of the Proposed Development lies within the 2km grid square O12X and is directly adjacent to 2km grid square O12Y.Given the proximity of the Site to both grid squares, records from both O12X and O12Y will analyzed in this assessment. Records from the last 30 years from available datasets are given in the relevant sections of this report.

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in Section 7, References.

3.3 Zone of Influence

The 'zone of influence' (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.

The overland ZOI of the Proposed Development is largely confined to habitats within and immediately adjacent to the Site due to the scale, nature and location of the Proposed Development. However the hydrological and hydrogeological ZOI of the Proposed Development extends to nearby receiving waterbodies which ultimately discharge to Dublin Bay or the Irish sea

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 PEA reports such as this to identify all relevant designated sites potentially linked to the Proposed Development.

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.

The methodology used to identify relevant designated sites comprised the following:

- Identification of potential sources of effects based on the Proposed Development description and details;
- Identification of potential pathways between the Site of the Proposed Development and any designated sites within the ZOI of any of the identified sources of effects.
    - Water catchment data from the EPA (www.epa.ie) were used to establish or discount potential hydrological connectivity between the Proposed Development and any designated sites.
    - Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Proposed Development and any designated sites.

  - Air and land connectivity assessed based on Proposed Development details and proximity to designated sites.
  - Consideration of potential indirect pathways, e.g., impacts to flight paths, *ex-situ* habitats, etc.

- Review of Ireland's designated sites to identify those sites which could potentially be affected by the Proposed Development in view of the identified pathways, using the following sources;
  - European sites and nationally designated sites (e.g., NHAs and pNHAs) from the NPWS (www.npws.ie);
  - Ramsar sites from the Irish Ramsar Wetland Committee (https://irishwetlands.ie/irish-sites/);
  - Other internationally designated sites e.g., UNESCO Biospheres; and
  - Regional development plans to identify any remaining sites or areas designated for nature conservation at a local level.

3.5 Field Surveys

An ecological walkover was conducted at the Site on the 26th of April 2023. During the walkover, the habitats and corresponding flora were classified according to Fossitt (2000). Invasive plant species, if present, were identified and mapped. Evidence of mammal activity at the Site (trails, droppings and burrows) were assessed and a bird scoping survey was conducted. The Site was also assessed for its potential to support roosting bats (Table 1).

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

Survey	Surveyor	Dates
Site Walkover (Habitat mapping, invasive species, common bird scoping survey, potential bat roost assessment and non volant mammal survey)	Enviroguide Consulting (BT)	26th April 2023

Details of the survey methods are given in the below sections.

3.5.1 Habitat Surveys

Habitat surveys of the Site were conducted by Enviroguide on the 26th of April 2023. 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.

The habitats at the Site were also assessed for their potential to support protected and/or notable fauna.

3.5.2 Bat Surveys

3.5.2.1 Preliminary Bat Roost Assessment

A preliminary bat roost assessment of Potential Roost Features (PRFs) within trees and/or buildings directly adjacent to the Site was completed on the 26th of April 2023 in adherence to best practice guidelines (Collins, 2023 and Marnell et al., 2022). This was undertaken to determine the suitability of the Site and the features in the immediate vicinity for roosting bats and the potential requirement for further surveys to be undertaken. PRFs can be defined in four broad terms of suitability as detailed below:

- Negligible – No suitable features observed;
- Low – A structure with one or more roost features as used by individual bats or a tree of sufficient size to contain roost features but none observed from the ground;
- Moderate – A structure or tree with one or more roost features and able to support one or more bats but unlikely to support a roost of high conservation status.
- High - A structure or tree 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.

3.5.2.2 Bat Habitat Suitability Survey

A Bat Habitat Suitability Assessment was carried out in conjunction with the roost assessment on the 26th of April 2023. This assessment evaluated the habitats present on Site and in the wider area for bat foraging and commuting suitability. Habitat suitability is assessed qualitatively from Negligible to High:

- Negligible – No suitable foraging or commuting habitats on Site
- Low – Suitable but isolated habitats that could be used by small numbers of commuting and/or foraging bats, such as poorly connected gappy hedgerows, lone trees, unvegetated streams, etc.
- Moderate – Suitable continuous habitat connected to the wider landscape that could be used by commuting and/or foraging bats, such as treelines, scrub, grassland, water, etc.
- High – Continuous high-quality habitat that is well-connected to the wider landscape, and is likely used regularly by commuting and/or foraging bats, such as river valleys, broadleaved woodland, woodland edge, grazed parkland, etc.

All survey methodologies will follow those of the Bat Conservation Trust Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th Edition (Collins, 2023). Any further recommended bat survey work will be undertaken within the recommended survey period of May to September inclusive and as per best practice guidelines.

3.5.3 Bird Scoping Survey

A bird scoping survey was carried out on the 26th of April 2023 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.

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 habitats within and adjacent to the Proposed Development and scanning and listening for birds.

3.6 Fauna Survey

A general fauna survey of the Site was carried out in conjunction with the other field surveys on the 26th of April 2023. The habitat types recorded throughout the survey area were used to assist in identifying the fauna considered likely to utilise the area. The Site was searched for tracks and signs of mammals as per Bang and Dahlstrom (2001) and other fauna as per the National Road Authority (NRA, 2005; NRA, 2009).

Additionally, a focused search for signs of the following fauna was carried out at the Site:

- Badger (*Meles meles*)
- Otter (*Lutra lutra*)
- Eurasian Pygmy Shrew (*Sorex minutus*)
- Eurasian Red Squirrel (*Sciurus vulgaris*)
- Pine Marten (*Martes martes*)
- West European Hedgehog (*Erinaceus europaeus*)
- Amphibians (Common Frog *Rana temporaria* and Smooth Newt *Lissotriton vulgaris*)

3.6.1 Invasive Species Surveys

An invasive species surveys were carried out in conjunction with the habitat surveys on the 26th of April 2023. This included a detailed search for signs or any invasive flora or fauna, with any incidental observations of evidence for invasive species recorded, whenever on Site.

3.7 Preliminary Ecological Appraisal

3.7.1 Identification of Ecological Constraints

The evaluation and assessment of ecological features is beyond the scope of a PEA and has therefore not been undertaken here. Where required, formal evaluation and assessment of any identified important ecological features should be undertaken as part of either a full EcIA, or receptor – specific survey and assessment in accordance with the published CIEEM method (CIEEM, 2018).

Following the desk study and field survey(s), likely ecological constraints to the Proposed Development were identified based on the following information:

- Perceived sensitivity of the recorded ecological features;
- Level of uncertainty in assessing the status of an ecological feature (e.g., where a pond is observed but it is not known whether it supports breeding amphibians due to seasonal limitations); and
- Likely impacts on the recorded ecological features based on current knowledge of Proposed Development design (e.g., removal of treeline)

3.7.2 Mitigation and Further Survey Recommendations

Identification of likely ecological constraints will inform an EcIA and/or the design of appropriate avoidance, mitigation and/or compensation measures through the planning process. Additionally, further surveys to address any remaining uncertainties are recommended for the identified ecological constraints.

3.8 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.

Despite the above, it was concluded that no limitations were encountered which would prevent robust conclusions being drawn as to the potential impacts of the Proposed Development on local flora and fauna.

4 ECOLOGICAL BASELINE CONDITIONS

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

4.1 Geology, Hydrogeology and Hydrology

The Site is located in the Liffey and Dublin Bay Catchment (Catchment I.D 09) and in the Dodder_SC_010 Sub-catchment (Sub-catchment I.D.09_16) (EPA, 2023).

The Carrickmines Stream (EPA Code: 10C04) is located approximately 254m to the southeast of the Site and flows south easterly direction for 7.7km before joining the Shanganagh river (EPA Code: 10S01) which discharges into the Southwestern Irish Sea-Killiney Bay (EPA Code: HA10) coastal waterbody at Killiney beach. Approximately 873m to the west of the Site, the Slang 1st order stream (EPA Code: 09S04) flows in a northerly direction for 5km before joining the River Dodder (EPA Code: 09D01) which flows north for 4.8km before discharging into the Lower River Liffey Estuary (WFD Code: IE_EA_090_0300) at Grand Canal Dock before ultimately discharging into Dublin Bay (WFD Code: IE_EA_090_0000).

There are several water quality monitoring stations located on the Carrickmines Stream and the River Dodder Down stream of the Site. Although multiple water quality monitoring stations are present along the Slang stream, no Q-Values are available for these stations. The EPA water quality monitoring data for the stations on the Dodder and Carrickmines surface waterbodies located closest to the Site is summarised in Table 2 (EPA, 2023).

