8 BIODIVERSITY

8.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) identifies, describes and presents an assessment of the likely significant effects of the proposed development on biodiversity. The assessment examines the potential impacts during the construction, operational and decommissioning phases of the proposed development as outlined in **Chapter 5: Description of Development**.

This chapter was carried out in compliance with the 2014 EIA Directive, the Planning and Development Act 2000 as amended and the European Commission's guidance on the preparation of the EIAR.

8.2 Methodology

The surveys and impact assessment have been carried out in accordance with the following guidelines:

- EPA 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (EPA, 2022a);
- EPA 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (EPA, 2003) (and revised draft advice notes 2015);
- Chartered Institute of Ecology and Environmental Management 'Guidelines for Ecological Impact Assessment in the UK and Ireland –Terrestrial, Freshwater, Coastal and Marine' (CIEEM, 2018);
- Best Practice Guidance for Habitat Survey and Mapping (Smith *et al*., 2011);
- A Guide to Habitats in Ireland (Fossitt, 2000);
- TII 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' (NRA, 2009a);
- TII 'Guidelines for the Assessment of Ecological Impacts of National Road Schemes' (Rev. 2) (NRA, 2009b);
- Bat Conservation Trust 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (3rd ed.) (Collins, 2016);
- Bat Surveys: Good Practice Guidelines (2nd ed.) (Hundt, 2012);
- Bat Mitigation Guidelines for Ireland (Kelleher & Marnell, 2006);
- TII's Environmental Planning and Construction Guidelines Series (National Roads Authority (2005 – 2011); and
- Inland Fisheries Ireland (IFI) 'Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters' (IFI, 2016).

The assessment was carried out in two stages, initially through a desktop study, followed by field survey work in order to identify, describe and map areas of known or potential biodiversity value.

8.2.1 Relevant Legislation, Policy and Guidelines

The assessment of the likely significant effects of the proposed development on ecological features has taken account of the policy documents and legislation listed in this section, where relevant.

8.2.1.1 International Legislation

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora; hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network was established and special areas of conservation (SACs) are designated

for the protection of natural habitat types listed in Annex I and habitats of the species listed in Annex II of that Directive.

Directive 2009/147/EEC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas are designated for the protection of endangered species of wild birds listed in Annex I of that Directive.

8.2.1.2 National Legislation

The Wildlife Acts 1976 to 2020; hereafter collectively referred to as the 'Wildlife Acts', are the principal pieces of legislation at national level for the protection of wildlife and for the control of activities that may harm wildlife. All bird species, 22 other animal species or groups of species, and 86 species of flora are protected under this legislation.

The Planning and Development Acts 2000 to 2021 are the basis for Irish planning. Under the legislation, development plans (usually implemented at local authority level) must include mandatory objectives for the conservation of natural heritage and for the conservation of European Sites. It also sets out the requirements in relation to environmental assessment with respect to planning matters, including transposition of the Habitats and Birds Directive into Irish law.

European Communities (EC) (Birds and Natural Habitats) Regulations 2011 to 2015; hereafter the 'Birds and Habitats Regulations', transposes the Habitats and Birds Directives into Irish law. It also contains regulations (49 and 50) that deal with invasive species (those included within the Third Schedule of the Regulations).

The Flora (Protection) Order, 2015. This lists species of plant protected under Section 21 of the Wildlife Acts.

8.2.1.3 National Plans and Policies

The following national plans and policies are relevant to the proposed development:

- The National Biodiversity Action Plan 2017-2021 is a framework for the conservation and protection of biodiversity in Ireland. The main objective of the plan is to conserve and restore biodiversity and ecosystem services. The importance of conservation, the management of protected areas and species and the sustainable use of biodiversity has been identified as an action under several objectives in the National Biodiversity Action Plan. The objectives recognise the shared responsibility for the conservation of biodiversity and the sustainable use of its components, by all sectors.
- The All Ireland Pollinator Plan 2021-2025 (NBDC, 2021) is a five-year plan which sets out to help restore declining Irish pollinator populations, the plan will work to provide a landscape where pollinators can flourish. The plan has six main objectives to help conserve and improve pollinator populations in Ireland. Objective 2 of the plan addresses making public land pollinator friendly.
- The Draft Fingal Biodiversity Action Plan 2022 – 2030 (Fingal County Council, 2022) puts forward actions to reverse the decline in biodiversity. This Action Plan challenges everybody; planners, architects, landscape architects, engineers, politicians, developers, business owners and local communities, to get involved in protecting and restoring nature in whatever way possible.
- The Fingal Development Plan 2017-2023 (Fingal County Council, 2017) seeks to develop and improve, in a sustainable manner, the social, economic, environmental and cultural assets of the County. The main aims of the plan include supporting the sustainable long-term development of Fingal, to provide for the future wellbeing of the residents and to facilitate and encourage innovation in order to drive sustainable development, protecting against potential negative impacts.

8.2.2 Consultation

The following organisations with interest in Irish biodiversity were consulted in relation to this assessment:

- An Bord Pleanála;
- An Taisce;
- Bat Conservation Ireland (BCI);
- BirdWatch Ireland (BWI);
- Department of Environment Climate and Communications;
- Department of Housing, Local Government and Heritage (Development Applications Unit (DAU));
- Fingal County Council (Roads, Drainage, Environment Depts);
- Geological Survey of Ireland (GSI);
- Heritage Council;
- Inland Fisheries Ireland (IFI);
- Irish Environmental Network;
- Irish Landscape Institute;
- National Biodiversity Data Centre (NBDC);
- Office of Public Works (OPW);
- Environmental Protection Agency (EPA); and
- World Wildlife Fund (WWF).

Consultation responses can be found in **Appendix B** of **EIAR Volume III**.

8.2.3 Zone of Influence

The Zone of Influence (ZoI) for a project (or 'spatial extent of the impact' as described in Annex III (3) of the EIA Directive) is the area over which habitats, species, and/or ecosystems (i.e. ecological features) may be subject to significant impacts as a result of the proposed development and associated activities.

The ZoI is likely to extend beyond the boundary of a project, for example where there are hydrological links extending beyond the site boundaries. It will also vary for different ecological features depending on their sensitivity to an environmental change. It is therefore appropriate to identify different ZoIs for different features. The features affected could include habitats, species, and the processes on which they depend. ZoIs are specified for different ecological features, and types of potential impact.

It is also important to acknowledge, as per EPA guidance (EPA, 2022a) '*that the absence of a designation or documented feature does not mean that no such feature exists within the site*'. As such, ZoI have been identified for all features potentially occurring within the project site, in addition to any known to occur. Also as recommended by the Chartered Institute of Ecology and Environmental Management (CIEEM) (2018), professionally accredited or published studies have also been used to determine ZoI for this proposed development.

Through the incorporation of relevant ZoIs for the proposed development, the biodiversity study area extends outside of the footprint of the proposed development. The relevant ZoI for each of the main ecological features relevant to this assessment is listed in **Table 8-1**.

Table 8-1 Study Area and Zone of Influence for Different Ecological Features.

Ecological Features	Study Area for Desk Study	Zone of Influence Identified
Sites designated for nature conservation	Catchment Management Unit	Adopting a precautionary approach, the distance over which surface water discharges could have a significant impact on receiving watercourses is considered to extend downstream of the proposed development site to the Irish Sea.
Otter	5km	Up to 150m along suitable watercourses
Badger	5km	Up to 150m from the redline boundary of the proposed development
Bats	5km	Redline boundary of the proposed development and adjoining habitats
Habitats, rare, threatened and protected flora, and invasive alien plant species.	5km	Redline boundary of the proposed development and adjoining habitats
Breeding Birds	5km	Considered to extend no more than 100m from the proposed development since there is a limited construction phase proposed.

8.2.4 Desk Study

The National Biodiversity Data Centres (NBDC) online database was searched for records of invasive species, protected flora (the Flora Protection Order 2015), protected fauna (under the EU Habitats Directive 92/43/EEC), Birds Directive (2009/147/EC) and Wildlife Acts (1976 as amended) within 2x2km Grid Squares. The area covered by the mentioned Grid Squares is considered to be adequate to account for the species affected by the proposed operation.

In addition, the following desktop data sources have been referenced:

- EPA Unified GIS Application Guide (EPA, 2022b);
- NPWS online maps and data, site synopsis and conservation objectives (NPWS, 2022a);
- NBDC online maps and data (NBDC, 2022a);
- Department of Housing, Planning and Local Government – River Basin Management Plan 2018-2021 (DHPLG, 2018);
- Geological Survey of Ireland online mapping (GSI, 2022a);
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2013); and
- OSI Map Viewer (OSI, 2022).

Furthermore, a detailed peregrine falcon *Falco peregrinus* management plan '*Response to Request for Further Information in Relation to Peregrine Falcon*' (RPS, 2019) was made upon a Request for Further Information that was supplied as part of the previous successful application for planning consent (Reg. Ref. F19A/0077) and was reviewed as part of this survey.

8.2.5 Field Study

8.2.5.1 Guidance

The biodiversity chapter has followed the following guidance documents:

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1 (CIEEM, 2018); and
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes, Revision 2 (NRA, 2009).

For the purposes of this impact assessment process on terrestrial biodiversity and ornithology, the CIEEM (2018) guidelines have been used for the basis of the assessment. The process takes cognisance of the EPA (2022) guidelines and incorporates NRA (2009) guidelines for the ecological valuation and geographic context.

8.2.5.2 Site Visit

A walkover ecological survey was undertaken on 23rd August 2022. This survey updated previous habitat mapping completed on site (see **Section 8.2.5.3**) as part of the 2019 planning application for extension of duration and relocation of primary site entrance and associated infrastructure (Reg. Ref. F19A/0077). Invasive species (see **Section 8.2.5.3**) and mammal signs were also recorded (see **Section 8.2.5.4**). Birds were recorded on an *ad hoc* basis.

The August 2022 site walkover additionally assessed whether there have been significant changes to the habitats present (and/or the ecological conditions/functions/ecosystem functioning upon which they are dependent) since the surveys were undertaken in October 2018, May/June 2019, April/May 2020, for the previous application (Reg. Ref. F19A/0077), including through changes to site management (CIEEM, 2019).

8.2.5.2.1 Habitats and Flora Survey

Habitats on site were classified using *A Guide to Habitats in Ireland* (Fossitt, 2000) and mapped in accordance with the *Best Practice Guidance for Habitat Survey and Mapping* (Smith *et al*., 2011). The classification is the standard scheme for identifying, describing and classifying habitats in Ireland. The hierarchical classification operates at three levels, using codes to differentiate habitats based on the plant species present. Species recorded in this report are given both their Latin and common names, following the nomenclature given in the *New flora of the British Isles* (Stace, 2010).

Invasive Alien Plant species including those listed on Schedule 3 of the Birds and Natural Habitats Regulations 2011 (as amended) were also searched for during site visits and findings are addressed in this chapter.

8.2.5.2.2 Protected Fauna Survey

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

8.2.5.3 Study Area Description

The ‘study area’ referred throughout this chapter extends to the boundaries of the site as shown in **Figure 8-1**. Occasionally, areas beyond that boundary that have potential to support ecological features of conservation interest were also considered in terms of connectivity pathways.

