MWP

ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)

Ros an Mhíl Deep Water Quay

Chapter 5: Terrestrial Ecology

Department of Agriculture, Food and the Marine

November 2025

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Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Acceptance Code / Status
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5. Terrestrial Ecology

5.1 Introduction

The Applicant, Department of Agriculture, Food and the Marine (DAFM) is seeking planning permission for the completion of the construction works for the proposed Ros an Mhíl Deep Water Quay.

This Terrestrial Ecology Chapter provides an assessment of the potential impacts and effects of the proposed deep water quay development. A full description of the Proposed Development, development lands and all associated project elements is provided in Chapter 2 of this EIAR. The nature and probability of effects on terrestrial biodiversity arising from the overall project has been assessed. The assessment comprises:

- A review of the existing receiving environment prior to any works;
- A review of the existing receiving environment at present;
- Prediction and characterisation of likely impacts;
- Evaluation of the significance of effects on biodiversity; and
- Mitigation and monitoring measures, where appropriate.

In line with best ecological practice, the assessment was guided by the following specific objectives:

- Identify and document protected habitats and species in the study area and extending away from it through a desk top study of available ecological data.
- Undertake baseline ecological surveys at the study area and evaluate the nature conservation importance of the ecological resources identified using a scientifically robust and objective methodology based on current best practice.
- Predict the potential direct, indirect and cumulative effects of the project on Biodiversity.
- Prescribe measures to mitigate the potential negative effects of the project on Biodiversity, and
- Identify habitats within the study area that can benefit from ecological management for the purpose of local Biodiversity enhancement.

A Screening for Appropriate Assessment report has been undertaken to determine whether said unauthorised deep water quay works were directly connected with, or necessary to, the management of a European site(s) , and if not, whether they were likely to have had significant effects on nearby European site(s) (either alone or in combination with other plans or projects) in view of the conservation objectives of that site(s).

Planning permission for the Deep Water Quay (DWQ) project was granted by Galway County Council (GCC) on 2nd April 2018 under Planning Application 17/967. The approval covered the construction of a new quay, a reclamation area with low concrete sea walls, rock armour revetment, an access road, lighting, drainage infrastructure, and other ancillary works. Works commenced on 26th January 2023 and continued at an advanced pace throughout that year. On 23rd May 2023, ahead of the anticipated expiration date of 11th July 2023, an application was made to extend the permission for an additional five years. Two earlier extension attempts—Planning Applications 22/460 and 23/60548—had been refused and declared incomplete, respectively. GCC ultimately granted the extension on 11th July 2023 under Application 23/218. However, on or about 4th September

2023, Wild Ireland Defence lodged an application for Judicial Review (High Court Case 2023 1007 JR), challenging the validity of GCC's decision. On 17th May 2024, GCC confirmed to the solicitors of Wild Ireland Defence that it would consent to an order quashing the extension. As a result, works on the site ceased and the area was cleared on 20th May 2024. The High Court formally quashed the decision to extend the planning permission in October 2024 through an Order of Certiorari. In light of these developments, and in accordance with Section 177C of the Planning and Development Act 2000, as amended—which allows for an application for Substitute Consent in respect of unauthorised development requiring Environmental Impact Assessment (EIA), EIA screening, and/or Appropriate Assessment (AA)—the Applicant now considers it appropriate to apply for Substitute Consent. This step aims to regularise the planning status of the unauthorised works already completed near Ross an Mhíl Harbour and to facilitate any future planning proposals within the framework of the planning system.

MWP has been appointed by the Applicant to prepare a Terrestrial Ecology Impact Assessment for the EIAR to support the planning application to complete the remainder of the proposed works for the Ros an Mhíl Deep Water Quay (DWQ) development.

5.2 Methodology

The following guidance documents and relevant publications were used:

- '*Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland*' published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).
- '*Guidelines for Assessment of Ecological Impacts of National Road Schemes*' (NRA, 2009).
- '*Best Practice Guidance for Habitat Survey and Mapping*' (Smith *et al*., 2011).
- Other information sources and reports footnoted in the course of the report.