TABLE 2. EPA MONITORING STATIONS AND ASSIGNED Q VALUES

EPA Monitoring Station name	Station Code	Location from Site	Distance from Site	Assigned Q value
River Dodder	RS09D010800	North downstream	4.5km north	3-4 “Moderate”
Carrickmines stream	RS10C040200	Southeast downstream	4.9km southwest	3 “Poor”

The Site of the Proposed Development is situated on the Kilcullen (IE_EA_G_003) groundwater body. The bedrock aquifer identified beneath the Site is mapped as a “*Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones*” (Ll) (GSI, 2023).

The Groundwater Vulnerability Rating assigned to groundwater beneath the majority of the Site is mapped as “*High”* (H) while a small section of the southern portion of the Site of the Site is mapped as “*Extreme”* (E) (GSI, 2023).

The quaternary sediments beneath the majority of the Site are mapped as “*Bedrock Outcrop or Subcrop”* (Rck) with a fringe of “*Till derived from granites*” (TGr). The subsoil beneath the Site is mapped as “*Granite Till*” (GSI, 2023).

The Waterbody Status for river, groundwater, transitional and coastal water bodies relevant to the Site as recorded by the EPA (2023) in accordance with European Communities (Water Policy) Regulations 2003 (SI no. 722/2003) are shown in Table 3.

TABLE 3. WFD RISK AND WATER BODY STATUS

Waterbody Name	Water body; EPA code	Location from Site	Distance from Site (km)	WFD water body status (2016-2021)	WFD 3rd cycle Risk Status	Hydraulic Connection to the Site
Surface Water Bodies						
Carrickmines Stream	10C04	East	0.2km	Good	Not at Risk	None
Slang Stream	09S04	West	0.8km	Moderate	At risk	Surface water run-off during Operational Phase
Dodder	09D01	North	4.3km	Moderate	At risk	Surface water run-off during Operational Phase
Coastal Water Bodies						
Dublin Bay	IE_EA_090_0000	East	12.7km	Good	Not at risk	Downstream of the Site.
Transitional Waterbodies						
Lower Liffey Estuary	IE_EA_090_0300	Northeast	8.2km	Moderate	At Risk	Downstream of the Site.
Groundwater Bodies						
Kilcullen	IE_EA_G_003	N/A	N/A	Good	At Risk	Underlying groundwater body.

4.1.1 Site Drainage

No drainage ditches or streams occur within or directly adjacent to the Site. The closest waterbodies to the Site are the Carrickmines Stream and the Slang Stream as outlined in Table 3 above.

4.2 Designated sites

All European sites potentially linked to the Proposed Development have been identified and fully assessed in the AA Screening Report accompanying this submission under separate cover (Enviroguide, 2024). A summary of the conclusion of the AA Screening report is given below in section 4.2.1.

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

4.2.1 European sites- Appropriate Assessment

The AA Screening did not identify any potentially significant impacts to European sites as a result of the Proposed Development. The AA screening concluded:

"The Proposed Development at Kilcross, Sandyford, Co. Dublin has been assessed taking into account:

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

In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that the possibility may be excluded that the Proposed Development will have a significant effect on any of the European sites listed below:

- *North Dublin Bay SAC (000206).*
- *South Dublin Bay SAC (000210).*
- *Wicklow Mountains SAC (002122).*
- *North Bull Island SPA (004006).*
- *South Dublin Bay and River Tolka Estuary SPA (004024).*
- *North-West Irish Sea cSPA (004236).*

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' conversation 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".

As such, European sites are not considered further in this report.

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

There are no drainage ditches or surface waterbodies within or immediately adjacent to the Site. The closest waterbodies to the Site are the Carrickmines Stream (EPA Code: 10C04) and the Slang stream (EPA Code: 09S04) which are between 254m-873m from the Site respectively. Therefore, there is no potential for the propagation of significant effects to any designated sites via a hydrological pathway during the Construction Phase. However, during the Operational Phase, excess surface water from the Site will be discharged into the existing Kilcross network, before discharging to the Slang Stream to the west. The Slang stream flows in a northerly direction for 5km before joining the River Dodder (EPA Code: 09D01), which flows north for 4.8km before discharging into the Lower River Liffey Estuary at Grand Canal Dock, before ultimately discharging into the sea at Dublin Bay. Therefore, this constitutes a hydrological connection with several designated sites in Dublin Bay during the Operational Phase including **Dolphins- Dublin Docks pNHA (000201), South Dublin Bay pNHA (000210), North Dublin Bay pNHA (000206), Sandymount Stand/Tolka Estuary RAMSAR site (832), North Bull Island RAMSAR Site (406) and the UNESCO- Dublin Bay Biosphere Site.**

However, this pathway is considered weak and insignificant for several reasons. Firstly, surface water from the Site will pass through petrol interceptors and underground attenuation within the Proposed Development Site or be directed to groundwater. Therefore, these embedded design features will remove potential pollutants from surface waters prior to discharge to the Slang stream. In addition, the hydrological distance (13.6km river channel length via the Slang, Dodder and Liffey Estuary) between the Proposed Development and the above designated sites and the dilutive capacity of the intervening waterbodies and Dublin Bay will greatly diffuse pollutants and/or sediments in the unlikely event they bypass the above SuDS measures. Therefore, there are no hydrological connections of note to any designated site.

4.2.2.1.1.2 Hydrogeological pathways

The closest designated site to the Proposed Development is **Fitzsimmons Wood pNHA (001753)** approximately 150m southwest of the Site and is accessible via the Kilcross Estate.

Both the Site and **Fitzsimmons Wood pNHA (001753)** lie within the Kilcullen groundwater body which likely discharges north-eastwards towards the Irish Sea. The groundwater vulnerability rating assigned to groundwater beneath the majority of the Site and **Fitzsimmons Wood pNHA (001753)** is mapped as "*High"* (H), "*Extreme"* (E) or "*Rock at or near surface or Karst*" (X).

However, according to the summary report for this groundwater body (GSI, 2023) typical groundwater flow paths will be in the order of a couple of hundred metres, with discharge occurring to the closest surface water feature. Therefore, groundwater will likely discharge to the Carrickmines Stream to the east of the Site rather than in the direction of Fitzsimmons Woods. As outlined in the hydrological risk assessment (HRA) for this development (Enviroguide, 2024), Fitzsimmons Woods pNHA is not hydrogeologically connected to the Site and lies upgradient of the Site (See HRA for full detailed assessment). In addition, the groundworks for the Proposed Development will be traditional in nature and will only involve relatively shallow excavations for the foundations and attenuation tank. Therefore, the

potential for groundwater impacts on this Site is considered negligible. As all other designated sites are significantly greater than 150m from the Site, the potential groundwater impacts to these sites is considered negligible.

4.2.2.1.1.3 Air and land pathways

The closest designated site to the Proposed Development Site is **Fitzsimmons Wood pNHA (001753)** approximately 150m southwest of the Site. Although there is no formally identifying qualifying interests for this Site, it is noted to contain several different habitats including broadleaf forest (mainly Oak, ash and birch), grassland and gorse. It also supports a wide variety of fauna and flora, notably a small herd of Sika Deer, a notable bird assemblage and a colony of Smooth Newts. Therefore, there is potential for increased noise emissions during the Construction Phase to impact sensitive species of mammals and birds (Cutts et al., 2009). Due to the location and scale of the development as well as the intervening distance to **Fitzsimmons Wood pNHA (001753)**, it is not considered that dust emissions from the Site from the Site will impact site. For developments of this scale most dust would be expected to deposit within the immediate vicinity of the Site (i.e. 25m) (TII, 2011).

4.2.2.1.2 Indirect Pathways

During the Operational Phase there is a hydrological pathway between the Site and **Dolphins-Dublin Docks pNHA (000201), South Dublin Bay pNHA (000210), North Dublin Bay pNHA (000206), Sandymount Stand/Tolka Estuary RAMSAR site (832), North Bull Island RAMSAR Site (406) and the UNESCO- Dublin Bay Biosphere Site** via foul water drainage which discharges in Dubin Bay from Ringsend Wastewater Treatment Plant (WwTP).

However, this pathway is considered weak and insignificant for several reasons outlined below:

- The completion of the first phase of upgrade works to Ringsend WwTP, which increased the capacity of the facility by 400,000 Population Equivalent (P.E) (from 1.64 million P.E. to 2.04 million P.E.) in December 2021. It is expected that by the end of 2023, the plants capacity will be upgraded to 2.1 million P.E. In addition, further upgrade works will be completed by the end of 2025 which will increase the capacity of the facility to 2.4 million P.E. Although Ringsend WwTP is currently at/nearing capacity, Operational Phase foul water will not enter the plant before the capacity upgrades are complete at the end of 2023.