8.2.5.4 Surveys Scope Out

Given the nature of the study area management activities, the requirement to assess the following ecological features has been scoped out:

- **Breeding bird surveys**: A change in waste accepted on site, and subsequently buried underground, and an expansion of waste treatment activities onsite will not alter disturbance levels to breeding birds and are not going to result in any breeding habitat loss;
- **Peregrine surveys**: The results of the peregrine falcon monitoring program have shown the previously nesting pair have left the site (no birds observed in 2022) and as such no peregrine specific surveys (other than the 2022 routine monitoring survey) were undertaken;
- **Winter bird surveys**: Habitats found within the study area are not considered suitable to support any significant wintering bird populations due to their distance from any designated, coastal or wetland bird habitats, and the absence of potential winter roosting habitats (e.g. reed beds, moorland);

- **Bat activity surveys**: A change in waste accepted on site, and subsequently buried underground, and an expansion of waste treatment activities onsite are not going to alter disturbance levels to foraging/commuting bats and given the lack of roosting features within the site, will not result is any impacts on roosting bats;
- **Aquatic surveys**: The northern boundary of the study area is drained by the Ballough Stream, a first order stream (Strahler) at this location. It has been shown elsewhere (e.g. Callanan *et al*., 2014; Moldenke & Linden, 2007; Monaghan *et al*., 2005) that, even though headwater streams are important for maintaining good quality water status, invertebrate assemblages from paired first order streams share a low range of species. Furthermore, at the time of the ecological survey, the Ballough Stream had stagnant water or was dry, not allowing for a Q-value survey;
- **Invertebrate survey (terrestrial)**: The habitats within the study area are considered unlikely to support protected invertebrate species such as butterflies (e.g. Marsh fritillary *Euphydryas aurinia*); and
- **Reptile and surveys**: Although the Hollywood landfill provides habitats that could potentially be used by smooth newt, common lizard and frog, the NBDC database does not have records of their presence. Thus, the potential low number of reptiles in the area is unlikely to be picked up in a survey and a reptile survey was not undertaken.

8.2.6 Assessment Methodology

The assessment on terrestrial biodiversity and ornithology has followed the methodology set out in the following guidance documents, which are specific to biodiversity:

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1- Updated September 2019 (CIEEM, 2018); and
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes, Revision 2 (NRA, 2009).

For the purposes of this impact assessment process on terrestrial biodiversity and ornithology, the CIEEM (2018) guidelines have been used for the basis of the assessment. The process takes cognisance of the EPA (2017) draft guidelines and incorporates NRA (2009) guidelines for the ecological valuation and geographic context.

8.2.6.1 Important Ecological Features (IEF)

Having defined the relevant baseline conditions within the Terrestrial Biodiversity and Ornithology Study Area, ecological features therein are valued, in advance of commencing the assessment of potential impacts.

The methodology used to value ecological features is in accordance with the geographic frames of reference outlined by the NRA (2009) (refer to **Volume III, Appendix F**: Biodiversity Assessment Criteria).

It is possible that features which are in and of themselves of negligible ecological value (e.g. improved grassland of negligible floristic value) may be of high value in the resource they provide to other features (e.g. a significant resource of invertebrates breeding in the grasslands, which are an important food for local badgers). In some cases, therefore, habitats and species of negligible value may nevertheless be considered of greater importance due to their value to protected species.

Important Ecological Features, as termed in CIEEM (2018), are defined here as those ecological features which are valued at Local Importance (Higher Value) or above (NRA, 2009; refer to **Volume III, Appendix F**). Ecological features below this value have been scoped out of further ecological impact assessment as any potential impact is deemed to be of Local Importance (Lower Value) or negligible.

8.2.6.2 Ecological Impact Assessment Process

The ecological impact assessment process, as described by CIEEM (2018), involved:

- Identifying and characterising impacts and their effects;

- Incorporating measures to avoid and mitigate negative impacts and effects;
- Assessing the significance of any residual effects after mitigation;
- Identifying appropriate compensation measures to offset significant residual effects; and
- Identifying opportunities for ecological enhancement.

The assessment comprises the review of the baseline data gathered and the identification of IEFs with features valued on the basis of available information/guidance and using professional judgement.

8.2.6.3 Characterising and Determining Significance

Impact on IEFs are characterised with the following qualitative terms, as relevant (CIEEM, 2018):

- **Positive or Negative**. Positive and negative impacts and effects should be determined according to whether the change is in accordance with nature conservation objectives and policy:
    - Positive – a change that improves the quality of the environment (e.g. by increasing species diversity, extending habitat or improving water quality). This may also include halting or slowing an existing decline in the quality of the environment; and
    - Negative – a change which reduces the quality of the environment (e.g. destruction of habitat, removal of foraging habitat, habitat fragmentation, pollution).
- **Extent**. The extent is the spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions (e.g. noise transmission under water).
- **Magnitude**. Magnitude refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population).
- **Duration**. Duration should be defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- **Frequency and Timing**. The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons (e.g. bird nesting season).
- **Reversibility**. An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

There may be any number of possible impacts on IEFs arising from a development. However, it is only necessary to describe in detail the impacts that are likely to be significant. Impacts that are either unlikely to occur, or if they did occur are unlikely to be significant, are scoped out. If in doubt, the precautionary principle is applied and the potential impact will be assessed.

When assessing the significance of an effect and for the purposes of this assessment, the significance of an effect is simply any effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to permit a project. For the purposes of ecological impact assessment, a ‘significant effect’ is defined as an effect that either supports or undermines the biodiversity conservation for the IEF (CIEEM, 2018). These significant effects are qualified with reference to an appropriate geographical scale.

The approach to determining significance does not utilise a matrix of degrees of impact significance (such as EPA (2017)), but instead follows the industry standard for ecological impact significance (CIEEM, 2018) where effects are determined to be ‘significant’ or ‘not significant’.

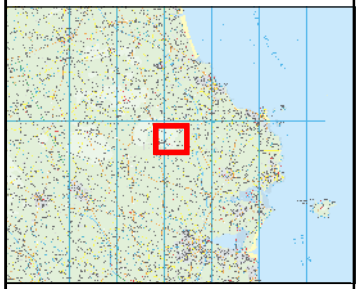
8.2.7 Data Limitations and Difficulties Encountered

8.2.7.1 Desk Study

Sources of desk study information are neither exhaustive nor necessarily easily available, and an extensive effort was made to obtain ecological data in the public domain to inform the description of the baseline environment and its assessment. Additional information, not in the public domain, is likely to exist, but could not be obtained or assessed here. This limitation is acknowledged and incorporated into the assessment and is deemed to not affect the certainty or predictability of the assessment.

8.2.7.2 Field Study

The receiving environment (i.e. baseline condition) may naturally vary through seasons and between years (NRA, 2008). All reasonable effort has been made to address this (e.g. combined use of desk and field survey data), and the limitation is acknowledged. Once incorporated into the assessment the limitation is deemed to not affect the certainty or predictability of the assessment.



Client

Integrated Materials Solutions (IMS) Limited Partnership

IMS Hollywood 2022 Update

Title

Figure 8-1: Biodiversity Study Area

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Issue Details

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8.3 Baseline Conditions

8.3.1 Site Overview

The site is located in Hollywood Great, Nag's Head, Naul, Co. Dublin (**Figure 8-1**). The study area was a former quarry which operated until 2007 and is now a licensed landfill site. The north of the site is bounded by the Ballough Stream which ultimately discharges at the Rogerstown Estuary circa 9km southeast of the study area.

8.3.2 Aquatic Environment

8.3.2.1 Surface Water

The proposed development site is located within the Nanny-Delvin Water Framework Directive (WFD) Catchment, adjacent to the Ballough Stream, which flows along the northern boundary of the site. The Ballough is a small tributary stream that rises at a small upstream distance of the site and enters the Rogerstown Estuary circa 9km downstream. The stream does not belong to the WFD waterbody monitoring network but flows into the EPA registered waterbody Ballough Stream_020, classed as *Moderate* WFD status (EPA, 2022c). The Knightstown branch stream flows approximately 500m south of the site and adjoins the Ballough Stream_10 approximately 2.5km southeast the site, classed as *Poor* WFD status (EPA, 2022c).

Further information about the surface water catchment is provided in **Section 10.4.4.**

8.3.2.2 Groundwater

The study area lies on two groundwater bodies: Lusk-Bog of the Ring (IE_EA_G_014) and Hynestown (IE_EA_G_033). Most of the Lusk-Bog of the Ring groundwater body lies within a locally important aquifer, generally productive but there are smaller areas of karstified aquifer. The groundwater flow depends on the local karstified nature of the aquifer, since water will move along fractures and faults which can draw water very deep underground. However, the flow will be shallower and more diffuse in the larger groundwater body area, where limestone is not as karstified (GSI, 2022b).

The northern part of the study area lies on the Hynestown groundwater body, within a locally important aquifer, moderately productive in local zones. The groundwater flow is expected to occur at shallow depths, usually following the topographic gradient, converging into rivers and streams (GSI, 2022c).

Refer to **Chapter 9** for further details on the baseline hydrogeological regime.

8.3.3 Desk Study Results

8.3.3.1 European Sites

There are three Special Areas of Conservation (SACs) and five Special Protection Areas (SPAs), collectively referred to as European sites, located within the Zone of Influence (ZoI) of the proposed development. The ZoI constitutes a 15km Buffer of the proposed development site and these European Sites are shown in **Figure 8-2** and listed in **Table 8-2**.

SACs are sites of international importance due to the presence of Annex I habitats and/or Annex II species listed under the EU Habitats Directive (92/43/EEC). SPAs are designated for the protection of bird species listed on Annex I of the Bird Directive (2009/147/EC), regularly occurring populations of migratory species and areas of international importance for migratory birds.

The European sites correspond to those that were subject to Screening for Appropriate Assessment (issued under separate cover as part of the planning and licensing submissions)**.** The assessment considered the European sites within the ZoI of the proposed development and/or with hydrological connectivity to the proposed development sites and concluded that there are likely significant effects to European sites as a result of the proposed development.

8.3.3.2 Nationally Designated Sites

Natural Heritage Areas (NHAs) are sites deemed to be of national ecological importance and are afforded protection under the Wildlife (Amendment) Act 2000. Many NHA boundaries overlap with European sites. The proposed NHAs (pNHAs) have not been statutorily proposed nor designated under the Wildlife Act 1976 to 2021. However, they are afforded some protection under planning legislation and objectives are included in the Fingal County Development Plan 2017-2023.

The Fingal County Council Development Plan 2017-2023 (Fingal County Council, 2017) sets out policies and objectives to develop and improve the social, economic, environmental and cultural assets of the county. Regarding biodiversity and geological heritage, it commits the county to the promotion of a sustainable management of the landscape and coast, defining specific objectives for the protection of pNHAs:

- **Objective NH16** – Protect the ecological integrity of proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, and Habitat Directive Annex I sites.
- **Objective NH17** - Ensure that development does not have a significant adverse impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Habitat Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats.

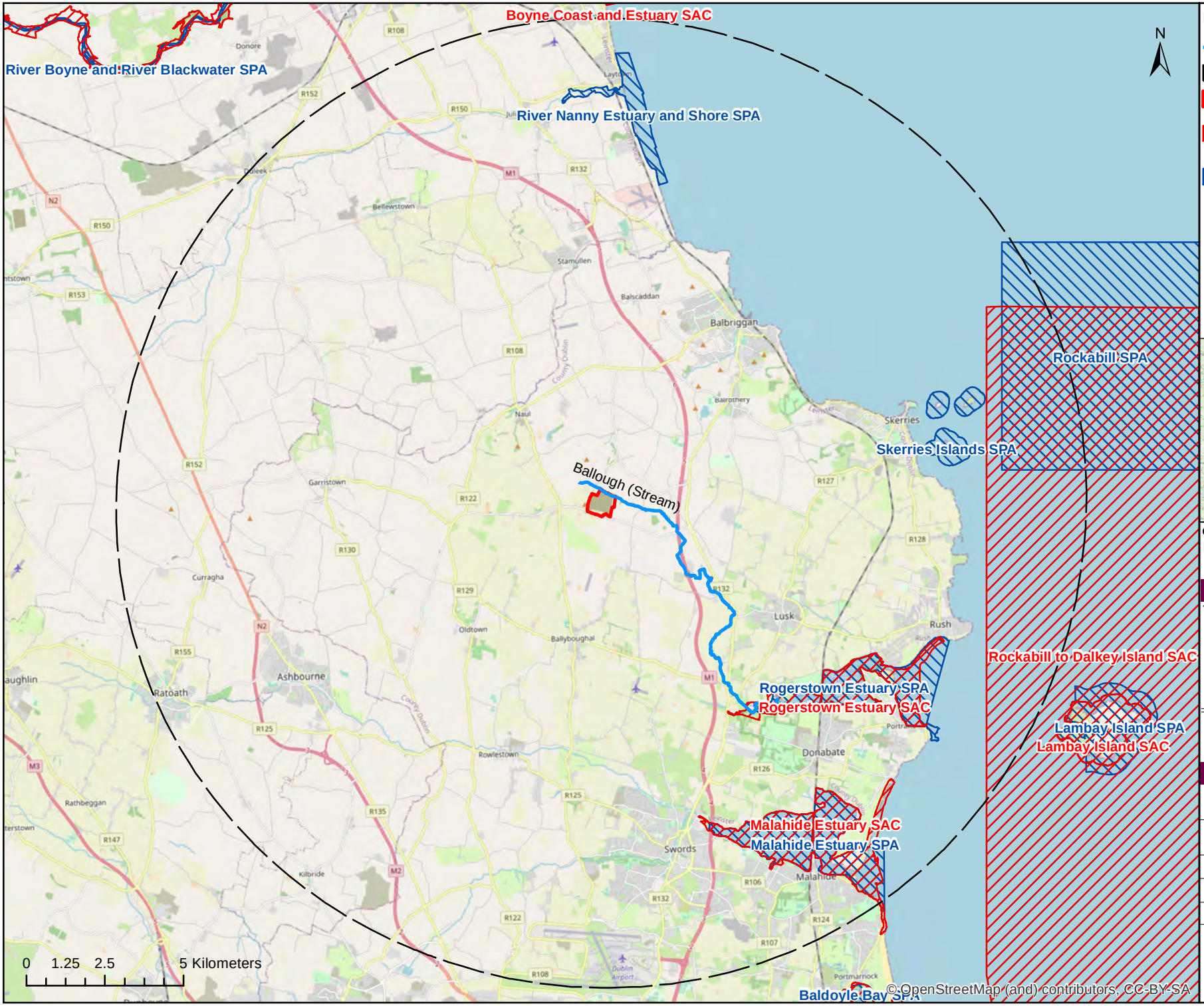
There is one NHA and nine proposed pNHAs located within 15km of the study area and these are listed in **Table 8-3** and illustrated in **Figure 8-3**.