5.2.1 Legislation and Best Practice Guidance

Important legislation underpinning biodiversity and nature conservation in Ireland comprise the:

- EU Habitats Directive (92/43/EEC), as amended;
- EU Birds Directive (2009/147/EC, as amended);
- EU Water Framework Directive (WFD, 2000/60/EC);
- European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 (S.I. 477/2011), as amended;
- Planning and Development Act (2000), as amended;
- Planning and Development Regulations 2001 to 2011, as amended;
- Wildlife Act 1976 to 2021, as amended; and
- Flora (Protection) Order, 2022.

Please also refer to Chapter 1 of the EIAR for more information.

5.2.2 Definition of Zone of Influence (ZOI)

The 'zone of influence' (ZOI) for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. The zone of influence will vary for different ecological features depending on their sensitivity to an environmental change (CIEEM, 2018). With regard to potential effects on biodiversity, the following criteria were considered when identifying the potential ZOI at the initial stages of the project:

- The nature, size and location of the project
- Identification of potential effect pathways to key ecological receptors
- The sensitivities of the relevant key ecological receptors
- Identification of suitable habitats for high conservation value species
- Ecological connectivity between the project and the wider landscape.

5.2.3 Desktop Study

The desk studies undertaken for this assessment included reviews of available published data on sites designated for nature conservation, and other ecologically sensitive sites, habitats and species of interest in the vicinity of the Proposed Development site. The available ecological data which were accessed included the following:

- Ordnance Survey Ireland (OSI) mapping and aerial photography;
- Environmental Protection Agency (EPA) online mapping and datasets;
- National Parks and Wildlife Service (NPWS) online mapping and datasets, including EU Habitats Directive Article 17 spatial mapping for habitats and species;
- National Biodiversity Data Centre (NBDC) online mapping and datasets;
- Heritage Maps online mapping;
- Geological Survey of Ireland (GSI) online mapping;
- Invasive Species Ireland on-line resources - http://www.invasivespeciesireland.com/;
- Review of records of plant species protected under the Flora (Protection) Order (2022);
- National Red Lists for rare and threatened floral and faunal species;
- Review of the most recent Bird Atlas: Balmer et al., (2013);
- Review of Birds of Conservation Concern in Ireland (BoCCI 4) 2020-2026 (Gilbert et al., 2021);
- Review of BirdWatch Ireland I-WeBS (Irish Wetland Bird Surveys) site information;
- Checklists of Protected and Threatened Species in Ireland. Irish Wildlife Manual No. 116 (Nelson, et al., 2019) Version 3.1 (February 2023);
- Review of requested records from NPWS Rare and Protected Species database, BCIreland bat records/roost database and BirdWatch Irelands I-WeBS Survey site count database;
- Galway County Development Plan 2022-2028;
- Galway County Council Biodiversity Action Plan 2024-2030;
- National Biodiversity Action Plan 2023 – 2030; and
- Other information sources and reports footnoted or referenced.

Online digital aerial mapping and satellite imagery was used in conjunction with publicly available GIS data to determine the types of habitats within the environs of the site with potential to support protected flora and fauna, including landscape features providing potential connectivity with the wider area (e.g. hedgerows, treelines, watercourses). This mapping was used to inform the desktop study and field surveys.

5.2.3.1 Database Searches and Data Requests

The site lies within the OSI National Grid hectad (10 km square) L92. Flora and fauna species records for this hectad were downloaded from the NBDC on-line database as part of the desktop study. A data request was submitted to NPWS on the 20th March 2025 for records of rare and/or protected species within the hectad L92. Data was received from NPWS on the 14th of July 2025. Results are discussed, where relevant, in Sections 5.4.5 to 5.4.11.

A data request was submitted to BirdWatch Ireland via their on-line data request facility on the 20th March 2025 for the most recent site count data available for the 'Grassland at Ardacong 0GS25' and 'Loch Ros Amhíl 0GS26' I-WeBS1 site which adjoins the Site. Please see Section 5.4.9.

5.2.4 Consultation

The following biodiversity related statutory and non-statutory bodies, as outlined in Table 5-1, were consulted in relation to the Proposed Development as part of pre-planning application consultation.

Table 5-1 List of biodiversity-related consultees for the Proposed Development that have been notified of the project.