- The insignificant increase in max 45 P.E effluent discharge to Ringsend WwTP as a result of the Proposed Development assuming it is already not catered for by this WwTP.

- It is considered that effects on marine biodiversity and the European sites within Dublin Bay from the current operation of Ringsend WwTP are unlikely due to the dilutive capacity of the receiving marine waters.

- The main area of dispersal of the treated effluent from Ringsend WwTP is in the Tolka Basin and around North Bull Island. South Dublin Bay is unaffected by the effluent from the plant (Irish Water, 2018).

Therefore, it is not expected that foul waters generated by the Proposed Development will result in the overloading of Ringsend WwTP and foul waters from the Proposed Development will not result in impacts to the above designated sites within Dublin Bay.

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 AMENDMENTS, AND ANY RELEVANT DESIGNATED SITES. THOSE SITES WITH NOTABLE S-P-R LINKS THAT ARE FURTHER ASSESSED IN THIS REPORT ARE HIGHLIGHTED IN GREEN.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
SPECIAL PROTECTION AREAS (SPAs)			
South Dublin Bay and River Tolka Estuary SPA (004024)	4.8km northeast	**NATURA 2000 Standard Data Form (2020)** • Great Crested Grebe (*Podiceps cristatus*) [A005] • Cormorant (*Phalacrocorax carbo*) [A017] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Red-breasted Merganser (*Mergus serrator*) [A069] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Grey Plover (*Pluvialis squatarola*) [A141] • Knot (*Calidris canutus*) [A143] • Sanderling (*Calidris alba*) [A144] • Dunlin (*Calidris alpina*) [A149] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Turnstone (*Arenaria interpres*) [A169] • Mediterranean Gull (*Larus melanocephalus*) [A176] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Roseate Tern (*Sterna dougallii*) [A192] • Common Tern *(Sterna hirundo*) [A193] • Arctic Tern (*Sterna paradisaea*) [A194]	• Weak hydrological pathway via Slang Stream, deemed insignificant due to distance (15.3 km channel length), attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak hydrogeological pathway through the Kilcullen groundwater body, deemed insignificant due to distance. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
		Wetland and Waterbirds [A999]	
North Bull Island SPA (004006)	8.8km northeast	**NATURA 2000 Standard Data Form (2020)** • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Shelduck (*Tadorna tadorna*) [A048] • Widgeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Mallard (*Anas platyrhynchos*) [A053] • Pintail (*Anas acuta*) [A054] • Shoveler (*Anas clypeata*) [A056] • Red-breasted Merganser (*Mergus serrator*) [A069] • Oystercatcher (*Haematopus ostralegus*) [A130] • Ringed Plover (*Charadrius hiaticula*) [A137] • Golden Plover (*Pluvialis apricaria*) [A140] • Grey Plover (*Pluvialis squatarola*) [A141] • Knot (*Calidris canutus*) [A143] • Sanderling (*Calidris alba*) [A144] • *Calidris ferruginea* [A147] • Dunlin (*Calidris alpina*) [A149] • Ruff (*Philomachus pugnax*) [A151] • Black-tailed Godwit (*Limosa limosa*) [A156] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Spotted Redshank (*Tringa erythropus*) [A161] • Redshank (*Tringa totanus*) [A162] • Greenshank (*Tringa nebularia*) [A164] • Turnstone (*Arenaria interpres*) [A169]	• Weak hydrological pathway via Slang Stream, deemed insignificant due to distance (15.2 km channel length), attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
		• Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Short-eared Owl (*Asio flammeus*) • Wetland and Waterbirds [A999]	
North-West Irish Sea cSPA (004236).	9.7km northeast	**NPWS Site Synopsis (2023)** • Red-throated Diver (*Gavia stellata*) [A001] • Great Northern Diver (*Gavia immer*) [A003] • Fulmar (*Fulmarus glacialis*) [A009] • Manx Shearwater (*Puffinus puffinus*) [A013] • Shag (*Phalacrocorax aristotelis*) [A018] • Cormorant (*Phalacrocorax carbo*) [A017] • Common Scoter (*Melanitta nigra*) [A065] • Little Gull (*Larus minutus*) [A177] • Kittiwake (*Rissa tridactyla*) [A188] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Lesser Black-backed Gull (*Larus fuscus*) [A183] • Herring Gull (*Larus argentatus*) [A184] • Great Black-backed Gull (*Larus marinus*) [A187] • Little Tern (*Sterna albifrons*) [A195] • Roseate Tern (*Sterna dougallii*) [A192] • Common Tern (*Sterna hirundo*) [A193] • Arctic Tern (*Sterna paradisaea*) [A194] • Puffin (*Fratercula arctica*) [A204] • Razorbill (*Alca torda*) [A200]	• Weak hydrological pathway via Slang Stream, deemed insignificant due to distance (15.6km channel length), attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
		• Guillemot (*Uria aalge*) [A199]	
SPECIAL AREAS OF CONSERVATION (SACs)			
North Dublin Bay SAC (000206)	9.8km northeast	**NATURA 2000 Standard Data Form (2020)** • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] • Mediterranean salt meadows (*Juncetalia maritimi*) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] • Humid dune slacks [2190] • *Petalophyllum ralfsii* (Petalwort) [1395]	• Weak hydrological pathway via Slang Stream, deemed insignificant due to intervening distance (15.2km), attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.
South Dublin Bay SAC (000210)	4.7km northeast	**NATURA 2000 Standard Data Form (2020)** • Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • *Salicornia* and other annuals colonising mud and sand [1310] • Embryonic shifting dunes [2110]	• Weak hydrological pathway via Slang Stream, deemed insignificant due to distance (15.3km channel length), attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak hydrogeological pathway through the Kilcullen groundwater body, deemed insignificant due to distance. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
			end of 2023 prior to the Proposed Development becoming operational.
Wicklow Mountains SAC (002122)	5.2km southwest	**NATURA 2000 Standard Data Form (2018)** • Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] • Natural dystrophic lakes and ponds [3160] • Northern Atlantic wet heaths with *Erica tetralix* [4010] • European dry heaths [4030] • Alpine and Boreal heaths [4060] • Calaminarian grasslands of the *Violetalia calaminariae* [6130] • Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] • Blanket bogs (* if active bog) [7130] • Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] • Calcareous rocky slopes with chasmophytic vegetation [8210] • Siliceous rocky slopes with chasmophytic vegetation [8220] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] • *Lutra lutra* (Otter) [1355]	• Indirect hydrological connection between the Site via the River Dodder. Otter (*Lutra lutra*) are a QI species listed for the Wicklow Mountains SAC and, although the Proposed Development Site provides no suitability for Otter, they are known to use the Dodder. Otter along this river in the locality of the Site could form part of the QI population of the SAC. However, given that the operational surface waters generated at the Site will pass through a suite of SUDS measures to be included as part of the Proposed Development and then be mixed and assimilated with those waters within the public surface water network, prior to eventually out-falling to the Dodder, it is deemed that the potential for likely significant effects on Otter using the Dodder as a result of the Proposed Development is extremely unlikely.
NATURAL HERITAGE AREAS (NHAs)			
None present within the surrounding areas or linked to the Proposed Development Site			
PROPOSED NATURAL HERITAGE AREAS (pNHAs)			
Fitzsimmons Wood pNHA (001753)	150m southwest	**NPWS Site Synopsis (2009)** Fitzsimon's Wood occupies an area of approximately 8ha near Lamb's	• Air pathway for increased noise or dust emissions during the Construction Phase to impact sensitive species of mammals and birds.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
		Cross in Sandyford, Co. Dublin. The woodland consists of mature birch (*Betula spp.*) with some oak (*Quercus spp.*), together with a well-developed understorey of Holly (*Ilex aquifolium*). Natural regeneration is occurring and there is a profuse growth of young birch, Ash (*Fraxinus excelsior*), oak and other species. Some marshy areas also occur within the woodland. An area of heath, dominated by Gorse (*Ulex europaeus*) scrub is also included in the site. The underlying rock of the area is granite and where this outcrops it is often covered with ferns and mosses. Fitzsimon's Wood is directly adjacent to a housing estate and is subject to significant recreational pressure. Dumping of cars and rubbish is a problem. The sporadic removal of wood, coupled with campfires, also poses a threat to the site. These activities will need to be controlled if the gradual attrition of the wood is to be prevented. Nonetheless, the basic woodland structure remains intact and as birch woodland is very rare in Co. Dublin, Fitzsimon's Wood continues to be of ecological importance.	• However, hydrogeological pathway through the Kilcullen groundwater body, deemed negligible due to likely discharge into Carrickmines Stream to the East and the nature of the proposed groundworks.
South Dublin Bay pNHA (000210)	4.8km northeast	No formal description provided, but site overlaps with South Dublin Bay SAC (000210)	• Weak hydrological pathway via Slang Stream, deemed insignificant due to intervening distance, attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.
Dolphins, Dublin Docks pNHA (000201)	8.2km northeast	No formal description provided, but site overlaps with South Dublin Bay and River Tolka Estuary SPA (004024)	• Weak hydrological pathway via Slang Stream, deemed insignificant due to intervening distance (13km), attenuation features of the Kilcross network and dilution capacity of intervening waterways.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
			• Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.
OTHER DESIGNATED SITES (UNESCO, RAMSAR, ETC.)			
Sandymount Stand/Tolka Estuary RAMSAR site (832)	4.9km northeast	**Ramsar Sites Information Service (2023)** The Site in Dublin Bay features extensive intertidal mud and sand flats which extend for almost three kilometres at their widest, and an intertidal biogenic reef and a small section of saltmarsh. The sands support the largest stand of seagrass beds (*Zostera noltii*) on Ireland's east coast. South Dublin Bay is the premier site in Ireland for the Mediterranean gull (*Larus melanocephalus*) and is a regular autumn roosting ground for significant numbers of terns. More than 1% of the global population of light-bellied brent goose (*Branta bernicla hrota*), black-tailed godwit (*Limosa limosa*) and bar-tailed godwit (*Limosa lapponica*) are present in the Site. The proximity of the city of Dublin makes the Site a very popular recreational area, while bait-digging is a regular activity on the sandy flats. It is also important for educational and research purposes. The Site is subject to natural eutrophication and is threatened by the accumulation of organic material. It is also affected by disturbances from roads, land conversions and urban wastewater.	• Weak hydrological pathway via Slang Stream, deemed insignificant due to intervening distance (15.3km) attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.
UNESCO-Dublin Bay Biosphere Site	5.1km northeast	**UNESCO Description (2019)** The biosphere reserve is significant from a conservation perspective since it supports well-developed salt marshes and dune systems displaying all stages of development from the earliest	• Weak hydrological pathway via Slang Stream, deemed insignificant due to intervening distance (10.2km), attenuation features of the Kilcross network and dilution capacity of intervening waterways.