8.3.3.3 Ramsar Sites

The *Convention on Wetlands* is an intergovernmental treaty adopted in February 1971 in the Iranian city of Ramsar. The official name of the treaty *The Convention on Wetlands of International Importance especially as Waterfowl Habitats* reflects the emphasis on the protection of wetlands primarily as habitat for waterbirds. There are presently 147 Contracting Parties to the Convention, with 1524 wetland sites, totalling 129.2 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance (Ramsar, 2016).

The convention entered into force in Ireland on 15 March 1985 with 45 sites designated as *Wetlands of International Importance* (Ramsar sites), with a surface area of 66.994ha. These 45 Ramsar sites in Ireland have no standalone statutory protection, but all of them are within existing SPAs, SACs or Nature Reserves, which confers them with the same legal protection as any of those designated sites.

There are two Ramsar sites within 15 km of the study area and these are listed in **Table 8-4** and illustrated in **Figure 8-4**.



Legend

- Ballough (stream)
- 15km Buffer
- Red Line Boundary
- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)

Data Sources: NPWS

Client
Integrated Materials Solutions (IMS) Limited Partnership

IMS Hollywood 2022 Update

Title

European Sites within the Zone of Influence

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Table 8-2 European Sites within the Zone of Influence

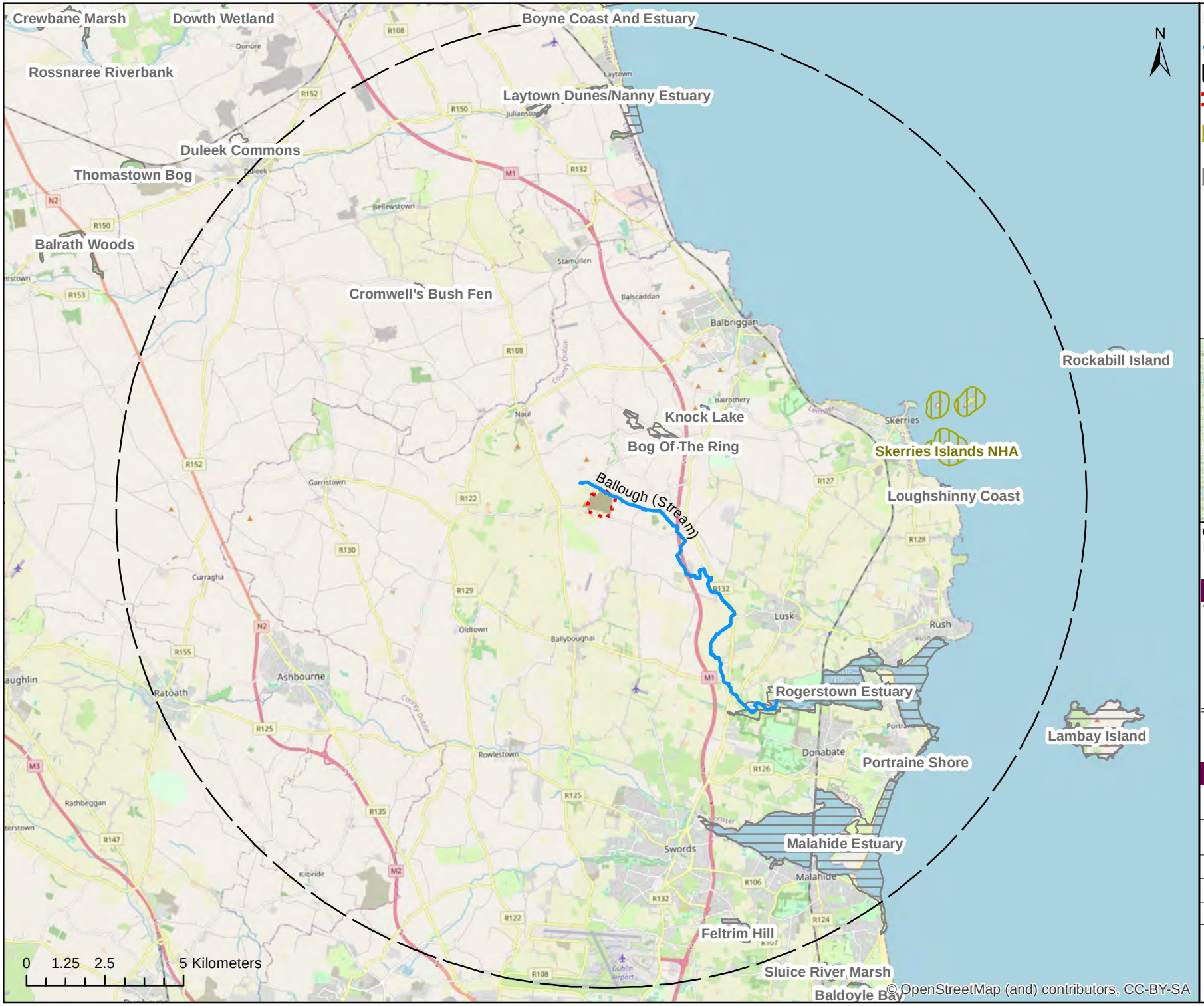
Site Name and Code	Qualifying Interest Habitats and Species (*=Priority Habitat)	Distance from Proposed Development	Pathway
Malahide Estuary SAC (000205) (S.I., 2019) (NPWS, 2013a)	**Conservation Objectives Series Version 1.0 (27/05/13)** **Annex I Habitats** • Mudflats and sandflats not covered by seawater at low tide [1140] • *Salicornia* and other annuals colonising mud and sand [1310] • Spartina swards *Spartinion maritimae* [1320]** • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] • Mediterranean salt meadows *Juncetalia maritimi* [1410] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]*	*c*. 10.5km	No. The European site does not have direct hydrological connectivity with the study area. Thus, the designated site is not considered to be at risk from the proposed development.
Rogerstown Estuary SAC (000208) (S.I., 2018) (NPWS, 2013b)	**Conservation Objectives Series Version 1.0 (14/08/13)** **Annex I Habitats** • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • *Salicornia* and other annuals colonising mud and sand [1310] • Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] • Mediterranean salt meadows *Juncetalia maritimi* [1410] • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]*	*c*. 9km	**Yes.** **The European site is located downstream of the study area, with direct hydrological connectivity via the Ballough Stream.**
Rockabill to Dalkey Island SAC (003000) (S.I., 2019) (NPWS, 2013c)	**Conservation Objectives Series Version 1.0 (07/05/13)** **Annex I Habitats** • Reefs [1170] **Annex II Species** • Harbour porpoise *Phocoena phocoena* [1351]	*c.* 12km	No. The European site does not have direct hydrological connectivity with the study area. Thus, the designated site is not considered to be at risk from the proposed development.

Site Name and Code	Qualifying Interest Habitats and Species (*=Priority Habitat)	Distance from Proposed Development	Pathway
Rogerstown Estuary SPA (004015) (S.I., 2010) (NPWS, 2013d)	**Conservation Objectives Series Version 1.0 (20/05/13)** **Special Conservation Interest (SCI)** • Greylag Goose *Anser anser* [A043] • Brent Goose *Branta bernicla* hrota [A046] • Shelduck *Tadorna tadorna* [A048] • Shoveler *Anas clypeata* [A056] • Oystercatcher *Haematopus ostralegus* [A130] • Ringed Plover *Charadrius hiaticula* [A137] • Grey Plover *Pluvialis squatarola* [A141] • Knot *Calidris canutus* [A143] • Dunlin *Calidris alpina alpine* [A149] • Black-tailed Godwit *Limosa limosa* [A156] • Redshank *Tringa tetanus* [A162] • Wetlands [A999]	*c*. 9km	**Yes.** **The European site is located downstream of the study area, with direct hydrological connectivity through the Ballough Stream.**
Broadmeadow/Swords Estuary SPA (004025) (S.I., 2011) (NPWS, 2013e)	**Conservation Objectives Series Version 1.0 (16/08/13)** **SCI** • Great Crested Grebe *Podiceps cristatus* [A005] • Brent Goose *Branta bernicla* hrota [A046] • Shelduck *Tadorna tadorna* [A048] • Pintail *Anas acuta* [A054] • Goldeneye *Bucephala clangula* [A067] • Red-breasted *Merganser Mergus serrator* [A069] • Oystercatcher *Haematopus ostralegus* [A130] • Golden Plover *Pluvialis apricaria* [A140] • Grey Plover *Pluvialis squatarola* [A141] • Knot *Calidris canutus* [A143] • Dunlin *Calidris alpina alpine* [A149] • Black-tailed Godwit *Limosa limosa* [A156] • Bar-tailed Godwit *Limosa lapponica* [A157]	*c*. 10.5km	No. The European site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.

Site Name and Code	Qualifying Interest Habitats and Species (*=Priority Habitat)	Distance from Proposed Development	Pathway
	• Redshank *Tringa tetanus* [A162] • Wetlands [A999]		
River Nanny Estuary and Shore SPA (004158) (S.I., 2012) (NPWS, 2012)	**Conservation Objectives Series Version 1.0 (21/09/12)** **SCI** • Oystercatcher *Haematopus ostralegus* [A130] • Ringed Plover *Charadrius hiaticula* [A137] • Golden Plover *Pluvialis apricaria* [A140] • Knot *Calidris canutus* [A143] • Sanderling *Calidris alba* [A144 • Herring Gull *Larus argentatus* [A184] • Wetlands [A999]	*c*. 10.5km	No. The European site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.
Skerries Islands SPA (004122) (S.I., 2010) (NPWS, 2022b)	**Conservation Objectives Generic version 9.0 (26/01/2022)** **SCI** • Cormorant *Phalacrocorax carbo* [A017] • Shag *Phalacrocorax aristotelis* [A018] • Light-bellied Brent Goose *Branta bernicla* hrota [A046] • Purple Sandpiper *Calidris maritima* [A148] • Turnstone *Arenaria interpes* [A169] • Herring Gull *Larus argentatus* [A184]	*c*. 10.5km	No. The European site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.
Rockabill SPA (004014) (S.I., 2012) (NPWS, 2013f)	**Conservation Objectives Series Version 1.0 (08/05/13)** **SCI** • Purple Sandpiper *Calidris maritima* [A148] • Roseate Tern *Sterna dougallii* [A192] • Common Tern *Sterna hirundo* [A193] • Arctic Tern *Sterna paradisaea* [A194]	*c*. 13km	No. The European site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.