Consultee
Department of Agriculture, Food and Marine - Aquaculture & Foreshore Management Division
National Parks and Wildlife Service (NPWS) via the Development Applications Unit (DAU) of the Department of Housing, Local Government and Heritage
Galway County Council
Irish Marine Institute
Inland Fisheries Ireland

A pre-application planning meeting was held between the Applicant, MWP and An Bord Pleanála (ABP), now An Coimisiún Pleanála (ACP) on the 11th October 2024. During this meeting, a general overview of the approach to ecology fieldwork in relation to the Proposed Development was discussed.

5.2.5 Definition of Study Area

As part of the early planning process, a preliminary ecological assessment of the Proposed Development site and its surrounding area was carried out on 7th October 2010, by an ecologist from Mott MacDonald. This formed part of the initial planning documentation before any development activity commenced. The findings from this assessment are detailed in Rossaveel Harbour: Deep Water Quay Development. Environmental Impact Statement. Chapter 9: Terrestrial Ecology (Mott MacDonald, 2017).

A follow-up site visit was conducted by ecologists from MWP on April 15th, 2025. This survey provided updated baseline information on the local ecology.

[1] I-WeBS; Irish Wetland Bird Surveywaterbirds at wetland sites across the country during the winter 'non-breeding' season (September to March).

It focused on identifying current habitats and species (both flora and fauna), as well as those likely to have been present during earlier development stages (see Section 5.4.4 for further details).

The scope of the 2025 ecological surveys included the full development site with the Ros an Mhíl Harbour area and surrounding publicly accessible lands owned by Údarás na Gaeltachta. Areas with ecological connections to the site such as adjacent shoreline and watercourses were also surveyed, particularly for faunal species like birds and mammals, including otter. Further information on these surveys is provided in Sections 5.4.7 and 5.4.9.

5.2.6 Field Surveys

Field surveys comprised a combination of multi-disciplinary ecological walkover surveys. Summaries of field survey methodologies employed are provided hereunder.

5.2.6.1 Habitat and Flora Survey

Two habitat and botanical surveys were conducted within the study area to inform the ecological assessment at different stages of the project.

The first survey was carried out on 7th October 2010 by ecologist Rita Mansfield of Mott MacDonald. It followed the Heritage Council's Best Practice Guidance for Habitat Surveying and Mapping (Smith et al., 2011) and used the habitat classification system in A Guide to Habitats in Ireland (Fossitt, 2000). Standard botanical identification keys (Stace, 2010) were used to identify plant species. A habitat map was produced to provide a baseline characterisation of the habitats present within and around the proposed development site (Figure 5-10). Weather conditions on the day were overcast with a south-westerly breeze and a temperature of 14°C. The survey also adhered to the National Roads Authority (NRA) Guidelines for Assessment of Ecological Impacts (NRA, 2009b).

The second survey, a Phase I habitat and botanical survey, was undertaken by MWP on 15th April 2025 during the recognised optimal survey season for vegetation (April–September). This survey also followed the Heritage Council (2011) guidelines and used the Fossitt (2000) habitat classification system. In addition to mapping habitat types and associated flora, habitats were assessed for potential alignment with EU Annex I habitat types. The survey also included the identification of any invasive plant species, with specific reference to those listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011).

5.2.6.2 Non-Volant Mammals Survey

Two separate non-volant mammal surveys were carried out within the study area to assess the potential presence of protected and notable species and to inform impact assessment for the Proposed Development.

The initial survey was conducted on 7th October 2010 and focused on detecting breeding and resting sites of protected mammal species within and adjacent to the footprint of the proposed DWQ. This survey followed best-practice guidance 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' (NRA, 2009). The main objectives were to:

- Identify key mammal habitats potentially used for breeding or resting;
- Evaluate the potential effects of both the construction and operation phase activities of the proposed development on local mammal populations;
- Propose mitigation measures to prevent significant negative effects and to maintain existing mammal habitat.