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
		phase of colonization to stable and full maturity. The area is also important for nesting and wintering waterfowls. The major habitats and land cover types are saltmarsh with glasswort (*Salicornia dolichostachya* and *S. europaea*), *Puccinellia maritima* and sea lavender (*Limonium humile*); sand dune complex with saltwort (*Salsola kali*), sea rocket (*Cakile maritima*), sea couchgrass (*Agropyron junceiforme*) etc.; beaches; lagoonal sand flat; lagoonal mud flats with algae such as *Enteromorpha intestinalis*, *E. compressa* and *Ulva lactuca*. It also qualifies for international importance as the numbers of three species exceed the international threshold – Light-bellied Brent Goose (*Branta bernicla hrota*), Black-tailed Godwit (*Limosa limosa*) and Bar-tailed Godwit (*Limosa lapponica*). Species such as Grey Heron (*Ardea cinerea*), Goldeneye (*Bucephala*), Red-breasted Merganser (*Mergus serrator*) and Greenshank (*Tringa nebularia*) are regular in winter in numbers of regional or local importance. The North Bull Island and parts of the buffer zone in north Dublin include populations of Irish Mountain Hare (*Lepus timidus hibernicus*), a uniquely Irish sub-species of a species of national and international importance, but under severe pressure from recreational disturbance and illegal poaching.	• Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.
North Bull Island RAMSAR Site (406)	10.2km northeast	**Ramsar Sites Information Service (2023)** The Site covers most of an island within the wider coastal and estuarine waters of Dublin Bay. Salt marshes extend along the length of the landward shore, and a well-developed and dynamic dune system along the seaward shore, where annual vegetation of drift lines is found in places. The island shelters two intertidal lagoons divided by a causeway. The dunes	• Weak hydrological pathway via Slang Stream, deemed insignificant due to intervening distance (13.2km), attenuation features of the Kilcross network and dilution capacity of intervening waterways. • Weak indirect hydrological pathway via Ringsend Wastewater Treatment Plant (WwTP), deemed insignificant due negligible increased in foul water discharge from the Proposed Development (i.e. 45 P.E.) and

Site Name & Code (Receptor)	Distance to Site of Proposed Development	Qualifying Interests (* = priority habitats) / Designation Rationale	Potential Pathway to receptors
		and salt marshes support characteristic plant communities and a number of rare plants which are legally protected. The intertidal habitats feature a rich macrofauna, small areas of eel grass and, in the summer months, green algal mats. The wider estuarine complex provides feeding and roosting habitat for more than 1% of the global population of more than 20 wintering birds, including black-tailed godwit (*Limosa limosa*) and light-bellied brent goose (*Branta bernicla hrota*). The Site also supports notable invertebrates. It is a very popular recreational area and important for educational and research purposes: nature conservation is a main land use within the Site. Much of the land surface of the island outside the Site is taken up by two golf courses. Due to its proximity to the Dublin urban area, the Site is impacted by urban wastewater, extensive tourism and roads.	capacity upgrades at Ringsend WwTP by the end of 2023 prior to the Proposed Development becoming operational.

4.3 Habitats

The habitats present within the Site, as recorded during the field survey are described in this section and summarised below. Site photographs of these habitats are included in Appendix III and a map of the habitats is presented in Figure 7.

4.3.1 Amenity Grassland (GA2)

The majority of the Site was composed of Amenity Grassland (Improved) (GA2) of the existing Kilcross Estate (Figure 2 and Photograph 1). This habitat is characterised by low species diversity and is mainly composed of Perennial Rye Grass (*Lolium perenne*), Dandelion (*Taraxacum spp*), Ribwort Plantain (*Plantago lanceolata*) and Daisy (*Bellis perennis*).

4.3.2 Flower Beds and Borders (BC4)

The western and southern boundary of the Site consisted of a narrow strip of Flower Beds and Borders (BC4) habitat (Figure 2 and Photograph 2). This habitat contained a mixture of native wildflower species and ornamental plants and shrubs. Species included, Cleavers (*Galium aparine*), Bluebells (*Hyacinthoides non-scripta*), Common Nettle (*Urtica dioica*), Sycamore (*Acer pseudoplatanus*), Hesperis *spp*, Bear's Breeches (*Acanthus mollis L.*), Daffodils (*Narcissus spp*.) and Tulips (*Tulipa spp)*

4.4 Species and Species Groups

4.4.1 Flora

4.4.1.1 Rare and Protected Flora

The Site of the Proposed Development is located within the NBDC 2km tetrads O12X and O12Y. 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 30 years. This database contained no records of protected flora within the last 30 years, however, one endangered, one vulnerable, and three near-threatened plant species occurred within the 2km Grid Square O12X. One vulnerable species occurred in within the 2km Grid Square O12Y (Table 5). The Floral Protection Order (FPO) Bryophytes database was also checked for rare and protected flora records within the vicinity of the Proposed Development. No rare and/or protected bryophyte records exist within the immediate vicinity of the Proposed Development.

TABLE 5. RECORDS OF RARE OR PROTECTED FLORA FOR THE SURROUNDING 2KM GRID SQUARES (O12X AND O12Y) ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Grid Square	Date of last record	Source	Designation
Good-King-Henry (*Chenopodium bonus-henricus*)	O12X	05/07/2012	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• IUCN Threatened Species: Vulnerable
Greater Knapweed (*Centaurea scabiosa*)	O12X	20/07/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• IUCN Threatened Species: Near threatened
Nettle-leaved Bellflower (*Campanula trachelium*)	O12X	20/07/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• IUCN Threatened Species: Endangered
Pale Flax (*Linum bienne*)	O12X	05/07/2012	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• IUCN Threatened Species: Near threatened
Six-stamened Waterwort (*Elatine hexandra*)	O12X	31/12/1999	BSBI tetrad data for Ireland	• IUCN Threatened Species: Near threatened
Yellow Archangel (*Lamiastrum galeobdolon*)	O12X	04/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• IUCN Threatened Species: Least concern
Cape Thread-moss (*Orthodontium lineare*)	O12X	29/04/1984	Bryophytes of Ireland	• IUCN Threatened Species: Least concern
Irish Whitebeam (*Sorbus hibernica*)	O12Y	31/12/1999	BSBI tetrad data for Ireland	• IUCN Threatened Species: Vulnerable

4.4.2 Invasive Species

There are records for 13 species of flora and five species of fauna considered to be invasive within the grid squares which encompass the Site of the Proposed Development. Details of these records are listed in Table 6.