* Priority habitat

***As per current updated NPWS Conservation objectives for Malahide Estuary SAC, 'It will (…) not be necessary to assess the likely effects of plans or projects against this Annex I habitat at this site' as both known species of Spartina spp. are considered to be alien.*



Legend

- Ballough (stream)
- 15km Buffer
- Red Line Boundary
- Natural Heritage Areas (NHAs)
- Proposed Natural Heritage Areas (pNHAs)

Data Sources: OSi, NPWS

Client
Integrated Materials Solutions (IMS) Limited Partnership

IMS Hollywood 2022 Update

Title

National Sites within the Zone of Influence

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Issue Details

File Identifier: MDR1492A-RPS-00-XX-DR-Z-AG-0003		
Status: S0	**Rev:** P01	**Model File Identifier:**
Drawn: NC		**Date:** 14/09/2022
Checked: XX		**Scale:** 1:160,000 @A4
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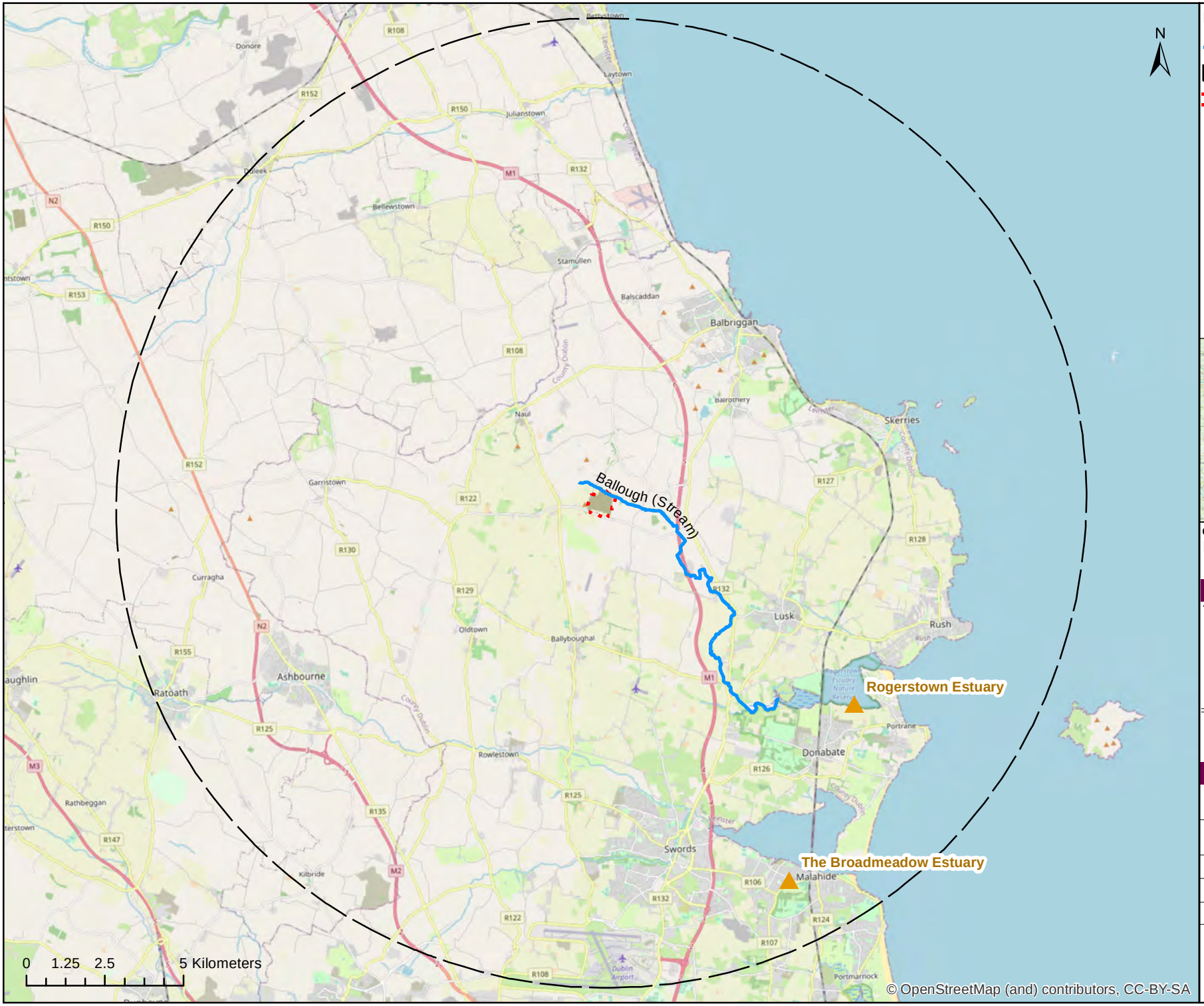
Table 8-3 National Designated Sites within the Zone of Influence

Site Name and Code	Summary Description	Distance from Proposed Development	Pathway
Natural Heritage Areas (NHA)			
Skerries Islands NHA (001218)	This NHA overlaps the Skerries Islands SPA. The conservation objectives for this site should be used in conjunction with those for the overlapping site as appropriate (NPWS, 2022b).	*ca.* 11km	No. The National site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.
Proposed Natural Heritage Areas (pNHA)			
Loughshinny Coast pNHA (002000)	Coastal grass habitat which merges into a shingle/rocky shore with some patches of saltmarsh. Presence of Green-winged Orchid (*Orchis morio*), a protected species under Flora Protection Order 2022 (NPWS, 2009a)	*ca.* 11km	No. The National site does not have direct hydrological connectivity with the study area. Thus, the designated site is not considered to be at risk from the proposed development.
Feltrim Hill pNHA (001208)	Knoll-reef dating from the Carboniferous period, containing two rare plant species: Spring Squill (*Scilla verna*) and Long-stalked Crane's-bill (*Geranium columbinum*) (NPWS, 2009b)	*ca.* 14km	No. The National site does not have direct hydrological connectivity with the study area. Thus, the designated site is not considered to be at risk from the proposed development.
Bog of the Ring pNHA (001204)	Flat low-lying area with impeded drainage, showing signs of peat development in its upper horizons (NPWS, 2009c)	*ca.* 2.5km	No. The Hydrogeological Assessment (refer **Chapter 9** and **Volume IV**) demonstrates that the Hollywood landfill is situated in a different groundwater catchment area than the Bog of the Ring wellfield. Notwithstanding this physical separation, sufficient hydrogeological evidence has been gathered to strongly support the conclusion that the two sites are also hydraulically separated.
Knock Lake pNHA (001203)	Shallow reservoir which, over time, has attained the character of a natural lake. Otter, Great Crested Grebe, Whooper Swan, Mallard, Pochard and Tufted Duck, Snipe and Curlew are frequent at the lake or surrounding fields (NPWS, 2009d)	*ca.* 3.5km	No. The National site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.

Site Name and Code	Summary Description	Distance from Proposed Development	Pathway
Portraine shore pNHA (001215)	Stretch of rocky bedrock shore with a narrow strip of coastal vegetation, Important habitat diversity value as well as geological (NPWS, 2009e).	*ca.* 12km	No. The National site does not have direct hydrological connectivity with the study area. Thus, the designated site is not considered to be at risk from the proposed development.
Cromwell's Bush Fen pNHA (001576)	Small wetland with a wide range of fen communities. Presence of rare floating plant Frogbit (*Hydrocharis morsus-ranae*) (NPWS, 2009f).	*ca.* 8km	No. The National site does not have direct hydrological connectivity with the study area. Thus, the designated site is not considered to be at risk from the proposed development.
Rogerstown Estuary pNHA (000207)	This pNHA overlaps both the Rogerstown Estuary SAC and SPA. The conservation objectives for this site should be used in conjunction with those for the overlapping sites as appropriate (NPWS, 2013b; 2013d)	*ca.* 10km	**Yes.** **The National site is located downstream of the study area, with direct hydrological connectivity through the Ballough Stream.**
Malahide Estuary pNHA (000205)	This pNHA overlaps both the Malahide Estuary SAC and the Broadmeadow/Swords Estuary SPA. The conservation objectives for this site should be used in conjunction with those for the overlapping sites as appropriate (NPWS, 2013a; 2013e).	*ca.* 10.5km	No. The National site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.
Laytown Dunes/Nanny Estuary pNHA (000554)	This pNHA overlaps the River Nanny Estuary and Shore SPA. The conservation objectives for this site should be used in conjunction with those for the overlapping site as appropriate (NPWS, 2012).	*ca.* 11.5km	No. The National site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.



Legend

- Ballough (stream)
- 15km Buffer
- Red Line Boundary
- Ramsar Sites

Data Sources: OSi, NPWS

Client

Integrated Materials Solutions (IMS) Limited Partnership

IMS Hollywood 2022 Update

Title

Ramsar Sites within the Zone of Influence

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Issue Details

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Status:	Rev:	Model File Identifier:
S0	P01	

Drawn: NC	**Date:** 14/09/2022
Checked: XX	**Scale:** 1:160,000 @A4
Approved: XX	**Projection:** ITM

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Table 8-4 Ramsar Sites within the Zone of Influence

Site Name and Code	Site Description (Irish Ramsar Wetlands Committee, 2022)	Distance from Proposed Development	Connectivity
Ramsar			
Rogerstown Estuary (no. 412)	A small tidal embayment sheltered from the sea by a broad sand and shingle spit. Extensive areas of mud, sand and gravel are exposed at low tide. The mudflats support beds of green algae (Enteromorpha) and *Spartina anglica*. Numerous species of large numbers of wintering waterbirds use the tidal flats and the site is internationally important for *Branta bernicla hrota*.	*c.* 9km	**Yes.** **The European site is located downstream of the study area, with direct hydrological connectivity through the Ballough Stream.**
Broadmeadow Estuary (no. 412)	An estuary cut off from the sea by a large sand spit. The site includes well-developed saltmarshes, salt meadows, rocky shores, a well-developed outer dune ridge and sand mudflats exposed at low tide. Vegetation consists of a large bed of eelgrass (*Zostera noltii* and *Z. angustifolium*) and extensive mats of green algae (*Enteromorpha* spp*., Ulva lactuca*). The estuary is an important wintering site for numerous species of waterbirds. The Brent goose population is of international importance. The high numbers of diving birds reflects the lagoon-type nature of the inner estuary.	*c.* 11km	No. The European site does not have direct hydrological connectivity with the study area. Furthermore, the study area does not hold suitable wetland features to support such SCIs. Thus, the designated site is not considered to be at risk from the proposed development.

8.3.4 Records of Protected and Invasive Species

The study area lies within the O15N, O15P, O15T and O15U Ordnance Survey 2x2km Grid Squares. Records of rare and protected faunal species and Invasive Alien Plant Species from these grid squares were obtained from the NBDC online database (NBDC, 2022a) and are presented in **Table 8-5**.