Survey efforts primarily targeted otter (*Lutra lutra*) and badger (*Meles meles*), given their likelihood of occurrence within the area. The otter survey methodology was informed by 'Monitoring the Otter Lutra lutra' (Chanin, 2003) and 'Guidelines for the Treatment of Otters during the Construction of National Road Schemes' (NRA, 2008). Surveyors searched for evidence of otter presence, including holts, resting places, spraints, tracks, and feeding remains. The badger survey followed 'Surveying Badgers' (Harris et al., 1989) and the NRA's 'Guidelines for the Treatment of Badgers Prior to the Construction of National Road Schemes' (2005), focusing on detecting signs such as setts, paths, snuffle holes, and latrines.

A second series of mammal surveys was conducted by MWP on 15th April 2025. These were designed to provide an updated understanding of mammal activity within and around the site and to assess the potential effects of the Proposed Development on protected terrestrial mammal species. Target species included those protected under the Wildlife Acts and the EU Habitats Directive (Annexes II, IV, and V), as well as Irish Red-listed species (Marnell et al., 2019). Particular attention was paid to badger, otter, Irish hare (*Lepus timidus hibernicus*), and pine marten (*Martes martes*), based on habitat suitability and prior records.

The surveys adhered to best-practice guidance and relevant literature, including:

- *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes (NRA, 2009)*
- *Animal Tracks and Signs (Bang and Dahlstrom, 2004)*
- *Surveying for Badgers: Good Practice Guidelines (Scottish Badgers, 2018)*
- *Monitoring the Otter Lutra lutra (Chanin, 2003)*
- *Ecology of the European Otter (Chanin, 2003b)*

The 2025 survey approach included general mammal walkovers and a targeted otter survey. During walkover surveys all signs of mammal activity such as breeding or resting places (holts/couches), tracks, spraints feeding remains, and trails were searched for. The targeted otter survey, conducted on 15th April 2025, focused on the extensive aquatic and intertidal habitats around the site, including watercourses and the shoreline of Cashla Bay[2], extending the survey zone beyond the core study area to encompass the bay's shoreline in the wider area.

For detailed survey results, refer to Section 5.4.7.

5.2.6.3 Bats

Two separate bat surveys were undertaken within the study area to identify features within the study area with the potential to support roosting bats and to inform the need for any follow-up survey effort.

The first survey was carried out on 7th October 2010 and followed the methodologies outlined by Andrews et al. (2013), Collins (2016), and Kelleher & Marnell (2006). This assessment involved a ground-level inspection of trees and built structures to identify potential roosting opportunities for bats. Trees were examined for typical potential roost features (PRFs), including vertical or horizontal cracks along limbs or trunks, knot holes, cavities, loose or lifted bark, and dense ivy with stem diameters exceeding 50 mm. Structures and vegetation within the study area were assessed from ground level during daylight hours for any signs of bat activity or roost use. The classification of potential roost features followed the criteria set out in Collins (2016).

A subsequent preliminary roost assessment (PRA) was conducted on 15th April 2025 to provide an updated evaluation of bat roosting potential within the site. This survey comprised detailed ground-level inspections of

[2] EPA Coastal Waterbody Code: IE_WE_190_0000

trees for evidence of PRFs, as well as any signs indicative of roosting bats (e.g., staining or droppings). The trees were assessed and categorised in accordance with Collins (2016) as having 'negligible', 'low', 'moderate', or 'high' suitability for supporting roosting bats. The outcome of this PRA informed the requirement for any further targeted bat activity or emergence surveys.

5.2.6.4 Bird Survey

Two bird surveys were conducted within the study area, each associated with broader ecological survey efforts.

During the initial site visit on 7th October 2010, bird activity was recorded incidentally as part of the mammal survey. A dedicated bird survey was not undertaken at that time, as it was considered unnecessary based on the characteristics of the site and the limited potential for significant ornithological interest. Observations were confined to birds seen or heard within and around the footprint of the proposed development.

A second site visit was carried out on 15th April 2025 during which all bird species encountered visually or aurally were noted in order to develop an updated understanding of the bird community present within the study area. Records were used to identify species potentially using the site for foraging or breeding. All bird species recorded were considered in the context of relevant legislation and conservation priorities. This included protection under the Wildlife Acts 1976 to 2000 (as amended) and the EU Birds Directive (2009/147/EC). Particular attention was given to species listed under Annex I of the Birds Directive, as well as those included on the Red and Amber lists of Birds of Conservation Concern in Ireland (BoCCI) 2020–2026 (Gilbert et al., 2021) and to any bird species identified as Special Conservation Interests (SCIs) for nearby Natura 2000 sites.