TABLE 6. RECORDS OF INVASIVE SPECIES OF FLOWERING PLANT AND MAMMALS FOR THE SURROUNDING 2KM GRID SQUARES (O12X AND O12Y) ASSOCIATED WITH THE SITE FROM THE NBDC

Species	Grid square	Date of last record	Source	Designations
Flora				
American Skunk-cabbage (*Lysichiton americanus*)	O12X	23/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species • EU Regulation No. 1143/2014 • Regulation S.I. 477/2011 (Ireland)
Black Currant (*Ribes nigrum*)	O12Y	24/05/2015	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species
Water Fern (*Azolla filiculoides*)	O12Y	31/12/1992	National Invasive Species Database	• Medium Impact Invasive Species • Regulation S.I. 477/2011 (Ireland)
Butterfly-bush (*Buddleja davidii*)	O12X	25/03/2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species
Cherry Laurel (*Prunus laurocerasus*)	O12X	03/04/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• High Impact Invasive Species
Himalayan Honeysuckle (*Leycesteria formosa*)	O12X	30/05/2019	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species
Giant Hogweed (*Heracleum mantegazzianum*)	O12Y	04/06/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland)
Japanese Knotweed (*Reynoutria japonica*	O12X	18/06/2018	National Invasive Species Database	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland)
Common Rhododendron (*Rhododendron ponticum*)	O12X	07/06/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland)
Spanish Bluebell (*Hyacinthoides hispanica*)	O12X	02/05/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Regulation S.I. 477/2011 (Ireland)

Species	Grid square	Date of last record	Source	Designations
Sycamore (*Acer pseudoplatanus*)	O12X	14/05/2020	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species
Three-cornered Garlic (*Allium triquetrum*)	O12X	04/04/2021	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species • Regulation S.I. 477/2011 (Ireland)
Traveller's-joy (*Clematis vitalba*)	O12X	05/05/2016	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	• Medium Impact Invasive Species
Fauna				
Brown Rat (*Rattus norvegicus*)	O12X	10/10/2015	Atlas of Mammals in Ireland 2010-2015	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland)
Eastern Grey Squirrel (*Sciurus carolinensis*)	O12X	05/02/2023	Mammals of Ireland 2016-2025	• High Impact Invasive Species • EU Regulation No. 1143/2014 • Regulation S.I. 477/2011 (Ireland)
Fallow Deer (*Dama dama*)	O12X	26/06/2018	Mammals of Ireland 2016-2025	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland) • Protected Species: Wildlife Acts[2]
Sika Deer (*Cervus nippon*)	O12X	13/10/2018	Mammals of Ireland 2016-2025	• High Impact Invasive Species • Regulation S.I. 477/2011 (Ireland) • Protected Species: Wildlife Acts
European Rabbit (*Oryctolagus cuniculus*)	O12Y	27/08/2017	Mammals of Ireland 2016-2025	• Medium Impact Invasive Species

4.4.2.1 Field Study Results

The only invasive plant species present at the Site was Sycamore (*Acer pseudoplatanus*) which was noted growing on the western Site boundary. This plant was an immature shrub and was growing within the Flower Beds and Borders (BC4) habitat. No other invasive plant species for which records exist within the surrounding grid squares were noted at the Site. In addition, no of evidence invasive fauna were noted at the Site.

[2] Protected Species in this case refers to hunting and mistreatment regulations under the Wildlife Act.

4.4.3 Bats

4.4.3.1 Desk Study Results

A total of eight bat species have been recorded within the 10km grid square (O12) which encompasses the Site (Table 7).

TABLE 7. RECORDS OF BATS FOR THE SURROUNDING 10KM GRID SQUARE (O12) ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	Grid Square	Date of last record	Database	Designation
Brown Long-eared Bat *(Plecotus auritus)*	O12	08/06/2010	National Bat Database of Ireland	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts
Daubenton's Bat (*Myotis daubentonii*)	O12	05/09/2014	National Bat Database of Ireland	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts
Leisler's Bat (*Nyctalus leisleri*)	O12	31/10/2014	National Bat Database of Ireland	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts
Natterer's Bat (*Myotis nattereri*)	O12	04/08/2011	National Bat Database of Ireland	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts
Pipistrelle sp. (*Pipistrellus pipistrellus sensu lato*)	O12	20/09/2022	Community Foundation for Ireland Records	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts
Nathusius's Pipistrelle (*Pipistrellus nathusii*)	O12	04/08/2012	National Bat Database of Ireland	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts
Soprano Pipistrelle (*Pipistrellus pygmaeus*)	O12	20/09/2022	Community Foundation for Ireland Records	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts
Whiskered Bat (*Myotis mystacinus*)	O12	01/06/2004	National Bat Database of Ireland	• Protected Species: EU Habitats Directive Annex IV • Protected Species: Wildlife Acts

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

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

THE PROPOSED DEVELOPMENT SITE (

Figure 8) is located in an area with an overall Low-Medium (17.44) suitability for bats in general. The suitability index for specific bat species is presented in Table 8.

TABLE 8. LANDSCAPE SUITABILITY INDEX FOR INDIVIDUAL BAT SPECIES (SOURCE: NBDC). THOSE SPECIES THAT HAVE BEEN RECORDED IN THE NBDC DATABASE WITHIN THE O12X AND O12Y 2KM GRID SQUARES ARE HIGHLIGHTED IN GREEN. SUITABILITY LEVELS ARE COLOUR CODED FROM DARK RED (LOW) TO DARK GREEN (HIGH).

	Suitability Index (2km Grid Square)
Soprano pipistrelle *(Pipistrellus pygmaeus)*	30 (Medium - High)
Brown Longed-eared bat *(Plecotus auritus)*	23 (Medium)
Common pipistrelle *(Pipistrellus pipistrellus)*	32 (Medium-High)
Lesser horseshoe bat *(Rhinolophus hipposideros)*	0 (Low)
Leisler's bat *(Nyctalus leisleri)*	34 (Medium-High)
Whiskered bat *(Myotis mystacinus)*	14 (Low - Medium)
Daubenton's bat *(Myotis daubentonii)*	3 (Low)
Nathusius' pipistrelle (*Pipistrellus nathusii*)	10 (Low)
Natterer's bat *(Myotis nattereri)*	11 (Low)

4.4.3.2 Field Study Results

4.4.3.2.1 Preliminary Bat Roost Assessment

As there are no trees or buildings within the Site, there is no potential for roosting bats to present on the Site. In addition, none of the trees or buildings immediately adjacent to the Site are of value to roosting bats and were all classified as being of negligible bat roost potential.

4.4.3.2.2 Bat Habitat Suitability

The linear features within the vicinity of the Site, namely the treelines and hedgerows may provide 'moderate' suitability foraging and commuting habitat, due to a combination of the connectivity of these features to the wider landscape.

4.4.4 Birds

4.4.4.1 Desk Study Results

A total of 53 bird species have been recorded within the 2km grid squares O12X and O12Y. Of these, nine are amber listed birds and three are red listed birds as identified on the Birds of Conservational Concern in Ireland (BoCCI) (Gilbert et al. 2021). Details of the 12 no. amber and red listed species are detailed in Table 9. The remaining 41 no. species are all green listed.

TABLE 9. DETAILS OF AMBER AND RED LISTED BIRD SPECIES WITHIN THE 2KM GRID SQUARES (O12X AND O12Y)

Species	NBDC Grid Square	Date of last record	BoCCI Status (2021)
Barn Owl (*Tyto alba*)	O12X	30/11/2018	Red
House Martin (*Delichon urbicum*)	O12X	02/08/2015	Amber

Species	NBDC Grid Square	Date of last record	BoCCI Status (2021)
House Sparrow (*Passer domesticus*)	O12X O12Y	12/05/2016 11/02/2023	Amber
Red Kite (*Milvus milvus*)	O12X	03/01/2015	Amber
Brent Goose (*Branta bernicla*)	O12Y	29/12/2022	Amber
Common Redshank (*Tringa totanus*)	O12Y	29/12/2022	Red
Common Starling *(Sturnus vulgaris)*	O12Y	24/05/215	Amber
Common Swift (*Apus apus*)	O12Y	23/07/2014	Amber
Eurasian Oystercatcher (*Haematopus ostralegus*)	O12Y	29/12/2022	Amber
Great Black-backed Gull (*Larus marinus*)	O12Y	08/01/2011	Amber
Herring gull *(Larus argentatus)*	O12Y	08/01/2011	Red
Mew Gull (*Larus canus*)	O12Y	05/08/2009	Amber

4.4.4.2 Field Study Results

During the Site walkover on the 26th of April 2023, three species of birds were recorded (Table 10). Of these, one, namely, Herring Gull (*Larus argentatus*)—is red listed. The remaining two species are green listed (Gilbert et al. 2021).