Table 8-5 NBDC database records of Protected and Invasive species for O15N, O15P, O15T and O15U grid squares

Common name	Scientific name	Year of last record	Designation	Grid Square
Birds				
Barn swallow	*Hirundo rustica*	2011	BoCCI* – Amber	O15N; O15P; O15T
Common kestrel	*Falco tinnunculus*	2011	BoCCI – Red	O15N; O15P; O15T
Common linnet	*Carduelis cannabina*	2011	BoCCI – Amber	O15N; O15P; O15U
Common pheasant	*Phasiansus colchicus*	2011	EU Birds Directive – Annex II, III	O15N; O15P; O15T; O15U
Common starling	*Sturnus vulgaris*	2011	BoCCI – Amber	O15N; O15P; O15T; O15U
Common wood pigeon	*Columba palumbus*	2011	EU Birds Directive – Annex II, III	O15N; O15P; O15T; O15U
House martin	*Delichon urbicum*	2011	BoCCI – Amber	O15P; O15T; O15U
House sparrow	*Passer domesticus*	2011	BoCCI – Amber	O15N; O15P; O15T; O15U
Skylark	*Alauda arvensis*	2011	BoCCI – Amber	O15N; O15P
Yellowhammer	*Emberiza citrinella*	2011	BoCCI – Red	O15N; O15P; O15T; O15U
Mute swan	*Cygnus olor*	2011	BoCCI – Amber	O15U
Common swift	*Apus apus*	2011	BoCCI – Red	O15N
Eurasian tree sparrow	*Passer montanus*	2011	BoCCI - Amber	O15T
European golden plover	*Pluvialis apricaria*	2011	EU Birds Directive – Annex I, II, III BoCCI - Red	O15T
Herring gull	*Larus argentatus*	2011	BoCCI - Amber	O15T
Lesser black-backed gull	*Larus fuscus*	2011	BoCCI - Amber	O15T
Black-headed gull	*Larus ridibundus*	2011	BoCCI - Red	O15N
Eurasian curlew	*Numenius arquata*	2011	EU Birds Directive – Annex II BoCCI - Red	O15N
Mallard	*Anas platyrhynchos*	2011	EU Birds Directive – Annex II, III BOCCI - Amber	O15N; O15T
Peregrine falcon	*Falco peregrinus*	2011	EU Birds Directive – Annex I	O15N
Rock pigeon	*Columba livia*	2011	EU Birds Directive – Annex II	O15N
Mammals				
West European hedgehog	*Erinaceus europaeus*	2015	Protected Species: Wildlife Acts	O15T

Common name	Scientific name	Year of last record	Designation	Grid Square
Eurasian badger	*Meles meles*	2013	Protected Species: Wildlife Acts	O15T
Eurasian red squirrel	*Sciurus vulgaris*	2013	Protected Species: Wildlife Acts	O15N
European rabbit	*Oryctolagus cuniculus*	2014	Medium Risk (Kelly *et al.* 2013)	O15N

*BoCCI= Birds of Conservation Concern in Ireland

8.3.5 Field Survey Results

A series of ecological surveys were undertaken in the period 2018 to 2022 at the study area within the site to support this assessment. The site visits identified and registered key habitats and species, with special attention to protected and invasive species. The survey was confined to field limits, although the surrounding landscape was also considered. This survey built upon the findings of the previous detailed habitat, mammal and bird survey undertaken in 2018 (refer **Appendix G in Volume III** of the EIAR).

8.3.5.1 Habitats

Habitats were identified and mapped according to Fossitt (2000) classification into:

- Depositing/lowland rivers (FW2);
- Other artificial lakes and ponds (FL8);
- Buildings and artificial surfaces (BL3);
- Exposed sand, gravel or till (ED1);
- Spoil and bare ground (ED2);
- Recolonising bare ground (ED3);
- Refuse and other waste (ED5);
- Improved agricultural grassland (GA1);
- Dry meadows and grassy verges (GS2);
- Hedgerow (WL1);
- Riparian woodland/Mixed broadleaved/Conifer woodland (WN5/WD2); and
- Scrub (WS1).

(None of the habitats corresponds to EU Annex I habitats).

These are mapped for the site in **Figure 8-5** and described further in the following sections. The greatest change onsite between the 2019 surveys and the August 2022 surveys was the transition to scrub (WS1) as vegetating dominated the previously exposed calcareous rock (ER2) habitat with the onsite infilling.

Butterfly-bush *Buddleja davidii* presence noted throughout the site, predominantly with the habitats ED3 and WS1.

Depositing/lowland rivers (FW2)

The Ballough Stream drains the northern boundary of the study area. The study area is located near the source of this waterbody for it is of a low stream order at this location. This is reflected not only on the channel width but also on the water it carries – the channel is either dry or holding almost stagnant pools, for the most part. The riverbed grain size is highly heterogeneous, showing more zones of accumulation than erosion.

The riparian gallery consists of a well-developed mixture of conifer and broadleaved trees and shrubs that is characterised elsewhere - Riparian woodland/Mixed broadleaved/Conifer woodland (WN5/WD2). This habitat is valued as Local Importance (Higher value).

Other artificial lakes and ponds (FL8)

At the time of the ecological survey a number of water bodies were present within the study area. There are two inter-connected small settlement ponds in the northern zone of the study area. These are used as primary treatment for the former quarry's process wastewater before being discharged to the Ballough Stream, further north. Furthermore, there are three other ponds within the study area. These are ponds resulting from rainwater accumulation.

Both waterbody types are seemingly oligotrophic, holding scarce vegetation in its margins – pondweed *Potamogeton* spp., bulrush *Typha latifolia* and soft rush *Juncus effusus*. This habitat is valued as Local Importance (Higher value).

Buildings and artificial surfaces (BL3)

This anthropogenic habitat is associated with the quarry supporting buildings and paved roads. The quarry entrance gate, office, garage and access roads that surround the study area are considered in this habitat category. Vegetation cover is scarce or non-existent. Within this habitat there are areas of exposed sand, gravel or till (ED1). This habitat is valued as Local Importance (Lower value).

Spoil and bare ground (ED2)

This habitat corresponds to unpaved areas within the quarry that are permanently/recently disturbed due to heavy vehicles and/or machinery movement. These areas form a network of bare ground paths that allow access to most of the study area. Depending on the degree of disturbance (i.e. vehicle movement), some of these paths can show premature signs of vegetation colonisation.

There are two areas of approximately 4000 m^2 in total formed by heaps of unconsolidated sediment, likely a by-product from the former quarrying activity. The material is of small dimension (gravel grain size) and these areas are devoid of vegetation for the most part. Within this habitat there are areas of exposed sand, gravel or till (ED1). This habitat is valued as Local Importance (Lower value).

Recolonising bare ground (ED3)

It is the habitat occupying the greatest area within the study area. Vegetation cover is higher than 50% and it is evident these areas are disturbed and are being colonised mostly by pioneer species. Species recorded include: butterfly bush, coltsfoot *Tussilago farfara,* common bird's-foot-trefoil *Lotus corniculatus,* common field-speedwell *Veronica persica*, common ramping fumitory *Fumaria muralis*, creeping buttercup *Ranunculus repens*, creeping cinquefoil *Potentilla reptans,* dandelion *Taraxacum sp.*, fat-hen *Chenopodium album*, gorse *Ulex europaeus*, great horsetail *Equisetum telmateia*, ragwort *Jacobaea vulgaris*, red clover *Trifolium pratense,* ribbed melilot *Melilotus officinalis*, ribwort plantain *Plantago lanceolata*, scarlet pimpernel *Anagallis arvensis,* scented mayweed *Matricaria chamomilla*, shepherd's-purse *Capsella bursa-pastoris*, spear thistle *Cirsium vulgare*, tufted vetch *Vicia cracca*. white clover *Trifolium repens* and rosebay willowherb *Epilobium angustifolium.*

Across this habitat, especially close to areas of scrub (WS1), the presence of shrubs like elder *Sambucus nigra*, grey willow *Salix cinerea*, juniper *Juniper communis* is noted. ED3 also had some small areas of exposed rock face. Within this habitat there are areas of exposed sand, gravel or till (ED1). This habitat is valued as Local Importance (Lower value).

Refuse and other waste (ED5)

There are currently two active areas for waste infilling. These areas consist of waste covered with topsoil after being infilled. Its dimensions are dynamic as it is an ongoing process. Although the area occupied by this habitat does not show signs to be different in terms of soil and subsoil composition than Recolonising bare ground (ED3), the absence of vegetation provides it with different nature and features. Within this habitat there are areas of exposed sand, gravel or till (ED1). This habitat is valued as Local Importance (Lower value).

Improved agricultural grassland (GA1)

This habitat is present around the boundaries of the study area. These are highly managed by grazing or mowing and characterised for being species poor. The fields are mostly occupied by ryegrasses *Lolium* spp. with occurrences of docks *Rumex* spp., clovers *Trifolium* spp. and plantains *Plantago*

spp. It should be noted the different nature of the field located in the north-west corner of the study area from the other fields with the GA1 habitat. That field is a former landfill cell that was the infilled and covered with topsoil. It is managed nowadays and is commonly planted and grazed. This habitat is valued as Local Importance (Lower value).

Dry meadows and grassy verges (GS2)

This habitat is present on former areas marked as recolonising bare ground during the 2019 surveys. The lack of management on this habitat has led to a transition from ED3 to GS2 as the recolonisation possess progresses. Species recorded in this habitat include Yorkshire fog *Holcus lanatus,* cocksfoot *Dactylis glomerata,* timothy *Phleum pratense,* ribwort plantain *Plantago lanceolata,* false oat-grass *Arrhenatherum elatius,* wild carrot *Daucus carota,* teasel *Dipsacus fullonum,* butterfly bush*,* red clover *Trifolium pratense,* white clover *Trifolium repens,* black medic *Medicago lupulina,* gorse *Ulex europaeus* and hedge mustard *Sisymbrium officinale.* Given this habitat is newly transitioned from an area of ED3, it is valued as Local Importance (Lower value) due to the relatively low species diversity.

Hedgerow (WL1)

The hedgerows present in the study area are highly managed and species poor. These form boundaries with roads and other fields but are not structured enough to provide ecological corridors to be used by key species (e.g. bats). These are also associated to drainage ditches but, since the ditches are dry, these are distinguishable as different habitats. Elder *Sambucus nigra*, hawthorn *Crataegus monogyna*, grey willow *Salix cinerea*, ivy *Hedera helix*, bramble *Rubus fruticosu*, dog-rose *Rosa canina agg.* are abundant, whereas western hemlock *Tsuga heterophyla*, juniper *Juniper* spp., ferns *Dryopteridaceae* spp. and ash *Fraxinus excelsior* are locally present.

This habitat is valued as Local Importance (Higher value) given the Fingal Development Plan's (2017) policies on trees and ecological corridors, specifically:

- *Objective NH27: Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management*
- *Objective DMS78 Ensure during the course of development, trees and hedgerows that are conditioned for retention are fully protected in accordance with 'BS5837 (2012) Trees in relation to the Design, Demolition and Construction – Recommendations' or as may be updated.*
- *Objective DMS170 Protect and enhance the ecological corridors along the following rivers in the County by ensuring that no development takes place, outside urban centres, within a minimum distance of 30m from each riverbank: Liffey, Tolka, Pinkeen, Mayne, Sluice, Ward, Broadmeadow, Ballyboghil, Corduff, Matt and Delvin (see Green Infrastructure Maps).*

Riparian woodland/Mixed broadleaved/Conifer woodland (WN5/WS2)

The Ballough Stream is surrounded by a well-developed riparian gallery, with very dense shrub/bush cover in most of the reach. It consists of a mixture of conifer - e.g. Scots pine *Pinus sylvestris*, western hemlock *Tsuga heterophylla*, juniper *Juniper communis*, Norway spruce *Picea abies* – and broad-leave species of trees – e.g. alder *Alnus glutinosa*, birch *Betula pensula*, ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus*. The shrub vegetation is dominated by ivy *Hedera heli*), bramble *Rubus fruticosus*, great horsetail *Equisetum telmateia*, elder *Sambucus nigra*, willows *Salix* agg., common vetch *Vicia sativa*, meadow vetchling *Lathyrus pratensis*, ferns *Athyrium* spp. and creeping buttercup *Ranunculus repens*.

This habitat is valued as Local Importance (Higher value) given the Fingal Development Plan's (2017) policies on trees and ecological corridors, specifically:

- *Objective NH27: Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management*
- *Objective PM64: Protect, preserve and ensure the effective management of trees and groups of trees*
- *Objective DMS77 Protect, preserve and ensure the effective management of trees and groups of trees*

- *Objective DMS78 Ensure during the course of development, trees and hedgerows that are conditioned for retention are fully protected in accordance with 'BS5837 (2012) Trees in relation to the Design, Demolition and Construction – Recommendations' or as may be updated.*
- *Objective DMS170 Protect and enhance the ecological corridors along the following rivers in the County by ensuring that no development takes place, outside urban centres, within a minimum distance of 30m from each riverbank: Liffey, Tolka, Pinkeen, Mayne, Sluice, Ward, Broadmeadow, Ballyboghil, Corduff, Matt and Delvin (see Green Infrastructure Maps).*

Scrub (WS1)

There are some zones within the study area that evolved from Recolonising bare ground (ED3) by developing bush and herbal cover. This development may have happened due to lack of disturbance of these areas after the quarrying ceased. These areas show localised high bush density but, for the most part, are poor in both abundance and diversity. These zones are occupied by elders *Sambucus nigra*, willows *Salix* agg., butterfly bush, ferns *Athyrium* spp., dog-rose *Rosa-canina*, scented mayweed *Matricaria chamomilla*, thistle *Cirsium vulgare* and nettles *Urtica dioica*.