5.2.6.5 Invertebrates and Herpetofauna Survey

Surveys for invertebrates and herpetofauna (amphibians and reptiles) were conducted as part of the broader ecological walkover assessments carried out in both October 2010 and April 2025. These assessments were incidental rather than targeted, with observations of these species groups recorded opportunistically during general habitat, flora, and fauna surveys. While not designed as dedicated surveys for these taxa, any sightings or signs of invertebrates or herpetofauna encountered during fieldwork were noted to help inform the overall ecological baseline.

5.2.7 Ecological Evaluation Criteria

The value of the ecological receptors identified was determined using the ecological evaluation guidance given in the National Roads Authority (NRA – now TII) ecological assessment guidelines 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). This evaluation scheme seeks to provide value ratings for ecological receptors and sets out the context for the determination of value on a geographical basis with a hierarchy (International through to Local) assigned based on the importance of any particular ecological receptor.

The NRA criteria are specific to circumstances in Ireland and, therefore, have been used in this chapter to assess the value of individual ecological features within the Site and its ZOI. The NRA (2009) guidelines provide a basis for determination of whether any particular site, habitat or species is of importance on the following scale:

- International
- National
- County
- Local Importance (higher value), and

- Local Importance (lower value)

The NRA (2009) guidelines clearly set out the criteria by which each geographic level of importance can be assigned. At the lowest end of the scale, Locally Important (lower value) receptors contain habitats and species that are widespread, of low ecological significance, and are of importance only in the local area. In contrast, Internationally Important receptors can comprise sites designated for conservation at an international level as part of the Natura 2000 Network (SAC or SPA) or which provide the best examples of habitats, or internationally important populations of protected flora and fauna.

The function of this evaluation scheme is primarily to assess the value of a site. In this case, the scheme has been adapted to assess the value of habitats and species. The value of habitats is assessed based on habitat condition, size, rarity, conservation and legal status. The value of species is assessed on its biodiversity value, legal status and conservation status. Biodiversity value is based on its national distribution, abundance or rarity, and associated trends. The NRA (2009)[3] criterion was used to evaluate the value of ecological resources.

Important Ecological Features (IEFs) are ecological features (*i.e*. sites designated for nature conservation, habitats and/or species) which are evaluated as Locally Important (higher value) or higher and which are likely to be impacted by the Proposed Development. All features that were evaluated as being of Local Importance (higher value) and higher were selected as IEFs for the Proposed Development in Section 5.4.12. The significance of impacts arising on these IEFs as a result of the various phases of the Proposed Development has been assessed in Section 5.5. In relation to bats, other guidance specific to bats and bat impact assessment, namely Marnell *et al*., (2022), has been used to determine impact significance on bats.

5.2.8 Impact Assessment Criteria

This assessment considers the potential effects with regard to each phase of the Proposed Development: namely the construction phase and operational phase. Appropriate mitigation measures are described to avoid, reduce or offset potential negative impact(s).

Determination of the significance of an effect will be made in accordance with the EPA guidance document '*Guidelines on Information to be contained in Environmental Impact Assessment Reports*' (2022). Refer to Chapter 1 of the EIAR for more information.

5.3 Appropriate Assessment Screening and Natura 2000 Impact Statement

A screening for Appropriate Assessment (AA) report has been prepared in relation to the Proposed Development. The AA Screening report was undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001), the European Commission Notice 'Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2019), 'Appropriate Assessment of Plans & Projects - Guidance for Planning Authorities' prepared by the NPWS (DoEHLG, 2010), and the 'Office of the Planning Regulator (OPR) Practice Note PN01 – Appropriate Assessment Screening for Development Management' (OPR, 2021).

An appropriate assessment report has been prepared by Malachy Walsh and Partners Engineering and Environmental Consultants (MWP) after engagement by the Department of Agriculture, Food and the Marine to determine whether the proposed development could likely have significant effects on nearby Natura 2000 sites. The purpose of this screening was to assist in deciding if a full Appropriate Assessment was required under Article

[3] NRA, 2009

6(3) of the Habitats Directive (92/43/EEC), by evaluating potential effects on protected habitats and species, both alone and in combination with other plans or projects.