TABLE 10. BIRD SPECIES RECORDED DURING WALKOVER SURVEY ON THE 26TH OF APRIL 2023.

Species	Activity Observed	BoCCI Status
Herring Gull (*Larus argentatus*)	Flyovers	Red
Robin (*Erithacus rubecula*)	Within adjacent hedgerows	Green
Rook (*Corvus frugilegus*)	Flyovers	Green

4.4.5 Mammals (excl. bats)

4.4.5.1 Desk Study Results

Records for terrestrial mammals were obtained from the NBDC online database. Table 11 lists these species, their date of last record and summarises their protected status/designation.

TABLE 11. RECORDS OF NATIVE TERRESTRIAL MAMMALS FOR THE SURROUNDING 2KM (O12X AND O12Y) GRID SQUARES ASSOCIATED WITH THE SITE FROM THE NBDC.

Species	NBDC Grid Square	Date of last record	Source	Designation
Eurasian Badger (*Meles meles*)	O12X	30/11/2022	Mammals of Ireland 2016-2025	• Protected Species: Wildlife Acts
Eurasian Pygmy Shrew (*Sorex minutus*)	O12X	02/05/2018	Mammals of Ireland 2016-2025	• Protected Species: Wildlife Acts
Eurasian Red Squirrel (*Sciurus vulgaris*)	O12X O12Y	30/04/2018 15/09/2018	Mammals of Ireland 2016-2025	• Protected Species: Wildlife Acts
European Otter (*Lutra lutra*)	O12X	04/12/2016	Mammals of Ireland 2016-2025	• Protected Species: EU Habitats Directive Annex II and Annex IV • Protected Species: Wildlife Acts
Pine Marten (*Martes martes*)	O12X O12Y	17/08/2017 16/09/2018	Mammals of Ireland 2016-2025	• Protected Species: EU Habitats Directive Annex V • Protected Species: Wildlife Acts
Wood Mouse (*Apodemus sylvaticus*)	O12X	30/11/2022	Mammals of Ireland 2016-2025	• Not legally protected
West European hedgehog (*Erinaceus europaeus*)	O12X O12Y	18/09/2022 14/05/2022	Hedgehogs of Ireland	• Protected Species: Wildlife Acts
Red fox (*Vulpes vulpes*)	O12X	30/11/2022	Mammals of Ireland 2016-2025	• Not legally protected

4.4.5.2 Field Study Results

No evidence of mammal activity (droppings, trails, burrows etc) were observed within the Site. As the Site is composed of heavily disturbed Amenity Grassland (GA2), which is regularly mown and used by local residents, it does not represent ecologically valuable habitat for local mammals in terms of foraging, resting places or cover.

4.4.6 Herpetofauna (Amphibians and Reptiles)

4.4.6.1 Desk Study

The Common Frog (*Rana temporaria)* has been previously recorded in the 2km grid squares (O12X and O12Y) encompassing the Site of the Proposed Development. The Smooth Newt (*Lissotriton vulgaris*) has also been previously recorded in one of the 2km grid squares (O12X)

encompassing the Site. No reptiles have been recorded in the 2km grid squares encompassing the Site of the Proposed Development.

4.4.6.2 Field Study

No evidence of amphibians was observed during the walkover of the Site on the 26th of April 2023. In addition, there are no suitable terrestrial cover habitats (i.e., hedgerows or tall grassland) or spawning habitats (lakes or ponds) within or immediately adjacent to the Site. No evidence of reptiles was observed during the walkover of the Site on the 26th of April 2023. In addition, there is no suitable hibernacula (log/brash piles, tree roots, stone walls) or basking opportunities for reptiles such as Common Lizard.

4.4.7 Fish

4.4.7.1 Desk Study

No fish species were recorded within either of the 2km grid squares encompassing the Site of the Proposed Development.

4.4.7.2 Field Study

There are no waterbodies within or immediately adjacent to the Site of the Proposed Development that could support notable fish species such as salmonids or lampreys. The Site is weakly hydrologically linked to the Slang stream via the public surface water network however due to the nature of this weak hydrologically connection the Proposed Development does not have the potential to impact fish species within this, or any other waterbody.

4.4.8 Invertebrates

4.4.8.1 Desk Study

There are no records of White-clawed Crayfish (*Austropotamobius pallipes*) or Freshwater Pearl Mussels (*Margaritifera margaritifera*) within the 2km grid squares encompassing the Site of the Proposed Development (O12X and O12Y).

4.4.8.2 Field Study

There are no freshwater habitats located within or immediately adjacent to the Site of the Proposed Development, and no suitable habitat to support invertebrates identified during the desk study occurs here, thus it is assumed they are not present at the Site.

4.4.9 Other Protected and/or Notable Species

No other protected or notable fauna were recorded in the historical (NBDC) 2km (O12X and O12Y) grid square for the Site or the surrounding area.

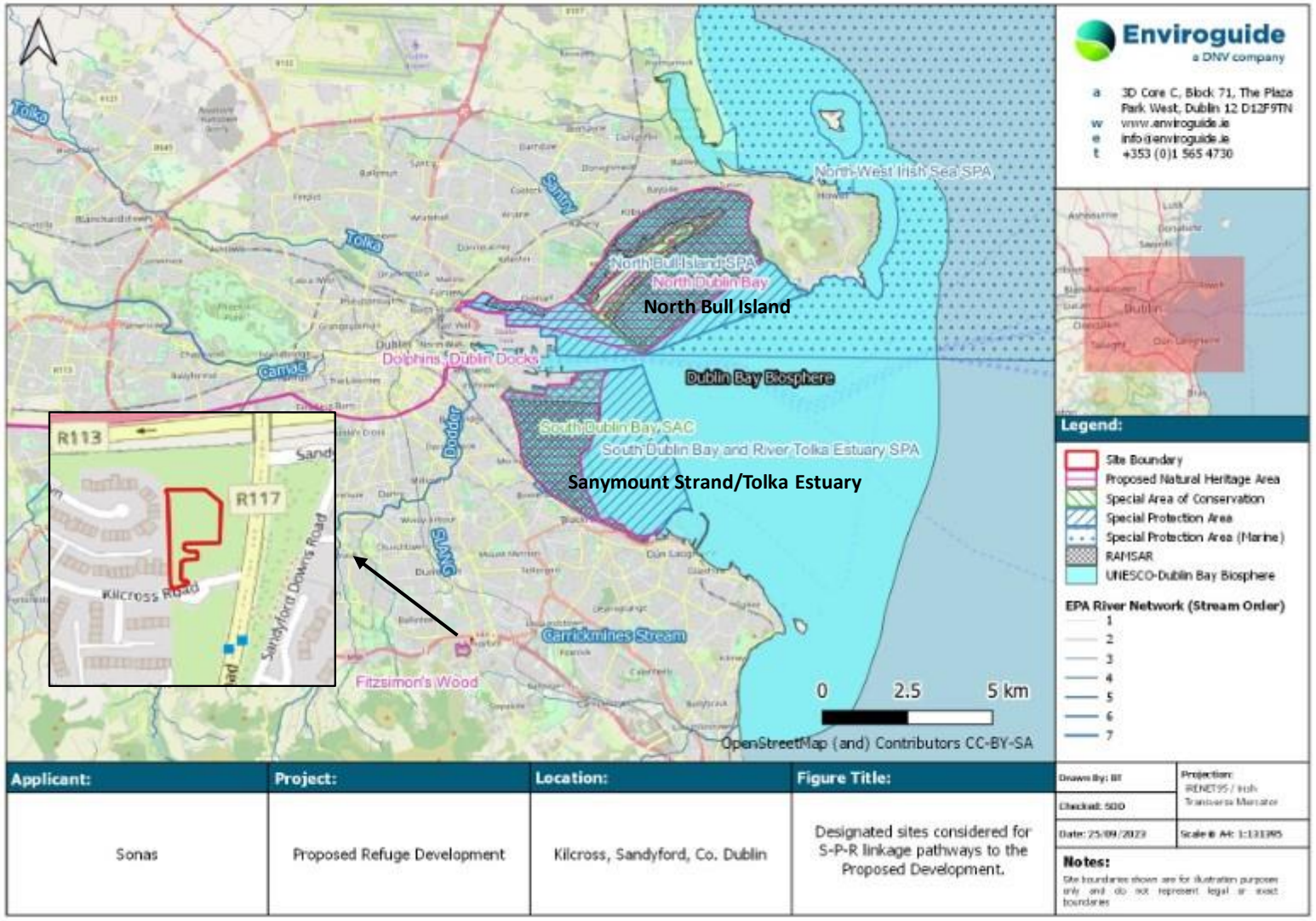

FIGURE 6. LOCATION OF DESIGNATED SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD IN RELATION TO THE PROPOSED DEVELOPMENT.