Areas that were classified as exposed calcareous rock (ER2) during the 2019 surveys and described as devoid of vegetation, have since transitioned to areas of scrub as the land has been infilled and recolonised. Some areas of bare cliff remain but vegetation is dominant over most of this habitat. A ledge beside where the artificial nest box was seen to have staining, indicating it was being used by birds, however only corvids were recorded in this area in 2022.

Given the species which have taken up within this habitat are newly established opportunistic species, this habitat is valued as Local Importance (Lower value).

.

Legend

- Ballough (stream)
- Red Line Boundary

Fossit Code

- BL3
- ED2
- ED3
- ED5
- FL8
- GA1
- GS2
- WL1
- WN5/WD2
- WS1

Client

Integrated Materials Solutions (IMS) Limited Partnership

IMS Hollywood 2022 Update

Title

Habitats

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Issue Details

File Identifier:
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Checked: XX	**Scale:** 1:5,500 @A4
Approved: XX	**Projection:** ITM

NOTE:

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8.3.5.2 Invasive Alien Plant Species (IAPS)

None of the species listed in the EU Regulation 1143/2014 of *Species of Union Concern*, European Communities (Birds and Natural Habitats) Regulations 2011 and in the list of *High Risk recorded species* from the Invasive Species in Ireland prioritization risk assessment (Kelly *et al*.,2013) was identified in the ecological survey. However, two *Medium Impact Species* was observed around the study area – butterfly bush and sycamore *Acer pseudoplatanus*.

8.3.5.3 Breeding Birds

During the 2019 breeding bird surveys undertaken, a total of 56 bird species were recorded making use of, or overflying, the proposed development site.

During the 2022 ecological walkover survey, 21 birds were recorded on an *ad hoc* basis, given the timing lay outside of the breeding bird survey season. These included:

- Blue tit *Cyanistes caeruleus;*
- Buzzard *Buteo buteo;*
- Chaffinch *Fringilla coelebs;*
- Coal tit *Parus ater;*
- Collard dove *Streptopelia decaocto;*
- Jay *Garrulus glandarius;*
- Magpie *Pica pica;*
- Goldfinch *Carduelis carduelis;*
- Herring gull *Larus argentatus;*
- Hooded crow *Corvus cornix;*
- House Martin *Delichon urbicum;*
- House sparrow *Passer domesticus;*
- Jackdaw *Corvus monedula;*
- Linnet *Carduelis cannabina;*
- Pheasant *Phasianus colchicus;*
- Pied wagtail *Motacilla alba yarrellii;*
- Robin *Erithacus rubecula;*
- Rook *Corvus frugilegus;*
- Starling *Sturnus vulgaris;*
- Swallow *Hirundo rustica;* and
- Wood pigeon *Columba palumbus.*

In summary, during the 2022 walkover survey, five amber listed species of conservation concern and one red listed species of conservation concern were identified within the proposed development site. Bird activity was highest along the boundary of the site, and also within the rough grassland fields to the east of the proposed development site.

8.3.5.3.1 Peregrine falcon

Peregrine falcon is listed in Annex I of the Birds Directive (Directive 79/409/EEC, amended to Directive 2009/147/EC) and is protected by the Wildlife Act (1976, amended in 2022). Both legal

implements bind the State to maintain and create habitats for this species along with providing the species with legal protection against disturbance, especially during breeding season. A peregrine falcon was observed overflying the study area in 2019 during surveys for the application for the current planning consent (Reg. Ref. F19A/0077). Roosting locations were identified from faecal and scrapping markings on the cliffs located at the south-western study area's boundary (**Figure 8-6**) during this time.

Figure 8-6 Two Ledges identified as peregrine roosting sites

In 2019, the scraped depression used by peregrines to nest was identified as located in a zone at the southwestern corner of the site within one of the vertical cliffs in this area. The project ornithologists recommended the installation and development of an alternate suitable nesting site at higher elevations on this northeast facing cliff face. This alternate nesting site was installed in February 2020 in advance of the breeding season and a photo showing the box is presented in **Figure 8-7**.

In an attempt to maintain the habitat for the falcon on the Hollywood site, a *Peregrine Falcon Management Plan* was prepared in 2019 for the site and is included in **Appendix H of Volume III** of this EIAR. This plan is currently being implemented on site and will continue to operate through the proposed development.

As discussed in **Section 8.2.5.4**, this ongoing monitoring of peregrines has shown the previously nesting pair have left the site (no birds observed in 2022). While onsite in August 2022, it was found that the location of the artificial nest box, after infilling of the cell below, is now considered unsuitable given its proximity to the ground, see **Figure 8-8**. A new location for this artificial nest box is required to ensure suitability for falcons in the area.

Figure 8-7 Artificial Nest Box for the Peregrine Falcon (installed 2020)

Figure 8-8 View of Artificial Nest Box for the Peregrine Falcon (August 2022)

8.3.5.4 Other Protected Fauna

Badger

Badgers are legally protected under the Wildlife Act 1976 (as amended). The NBDC database indicates the presence of badger within the study area which was confirmed by the Ecological survey. Secondary evidence of badger activity (e.g. droppings) was found at the field to the northwest corner of the study area (**Figure 8-1**) outside the site of the proposed operations.

Otter

Otters *Lutra lutra* are protected under the Wildlife Act 1976 (as amended) and are listed on Annex II and Annex IV of the EU Habitats Directive. The NBDC database does not have any records of the presence of otter within the study area, which was confirmed by the Ecological survey. No holts were identified along the Ballough Stream nor was there evidence of otter activity along other water features (e.g. other artificial lakes and ponds).

Other mammals

No evidence for other protected mammals was found during the ecological survey.

Amphibians

The artificial ponds within the study area have some potential for accommodating amphibian populations, indicated by the presence of macrophytes on the edges - e.g. pondweed *Potamogeton spp.,* bulrush *Typha latifolia*. The temporary nature of these artificial ponds, however, can hinder the establishment of such populations and potential *ad-hoc* evidence collected for their presence might be only episodical. The ecological survey did not find evidence for presence of either smooth newt *Lissotriton vulgaris* or natterjack toad *Epidalea calamita* but a common frog *Rana temporaria* individual was identified within the study area. Although these results are inconclusive regarding the overall presence and distribution of amphibians within the study area, the 2018 baseline presented in **Appendix G of Volume III** identified a newt population at the settlement ponds with 'numerous individuals'. These observations are also confirmed by local testimony.

8.3.5.5 Ecological Valuation and Identification of Key Ecological Receptors

Ecological valuation according to NRA guidance (NRA, 2009b) is summarised in **Table 8-6**, along with the corresponding conservation protection. Also presented in **Table 8-6**, the term 'ecological receptors' is used when impacts upon the ecological feature are likely (NRA, 2009b).

Table 8-6 Summary of Ecological Valuation and Key Ecological Receptors

Ecological Feature	International Protection	Ecological Valuation (NRA, 2009)	Ecological Receptor?
Designated Sites			
European			
Rogerstown Estuary SAC (000208)	European Site	International	**Yes**
Malahide Estuary SAC (000205)	European Site	International	No
Rockabill to Dalkey Island SAC (003000)	European Site	International	No
River Nanny Estuary and Shore SPA (004158)	European Site	International	No
Skerries Islands SPA (004122)	European Site	International	No
Rockabill SPA (004014)	European Site	International	No
Rogerstown Estuary SPA (004015)	European Site	International	**Yes**
Broadmeadow/Swords Estuary SPA (004025)	European Site	International	No
National			
Skerries Islands NHA (001218)	No	County	No
Laytown Dunes/Nanny Estuary pNHA (000554)	No	County	No

Ecological Feature	International Protection	Ecological Valuation (NRA, 2009)	Ecological Receptor?
Cromwell's Bush Fen pNHA (001576)	No	County	No
Knock Lake pNHA (001203)	No	County	No
Bog Of The Ring pNHA (001204)	No	County	No
Rogerstown Estuary pNHA (000208)	No	County	**Yes**
Malahide Estuary pNHA (000205)	No	County	No
Feltrim Hill pNHA (001208)	No	County	No
Portraine Shore pNHA (001215)	No	County	No
Loughshinny Coast pNHA (002000)	No	County	No
Ramsar			
Rogerstown Estuary (no. 412)	International Convention on Wetlands	International	**Yes**
Broadmeadow Estuary (no. 833)	International Convention on Wetlands	International	No
Habitats			
Depositing/lowland rivers (FW2)	No	Local (Higher)	**Yes**
Other artificial lakes and ponds (FL8)	No	Local (Higher)	No – the activities within the study area will either not result in loss of this habitat.
Buildings and artificial surfaces (BL3)	No	Local (Lower)	No
Spoil and bare ground (ED2)	No	Local (Lower)	No
Recolonising bare ground (ED3)	No	Local (Lower)	No
Refuse and other waste (ED5)	No	Local (Lower)	No
Improved agricultural grassland (GA1)	No	Local (Lower)	No
Dry meadows and grassy verges (GS2)	No	Local (Lower)	No
Hedgerows (WL1)	No	Local (Higher)	No – the activities within the study area will either not result in loss of this habitat type or, in the construction areas where hedgerows will be removed, these are highly managed and are considered unsuitable for bat commuting habitat or for bird nesting.
Riparian woodland/Mixed broadleaf/Conifer woodland (WN5/WD2)	No	Local (Higher)	No – the activities within the study area will either not result in loss of this habitat.

Ecological Feature	International Protection	Ecological Valuation (NRA, 2009)	Ecological Receptor?
Scrub (WS1)	No	Local (Lower)	No
Protected Species			
Peregrine Falcon (*Falco peregrinus*)	European	International	**Yes**
Western European Hedgehog (*Erinaceus europaeus*)	No	Local (Higher)	No
Eurasian Badger (*Meles meles*)	No	Local (Higher)	No
European Otter (*Lutra lutra*)	Annex II and IV of EU Habitats and Species Directives	Local (Higher)	No
Bats	Annex IV of EU Habitats Directive	County	No
Invasive Species	-	-	No

8.3.5.6 Scoping for Ecological Impact Assessment

In accordance with best practice guidance (NRA, 2009a; 2009b; CIEEM, 2016), the following Ecological Features have been scoped out from further assessment for the rationale stated:

- **European Sites**: The potential impacts to the European Sites within the ZoI have been analysed in Screening for Appropriate Assessment (also presented as part of this planning application). The assessment concluded that there is hydrological connectivity between the proposed development and two European sites - Rogerstown Estuary SAC (000208) and Rogerstown Estuary SPA (004015). Beyond these two European sites, any other European sites within the ZoI are not considered for further assessment.
- **National sites**: As with the case of European sites, there is direct hydrological connectivity with Rogerstown Estuary pNHA (000208). The Hydrogeological Assessment (refer **Chapter 9** and **Volume IV**) provides detailed evidence that demonstrates that the site is situated in a different groundwater catchment area than the Bog of the Ring wellfield. Notwithstanding this physical separation, sufficient hydrogeological evidence has been gathered to strongly support the conclusion that the two sites are also hydraulically separated.
- **Ramsar sites**: As with the case of European and National sites, there is direct hydrological connectivity with Rogerstown Estuary (no. 412). Beyond this Ramsar site, any other Ramsar sites within the ZoI are not considered for further assessment.
- **Habitats**: Habitats with a valuation below Local Importance (Higher Value) do not represent key ecological receptors and detailed assessment is not required.
- **Protected species**: The ecological survey did not reveal evidence for the presence of either otter or western European hedgehog *Erinaceus europaeus*. There was secondary evidence of Eurasian badger within the study area in 2019, however none was recorded in 2022. The location for the 2019 evidence was on the northwest corner, outside the operation zone. Because there was no evidence of badger presence within the operation zone, the proposed development is not considered likely to produce detrimental effects for this species and will not be considered for further assessment. No hedgerows or mature trees were found within the study area that could be considered as likely to host bats. The riparian corridor around the Ballough Stream, on the northern boundary of the study area, is the only identified suitable area for bats. Since this habitat is not going to be affected by the proposed development, bats are not considered for further assessment.
- Medium risk **Invasive species** butterfly bush and sycamore *Acer pseudoplatanus* were recorded within the study area. However, in the case of the butterfly bush, this species' benefits to pollinators have been observed (NBDC, 2022a) and, although monitoring is advised, it only becomes problematic when it becomes established along watercourses or where it voraciously

spreads into derelict ground (NRA, 2010), which is not the case within the study area. Regarding sycamore, the main concern is when woodlands become dominated with this species (NBDC, 2022b), which is not the case within the study area.

8.4 Impact Assessment

Biodiversity impact assessment has been presented for both combined construction/operation phases as well as the ultimate restoration phase of the proposed development.

8.4.1 'Do-Nothing' Scenario

The 'Do-Nothing' scenario refers to a scenario whereby the facility would continue the existing permitted operations at the site including the landfilling of inert wastes and the processing of aggregates and concrete. Under such a scenario the baseline status outlined above would remain largely unchanged.

8.4.2 Designated Sites

8.4.2.1 European Sites

There are three Special Areas of Conservation (SACs) and five Special Protection Areas (SPAs), collectively known as European Sites located within the ZoI of the proposed development. The European Sites with direct hydrological connectivity to the Study Area are:

- Rogerstown Estuary SAC; and
- Rogerstown Estuary SPA.

As outlined, there is potential for a pathway to be established between the study area and Rogerstown Estuary SAC (000208) and Rogerstown Estuary SPA (004015) due to hydrological connectivity with the Ballough Stream.

Potential impact from operation phase of the development relates to the potential for landfilling operations at the north of the site to cause sedimentation in the Ballough Stream with an ultimate impact at the Rogerstown Estuary downstream. In addition, the creation of a new direct discharge from the proposed attenuation pond in the north-eastern section of the site into the Ballough Stream (SWD8) has the potential to cause adverse effect to the downstream designated sites. Each of these impacts is assessed in the following sections.

With regard to the potential for sedimentation from the proposed landfilling works, the Waste Licence monitoring to date indicates that the site is largely in compliance with the suspended solids in the stream to the north of the site (refer **Section 10.4.5.2**). The results show elevated levels of suspended solids recorded commonly observed in downgradient surface water monitoring point SW2. For each suspended solid exceedance, the Annual Environmental Reports state that these likely to be unrelated to the operation of the facility and instead are associated with silt/run-off from streams bed/banks, and/or adjacent agricultural activities. This is supported with site observations which show a heavily modified bank at SW2 used for livestock feeding. In addition, ancillary voluntary monitoring of direct discharges from the site to the stream shows no sedimentation impact from the ongoing operations.

In short, the evidence base indicates that the current operations at the site are not having an adverse impact on the stream through sedimentation. This is likely largely due to the 70-80m buffer zone that lies between the landfill body and the stream. This buffer zone is vegetated and acts as a natural barrier to fugitive sediment loss from the existing landfilling operation. The proposed landfilling operation will operate using similar operational principles to the existing operation and will be located within the same footprint. In this regard, the buffer zone will remain and hence the risk of sedimentation from the proposed operation will not change from the existing operation. In this regard, it is concluded that there will be no adverse impact to the stream as a result of sedimentation from the proposed operation.

It is acknowledged that the landfill cells to the north of the site are proposed for non-hazardous wastes as opposed to the existing inert wastes landfilled at the site. These non-hazardous wastes including contaminated soils and wastes containing metals such as IBA and, as such, the potential for

loss of metal particles or other substances in the sediments to the stream is greater. However, by retaining and adequate buffer area between the north of the landfill body and the stream, these risks may be suitably mitigated.

The introduction of a new direct discharge (SWD8) from the proposed attenuation pond to the stream has the potential to alter the flow characteristics of the stream and/or water quality with a potential for impact to the downstream SAC. In considering the potential for significant adverse impact the following is noted:

- The water that will be collected from the landfill body and diverted to the attenuation pond will be stormwater that has fallen on capped cells or empty engineered cells so the stormwater collected will be a largely 'clean' water source. Rainfall to active cells will be collected as leachate in a separate system;
- Runoff will pass through oil interceptor prior to discharge to the stream. This oil interceptor will retain any hydrocarbons in the runoff and thereby improve the quality of the runoff;
- The pond is designed with a storage volume for a 1 in a 100 yr storm event for the entire landfill footprint and included for a climate change factor of 20% to ensure the capacity is fully available to meet the potential demand through all phases of development;
- The attenuation pond will slow the flow of the water and therefore will also act as a settlement pond to reduce the levels of suspended solids in the surface water;
- It is proposed to limit outflow from the site (outflow will be at greenfield runoff rates - 5.24 l/s/ha) through the attenuation pond, controlled by way of actuated valves such as a hydro brake. As such, the discharge will only be permitted at greenfield run off rates to mitigate the potential for adverse flow impacts to the stream;
- This discharge will be from the attenuation pond via a monitoring chamber and all discharges from this new emission point will be required to comply with the limits set out in the licence and the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No 272 of 2009).

With the above control measures in place and the overdesign of the pond to ensure capacity, the discharges from the stream will be 'clean' stormwater that is discharged at greenfield run off rates. In this regard, there is a low risk of impact to the aquatic environment from this new discharge point and no adverse significant impact is predicted.

8.4.2.2 National Sites

There is one National Heritage Area (NHA) and five proposed National Heritage Areas (pNHAs), collectively known as National sites within the ZoI of the proposed development. There is one National site with direct hydrological connectivity to the Study Area - Rogerstown Estuary pNHA. As with the designated European sites, there is potential for a pathway to be established between the study area and Rogerstown Estuary pNHA (000208) due to hydrological connectivity with the Ballough Stream **(Table 8-3)**. As above, with the control measures designed and in operation no significant discharge from the site to the stream is predicted.

8.4.2.3 Ramsar Sites

There is one site designated as *Wetlands of International Importance*, collectively known as Ramsar sites, with direct hydrological connectivity to the proposed development - Rogerstown Estuary. As with the previously mentioned designated sites, there is potential for a pathway to be established between the study area and Rogerstown Estuary (412) due to hydrological connectivity with the Ballough Stream (**Table 8-4**). As above, no significant impact from the site on the stream is predicted.

8.4.2.4 Habitats

The bulk of the proposed landfilling operations are located within habitats of Local (lower) importance (e.g. improved agricultural grassland, spoil and bare ground, recolonising bare ground, scrub). Habitats of Local (lower) importance do not require impact assessment as per NRA guidelines (2009b).

8.4.2.5 Protected Species

Peregrine falcon

Given there were no peregrines recorded during the surveys in 2022, the proposed development does not present any potential impacts on this species. However, due to their historical presence on site up until recently, prior to the infilling of cells onsite under Reg. Ref. F19A/0077, peregrines are still considered an Important Ecological Feature and are therefore scoped in for mitigation.

Other Breeding Birds

The findings of the baseline breeding bird surveys in 2019 indicated that bird activity was highest along the boundary of the site and also within the rough grassland fields in the east of the proposed development site. This was reaffirmed during the ad hoc observations recorded during the 2022 ecological walkover.

The footprint of the proposed development site, i.e. where the proposed landfill cells and associated infrastructure are located, is considered to be of lower suitability to breeding birds when compared with the rough grassland and scrub/tree areas. This is established by the breeding evidence recorded on site. The 2019 breeding evidence was recorded for several species within the footprint of the proposed development; however, all but three of these species (mallard, little grebe and peregrine falcon) were also noted breeding outside of the proposed development footprint. The proposed development will result in the loss of a portion of the *GA1 – Improved Agricultural Grassland* (**Figure 8-5**) to the northwest as an attenuation pond is proposed for this area.

Given that the proposed development does not encompass a reduction in areas considered most suitable to breeding birds, no significant negative impact to breeding birds is considered likely.

Amphibians

Even though the proposed development is not to be undertaken in the vicinity of habitats potentially used by amphibians (i.e. the settlement ponds), the process of site clearance and earthworks can result in the incidental mortality of individual amphibians, and they can be killed attempting to cross the study area or internal access roads, particularly during their breeding migrations in spring.

Bats

Having regard to good practice guidelines of the assessment of bat commuting and foraging habitats (Collins, 2016), there are habitats adjoining the proposed site which can be considered of moderate suitability (i.e. the hotspot identified in 2019). However, this moderate suitability area will not be subject to change from the proposed development and will remain intact. The interior of the proposed development site, where the proposed cells and associated infrastructure are located, is considered to be of low suitability to commuting and foraging bats. Given the proposed development does not encompass a reduction of (moderate) bat habitat, no significant impact to bats is considered likely.

8.4.2.6 Invasive Species

Besides spreading of the Invasive Alien Plant Species (IAPS) identified during the Ecological Survey, there is potential for other invasive species to be introduced or become established during the operational phase of the development. Machinery, equipment and material (including soil) which may be transported onto the site for construction could lead to the introduction of invasive species to the site with potential to displace natural biodiversity. This could lead to a significant impact at the local to international level.

8.4.3 Restoration Phase

8.4.3.1 Designated Sites

Once infilling and capping is complete on the site there will remain a direct connectivity from the stream to the south of the site to the Rogerstown Estuary at the coast. However, with the site fully capped the drainage regime in the area will return to natural greenfield run off rates and hence a negligible impact is predicted.

8.4.3.2 Habitats

Post infilling, the restoration of the site will allow for the return of the land to grassland, as with the infilled cells to the east. A series of land boundaries will be installed in the form of hedgerows. This grassland will be allowed to transition to a more traditional meadow over time rather than managing it for agricultural purposes as previously done for the eastern section. This would involve restricting the management to cutting twice a year, once in September (not prior to September 1st given the habitat's suitability for ground nesting birds) and once any time between October and February (not after March 1st given the habitat's suitability for ground nesting birds). With each mowing, the cuttings are to be collected and removed from the grassland. This will result in a net gain relative to the existing habitat value of the site.

8.4.3.3 Protected Species

On full restoration of the site, in the event that all existing exposed cliff faces are infilled as part of the restoration phase there will be a direct loss of peregrine nesting habitat at this site. The nature and scale of impact are as per that presented for the Construction/Operation Phase.

8.4.3.4 Invasive Species

On cessation of importation of material, the pathway for the introduction of Invasive Alien Plant Species (IAPS) will be removed. Once the specified mitigation measures are fully implemented during these phases, the residual risk of IAPS in the restoration phase will be low and no significant impact is predicted.

8.5 Mitigation Measures

8.5.1 Sediment Control

The site EMS will be supplemented with the mitigation listed in this EIAR prior to the commencement of construction and further operational activities in order to minimise the effects on the environment. With reference to the potential for impact on the stream to the north of the site and ultimately the Rogerstown Estuary, the EMS will include for a sediment control plan to ensure so significant impact to the stream. As a minimum this plan will include the mitigation measures specified in **Section 10.6**.

8.5.2 Habitats

Where feasible, no scrub clearance or other removal of vegetation will occur during the bird breeding season from 1st March to 31st August.

8.5.3 Peregrine Falcon

The following sections include a number of measures to address the loss of peregrine falcon from the site as a result of the infilling works under Reg. Ref. F19A/0077. These measures are included in a *Peregrine Falcon Management Plan* that is currently operational at the Hollywood site and a copy of this plan is included in **Appendix H of Volume III**. The mitigation measures proposed will also include the supervision of an experienced raptor ornithologist.

As stipulated in the *Peregrine Falcon Management Plan*, given the nests were abandoned and the next box provided on the infilled cliff face were unused by peregrine in 2022, site management are to provide a long-term nesting box at a suitable alternate location (Step 5).