FIGURE 7. MAP OF HABITATS AND ECOLOGICAL CONSTRAINTS AT THE SITE OF THE PROPOSED DEVELOPMENT.

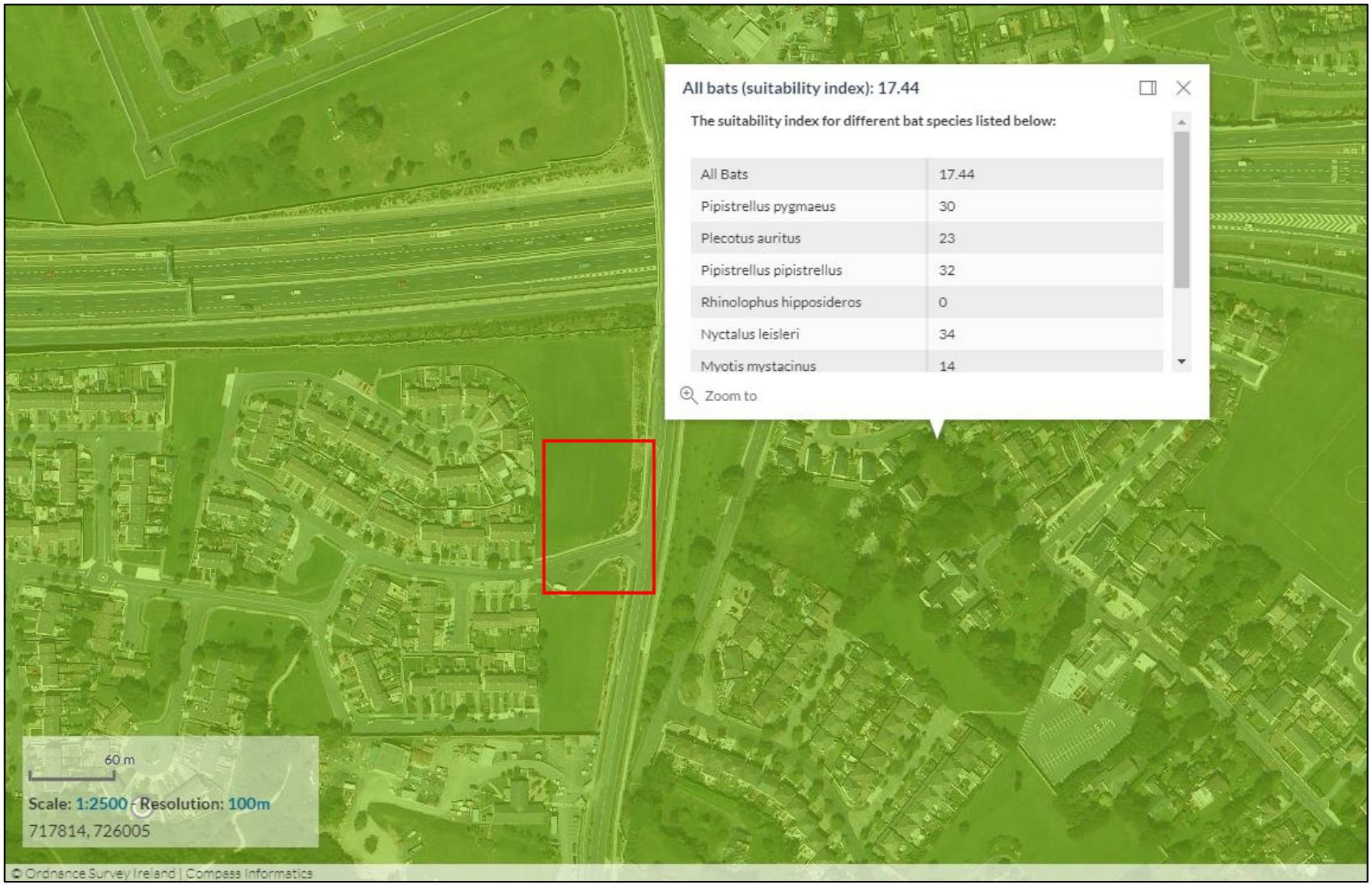

FIGURE 8. BAT LANDSCAPE SUITABILITY MODEL (ALL BATS) SURROUNDING THE PROPOSED DEVELOPMENT SITE (ADAPTED FROM NBDC). PROPOSED DEVELOPMENT SITE AREA IN RED

5 PRELIMINARY ECOLOGICAL APPRAISAL

5.1 Ecological Constraints

The ecological features recorded at the Site and likely ecological constraints identified are summarised below in Table 12.

TABLE 12. ECOLOGICAL CONSTRAINTS IDENTIFIED FOR THE PROPOSED DEVELOPMENT. POTENTIAL ECOLOGICAL CONSTRAINTS ARE HIGHLIGHTED IN GREEN.

Ecological Feature	Likely Ecological Constraint	Rationale
DESIGNATED SITES		
European sites	No	No significant S-P-R linkages of note to any European sites within the vicinity of the Proposed Development.
Nationally designated sites (pNHAs, NHAs)	Yes	Potential air pathways to **Fitzsimon's Wood pNHA (001753),** located 150m southwest of the Proposed Development, due to increased noise emissions during the Construction Phase which may impact sensitive species of mammals and birds within this site. No other nationally designated sites share S-P-R linkages of note with the Proposed Development
International sites (Ramsar, UNESCO)	No	No significant S-P-R linkages of note to any international sites within the vicinity of the Proposed Development.
HABITATS		
Amenity Grassland (GA2)	No	Both habitats are highly managed and are not considered to be of significant value to local fauna in terms of cover, foraging or nesting habitat.
Flower Beds and Borders (BC4)		
SPECIES AND SPECIES GROUPS		
Invasive Species	Yes	A single immature Sycamore shrub is present within the Flower Beds and Borders habitat towards the west of the Site. Therefore, there is a potential risk for the spread of this species during Site clearance works. Appropriate preventative measures must be incorporated.
Flora	No	No rare of protected flora are present within the Site and no records for their presence exist within the wider area.
Bats	No	The Site does not provide roosting, nesting, cover, spawning or hibernacula habitat for bats, birds, mammals, amphibians or reptiles, although records or some of these species grounds do existing within the wider area.
Birds		
Mammals (excl. bats)		
Amphibians		
Reptiles		
Fish		No suitable waterbodies within or immediately adjacent to the Site. Operational Phase surface waters do discharge to the Slang stream and River Dodder however white clawed crayfish and freshwater pearl mussel are not present within either of these waterbodies (Triturus, 2020 and NBDC, 2023).
Invertebrates (White-clawed Crayfish and Freshwater Pearl Mussel etc.)		

5.2 Recommendations

For those ecological features that were identified as constraints, recommendations of further surveys, avoidance of potential impacts, and likely appropriate mitigation measures are identified in Table 13 below. Details of the identified measures are given in the sections below.

TABLE 13. RECOMMENDATIONS FOR IDENTIFIED ECOLOGICAL CONSTRAINTS.

Ecological Constraint	Further Survey Recommendations	Mitigation Recommendations	Risks
DESIGNATED SITES			
European	None	None	None
National		Noise and reduction measures	Disturbance and displacement of species within this Site may lead to a notable change in the baseline conditions of the Site in terms of biodiversity.
International		None	None
HABITATS			
Amenity Grassland (GA2)	None	None	None
Flower Beds and Borders (BC4)			
SPECIES AND SPECIES GROUPS			
Invasive Species	None	Manual removal of Sycamore shrub to the west of the Site and disposal of removed material in licensed waste facility.	Spread of invasive species
Flora	None	None	None
Bats	None	None	None
Birds	None	None	None
Mammals (excl. bats)	None	None	None
Amphibians	None	None	None
Reptiles	None	None	None
Fish	None	None	None

Invertebrates (White-clawed Crayfish and Freshwater Pearl Mussel etc.)	None	None	None

5.2.1 Recommandation 1: Noise Reduction Measures

Short-term increases in disturbance levels as a direct result of human activity and through increased generation of noise during the Construction Phase of the Proposed Development can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.

Noise generated during the Construction Phase of the Proposed Development could cause temporary disturbance to a number of faunal species in the vicinity of the Site Particularly those which may utilise Fitzsimmons Wood pNHA (001753) approximately 150m to the southwest of the Site. In order to control likely noise impacts caused by the proposed external operations, mitigation measures as set out in BS 5228-1: A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise can be adopted:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by Site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use of alternative reversing alarm systems on plant machinery such as white noise alarms.
- Limiting the hours during which Site activities likely to create high levels of noise are permitted.
- Appointing a Site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

These measures will ensure that any noise disturbance to birds or any other fauna species in the vicinity of the Site or Fitzsimmons Woods pNHA (001753) will be reduced to a minimum.

5.2.2 Recommendation 2: Removal of Sycamore.

Due to the presence of a single Sycamore shrub on Site, manual removal of this plant is recommended (i.e., hand pulling and digging up, the roots must be completely removed). All waste material should be disposed of in licences facilities which accept invasive plant material.

5.2.3 Biodiversity Enhancements

To enhance the value of the Site for biodiversity is recommend that habitat features such as bird boxes and bat boxes be installed on site. Its is recommend that both open front and cavity nest boxes be installed to provide nesting habitat for a range of bird species. The number of bird and bat boxes and their locations should be decided by a suitably qualified ecologists to ensure maximum value to birds and bats. In addition, opportunities for native wildflower planting to be incorporated into the Site landscaping should be explored to provide food sources for pollinators in the vicinity.

6 CONCLUSION

No protected / notable habitats were identified on Site. No potential habitat for bats, birds, mammals, amphibians, reptiles or fish were identified during the Site survey in April 2023.

Based on the findings of this PEA, no additional targeted surveys are recommended for any of the above faunal groups and impacts will occur to these protected species as a result of the Proposed Development.

However, due to the presence of a single Sycamore shrub to the west of the Site, it is recommended that the manual removal and disposal of this plant take place to prevent the spread of this species during the Construction Phase. In addition, due to the proximity of the Site to Fitzsimmons Woods pNHA (001753), a suite of noise reduction measures are recommended to reduce and/or eliminate potential disturbance to sensitive species (mammals and birds) which utilise this woodland.

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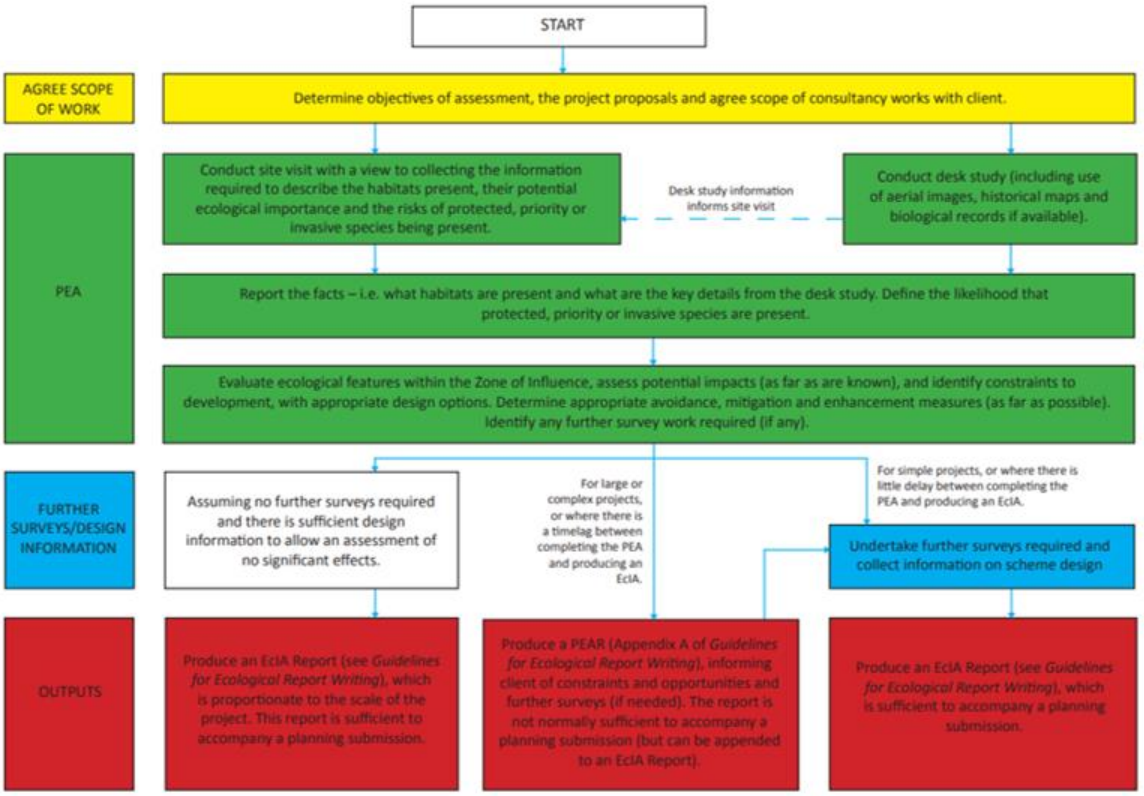
APPENDIX I – PRELIMINARY ECOLOGICAL APPRAISAL FLOW CHART (CIEEM, 2017)



APPENDIX II – 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 throughout 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 2017-2021

The National Biodiversity Plan (NBAP) 2017-2021, the third 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 to achieve Ireland's Vision for Biodiversity. The NBAP provides a framework to track and assess progress towards Ireland's Vision for Biodiversity over a five-year timeframe from 2017 to 2021. To achieve the Vision, seven strategic objectives were identified in the second NBAP "Actions for Biodiversity 2011-2016". The continued implementation of the objectives from the second NBAP has been retained for the new NBAP of 2017-2021. 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 targets (Table A1).

TABLE A1: OBJECTIVES AND TARGETS OF THE NATIONAL BIODIVERSITY ACTION PLAN 2017-2021.

Objective	Target
1: Mainstream biodiversity into decision-making across all sectors	1.1: Shared responsibility for the conservation of biodiversity and the sustainable use of its components is fully recognised, and acted upon, by all sectors.
	1.2: Strengthened legislation in support of tackling biodiversity loss in Ireland.
2: Strengthen the knowledge base for conservation, management and sustainable use of biodiversity	2.1: Knowledge of biodiversity and ecosystem services has substantially advanced our ability to ensure conservation, effective management, and sustainable use by 2021.
3: Increase awareness and appreciation of biodiversity and ecosystems services	3.1: Enhanced appreciation of the value of biodiversity and ecosystem services amongst policy makers, businesses, stakeholders, local communities, and the general public.
4: Conserve and restore biodiversity and ecosystem services in the wider countryside	4.1: Optimised opportunities under agriculture and rural development, forestry and other relevant policies to benefit biodiversity.
	4.2: Principal pollutant pressures on terrestrial and freshwater biodiversity substantially reduced by 2020.
	4.3: Optimised benefits for biodiversity in Flood Risk Management Planning and drainage schemes.
	4.4: Harmful invasive alien species are controlled and there is reduced risk of introduction and/or spread of new species

	4.5: Improved enforcement of wildlife law
5: Conserve and restore biodiversity and ecosystem services in the marine environment	5.1: Progress made towards good ecological and environmental status of marine waters over the lifetime of this Plan.
	5.2. Fish stock levels maintained or restored to levels that can produce maximum sustainable yield, where possible, no later than 2020.
6: Expand and improve management of protected areas and species	6.1: Natura 2000 network designated and under effective conservation management by 2020.
	6.2: Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020.
	6.3: No protected species in worsening status by 2020; majority of species in, or moving towards, favourable status by 2021.
7: Strengthen international governance for biodiversity and ecosystem services	7.1: Strengthened support for biodiversity and ecosystem services in external assistance.
	7.2: Enhanced contribution to international governance for biodiversity and ecosystem services.
	7.3: Enhanced cooperation with Northern Ireland on common issues.
	7.4. Reduction in the impact of Irish trade on global biodiversity and ecosystem services.

APPENDIX III – SITE PHOTOGRAPHS

	
Photograph 1. Amenity Grassland	**Photograph 2. Flower beds and Borders**

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