> *Step 5: If nesting site is lost, IMS will provide nesting boxes/ledge at suitable alternate location*
>
> ***5 FEASIBILITY OF INSTALLATION OF A LEDGE/PLATFORM/BOX OFFSITE***
>
> *This section addressed Additional Information Request item no. 3, subsection (b), which states: 'The investigation into the feasibility of installation a ledge/platform/box on a nearby quarry, building or telecom infrastructure in year 1'.*
>
> ***5.1 IDENTIFICATION OF AN ALTERNATIVE NESTING LOCATION***

In year one of the proposed development operation, a suitably qualified ecologist will identify alternative off-site locations for the installation of ledges/platforms/nesting boxes, in the event that the alternative location offered within the proposed development site are not utilised by nesting peregrine falcons.

Investigation into landowner agreement will be carried out in year one to ensure that viable options exist if measures outlined in Section 4 are not successful. Alternative location will include existing communication towers and quarries within a suitable distance of the proposed development site, but also outside the nesting ranges of known peregrine falcon sites.

Within one year of the proposed development operation, a review report will be issued to the Local Authority Biodiversity Officer and local NPWS Conservation Ranger with details of the above to allow for a consensus on future monitoring/management.

8.5.3.1 Monitoring Regime

The assigned raptor ornithologist shall implement the *Peregrine Falcon Management Plan*, specifically, implementing Step 5 and adhere to the following long term monitoring regime as per Sections 7 to 9 of the Plan.

7.1 OCCUPANCY MONITORING

A suitably qualified ecologist will complete the following to monitor peregrine falcon occupancy:

An annual breeding survey for peregrine falcon within the proposed development site, to be carried out by a suitably qualified ecologist. The survey shall include at least 3 surveys between the months of March and July.

An annual winter occupancy survey for peregrine falcon within the proposed development site, to be carried out by a suitably qualified ecologist. The survey shall include at least 3 surveys between the months of November and February.

A yearly submission of an 'occupancy monitoring report', to be submitted to the local NPWS Conservation Ranger and the Local Authority Biodiversity Officer.

8 INSTALLATION OF CAMERAS

This section addressed Additional Information Request item no. 3, subsection (e), which states: 'The installation of cameras to monitor activities at nesting site'.

8.1 CAMERA INSTALLATION

The installation of monitoring cameras was originally suggested in 2010, as a way to monitor the nest box sites remotely rather than via field visits. The proposed monitoring regime (see Section 9) is deemed to be robust enough to forgo the additional requirement of the camera installation. It is proposed that that the installation of a camera will be reconsidered in year 2 and 3, based on the monitoring results and feasibility.

9.1 MONITORING REGIME

A suitably qualified ornithologist with peregrine falcon experience (the 'suitably qualified ecologist'), shall implement the following detailed and long-term monitoring regime. Works shall be carried out under licence from the Wildlife Licencing Unit, where required. The monitoring regime shall include:

Year 0 (pre-construction and construction):

Pre-construction and construction monitoring for disturbance to peregrine, during the nesting season. This monitoring shall include:

A survey to assess peregrine falcon status on the site one week before the commencement of proposed construction works;

A survey to assess peregrine falcon disturbance during the first 3 days of construction activity in the vicinity of the confirmed nesting location. Result of this survey will inform the requirement of further mitigation measures (see Section 6.1).

Monthly surveys during construction to assess peregrine falcon disturbance. Result of this survey will inform the requirement of further mitigation measures (see Section 6.1).

A monitoring report shall be submitted to the local NPWS Conservation Ranger and the Local Authority Biodiversity Officer.

Year 1:

While cell preparation works may be undertaken, no waste infilling works in Cell 6 will take place unless agreed with a suitably qualified ecologist.

The suitably qualified ecologist shall undertake a minimum of three specific peregrine falcon surveys: at the beginning, middle and end of the nesting season (e.g. March to July) following best practice guidance (Hardey et al., 2013) to assess peregrine falcon activity, breeding behaviour and breeding success, or otherwise. The status of the created nesting ledges/boxes will also be monitored, as above.

A monitoring report shall be submitted to the local NPWS Conservation Ranger and the Local Authority Biodiversity Officer by end of October

Year 2-14:

The suitably qualified ecologist shall undertake a minimum of three specific peregrine falcon surveys per year: at the beginning, middle and end of the nesting season (e.g. March to July) following best practice guidance (Hardey et al., 2013) to assess peregrine falcon activity, breeding behaviour and breeding success, or otherwise. The status of the created nesting ledges/boxes will also be monitored, as above.

Any alternate nesting sites, locate off-site from the proposed development, will be subjected to long-term monitoring, as above.

A yearly monitoring report shall be submitted to the local NPWS Conservation Ranger and the Local Authority Biodiversity Officer by end of October.

Year 15:

The suitably qualified ecologist shall undertake a minimum of three specific peregrine falcon surveys: at the beginning, middle and end of the nesting season (e.g. March to July) following best practice guidance (Hardey et al., 2013) to assess peregrine falcon activity, breeding behaviour and breeding success, or otherwise. The status of the created nesting ledges/boxes will also be monitored, as above.

An overall monitoring report shall be submitted to the local NPWS Conservation Ranger and the Local Authority Biodiversity Officer.

Following discussion with the NPWS Conservation Ranger and the Local Authority Biodiversity Officer, a continued monitoring strategy of the alternate nesting sites will be agreed.

8.5.4 Invasive Species

During the combined construction and operation phases IMS must ensure that:

- An invasive species monitoring survey (carried out by an appropriately qualified ecologist in the correct botanical season: e.g. April - September) will be carried annually for the duration of infilling activities (i.e. approx. 25 years) and for three years after completion of infilling works. The findings of each survey will be reported to the Local Authority (in this case FCC);
- All machinery entering the site during operation activities are free from contamination with scheduled invasive plants. This can be achieved through wheel wash stations for vehicles entering and exiting the proposed development site;
- The waste materials which are introduced to the site during the operation are free from scheduled invasive species. This can be achieved through monitoring detail above; and
- Where a scheduled invasive species is accidentally introduced or becomes established within the proposed development site during operation, works will be immediately halted and an effective exclusion zone (See note above) will be erected until such time that an Invasive Species Management Plan (ISMP) is prepared and its action approved.

Should schedule invasive plants be discovered during the invasive species monitoring surveys, or during the operation phase, there will be a requirement to develop an Invasive Species Management Plan (ISMP). The ISMP will be agreed with a suitable qualified ecologist/invasive species specialist.

8.5.5 Amphibians

The two remaining settlement ponds in the northern one with potential for use by amphibians are not proposed to be infilled and will remain unaffected by the proposed works. These settlement ponds, although not showing evidence for amphibian presence during the field survey in October 2019, are the areas showing the highest suitability to harbour amphibian populations given their higher hydrological stability (i.e. they are not pumped) and macrophyte cover. This conclusion is confirmed by Doherty Environmental (2018) observations (**Appendix G, Volume III**) which reported a population of newts in the two settlement ponds.

8.5.6 Breeding Birds

The biodiversity mitigation measures are supplemented with the following for breeding birds:

- No vegetation/hedgerows/scrub will be removed from the site during the bird nesting season (i.e. no removal between March and August, inclusive);
- No mature trees will be removed during for the proposed development;
- Rough grassland in the east of the proposed development site will be maintained/enhanced as ground-nesting bird habitat within the lifetime of the project; with the exception of the addition of the attenuation pond in the northeast; and
- Any dewatering of pools will be complete outside the bird nesting season. If this is not possible, a suitably qualified ecologist will survey the pools before dewatering to ensure that no nest will be destroyed, e.g. those of little grebe.

8.5.7 Bats

The general biodiversity mitigation measures are supplemented with regards to known quarry specific recommendations (Steer *et al.,* 2016):

- Restoration of the site will result in a thicker, species-rich grassland sward than is currently present within the operational quarry. This may result in an increase in the number of winged insects, which could have a knock-on benefit for foraging bats;
- Dewatering of the rectangular pond will take place outside of bat activity season (e.g. outside of April to October, inclusive). The retained attenuation ponds on the northern boundary of the proposed development site will provide bat foraging habitat following the dewatering of the site; and
- No mature trees, with moderate or high suitability for roosting bats, will be removed during for the proposed development.

8.6 Cumulative Impacts

The Cumulative Impact Assessment (CIA) considers the impact associated with the proposed development, together with other projects and plans.

8.6.1 Plans

There are a number of plans and projects that are currently underway or are planned to be developed within the vicinity of the proposed development that have the potential of presenting cumulative effects with the current development. These include the following national and regional plans:

National Development Plan 2021-2030

A National Strategic Priority of the National Development Plan 2021-2030 details the Sustainable Management of Water and other Environmental Resources. Within this strategy, Waste Management and Resource Efficiency has been identified as an investment action. The action states that:

'*Delivering Significant Infrastructure Development projects (each with a spend of over €100m) to improve the quality of water and waste water. These include the Vartry Water Supply Scheme and the*

Cork Lower Harbour Main Drainage Scheme (both due for completion in 2021); the upgrade to the Ringsend Waste Water Treatment Plant; and a new Arklow Waste Water Treatment Plant.'

The Fingal County Development Plan 2017-2023

The Fingal County Development Plan 2017-2023 (FCC, 2017) highlights a number of potential larger infrastructural projects within the county. Within this Plan, the proposed development site is classified as 'HA – High Amenity'; a class attributed to areas of high landscape value. Two specific objectives are set for this area: Objectives NH51 and NH52. These Objectives state the intention of protecting these areas from inappropriate development and that development reflects and reinforces the distinctiveness of these areas, which provide a higher level of protection against the development of large infrastructural projects/developments. The proposed development site is located adjoining '*Preserve Views*' to the south, and is described as being within the '*Highly Sensitive Landscape: Naul*'.

An NIS has been completed of The Fingal County Development Plan 2017-2023 (FCC, 2017), which concluded:

'*As a result of the assessment process, it is concluded that mitigatory measures identified in the stage 2 Appropriate Assessment are adequate to ensure the integrity of the European Sites which will not be significantly affected as a result of the potential impacts of the objectives contained with the Fingal Development Plan*.'

8.6.2 Projects

A search was conducted of planning applications (projects) within the vicinity of the proposed development, using the Fingal Planning portal (FCC, 2022), the Department of Housing, Local Government and Heritage EIA Portal (DHLGH, 2022), and the An Bord Pleanála (ABP) case search for 'Strategic Infrastructure Development' and 'Strategic Housing Development' (ABP, 2022). The search was limited to the five-year period preceding the date of issue of this report and excluded retention applications (i.e. typically local-scale residential or commercial developments where an impact has already occurred), incomplete, withdrawn, and refused applications. The relevant projects with potential for in-combination adverse effects are detailed in **Table 5-16** in **Chapter 5**.

Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved. Given the relative distance from the proposed development and the low to moderate scale of these developments there is no predicted significant cumulative impact for biodiversity.

The only exceptions are the larger operations, i.e. the sand and gravel pit (Ref. AA191263) and the waste facility (Ref. W0265-01). Operations at both of these developments have the potential for cumulative adverse biodiversity impacts through drainage and impact on the aquatic environment.

However, the proposed development site at Hollywood is located within the drainage catchment of the Ballough Stream while the local topography in the area dictates that these other developments to the north west lie within the Delvin catchment. As such, there is no potential for cumulative adverse impact on the aquatic environment from the proposed development in addition to these consented developments.

8.7 Residual Impact

It will not be possible or practical to mitigate all adverse effects from the proposed development. The remaining environmental impacts that cannot be reasonably avoided are related with occasional distress of peregrine falcons as a result of the works in either the construction or operational phases. The disturbance level inflicted by the proposed development activities ultimately has the potential of affecting the suitability of the habitat for the peregrine falcons. However, it has been shown that peregrine falcons nest in quarries with high cliffs irrespective of whether they are in active industrial use or not (Moore *et al*., 2010. The conclusion was made in reference to quarry industrial activity but the transposition to landfilling activities is not considered inappropriate as the latter is less impactful towards peregrine falcon's habitat.

8.8 Monitoring

The detailed peregrine monitoring regime presented in **Section 8.5.3** will be implemented in full by the applicant and reported annually to the NPWS for consultation.

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