The need to apply the precautionary principle (the absence of scientific evidence on the significant negative effect of an action cannot be used as justification for approval of this action) in making any key decisions in relation to the tests of AA has been confirmed by European Court of Justice case law. Therefore, when applied to Article 6(3) procedure, where significant effects are likely, possible or uncertain at the screening stage, an AA will be required, in which case a Stage 2 NIS was prepared. A Separate future works NIS report was subsequently prepared by MWP and both are included with the current planning application.

5.3.1 Proposed Development Site

Since the development works carried out on the site between 2023 and 2024, the site has remained unused and is enclosed with fencing. It is noted that the protective berm and a significant portion of the reclaimed land are subject to partial flooding during spring high tides. The inland area adjacent to the site is relatively flat and accommodates existing infrastructure, including industrial and commercial units, a slipway, and a car park. The construction of the DWQ, as permitted under Planning Application 17/967, was only partially completed and the proposed layout of the DWQ and associated harbour infrastructure is shown in **Figure 5-1.** A full description of the future proposed activities is described in **Chapter 2 of the EIAR.**

Plate 5-1: Status of the development on 29th October 2024.

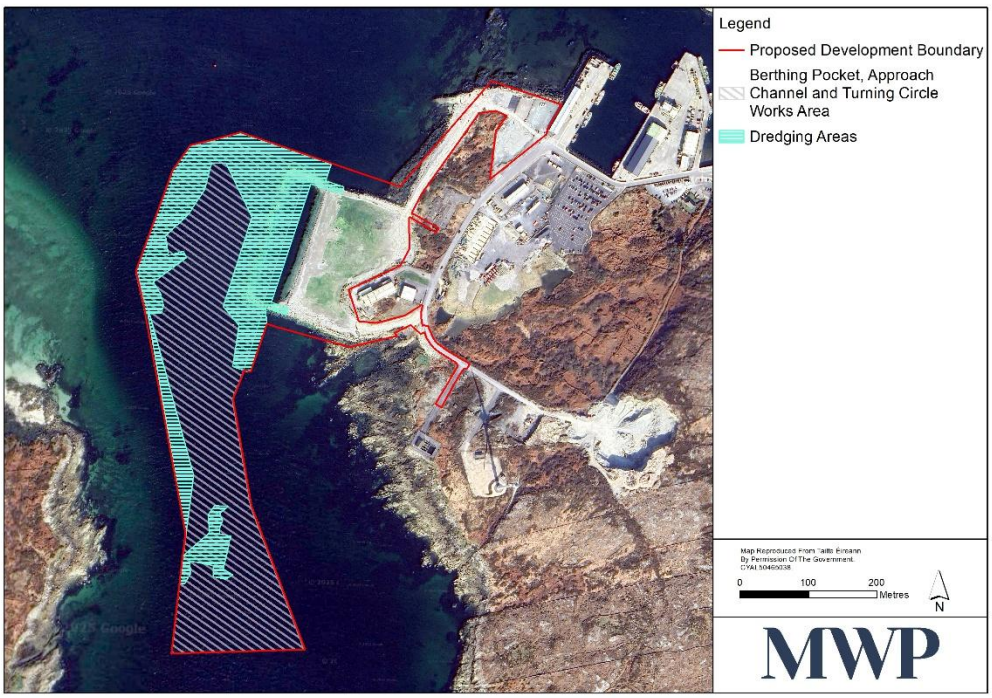

Figure 5-1: Map of area where works are to be completed at the Ros an Mhíl DWQ Site

5.4 Baseline Environment

5.4.1 Site Location

The DWQ works site is situated immediately southwest of Ros an Mhíl Harbour on the northeast shore of Cashla Bay, approximately 1.7 kilometres southwest of the Gaeltacht village of Ros an Mhíl in Connemara and approximately 35 kilometres west of Galway City. Access to the development site is from the R372 Regional Road through Ros an Mhíl village via the R336 connecting Ros an Mhíl village to Galway City.

The village contains several residential dwellings, a local shop, school and church, with industries in the wider area providing support to the fishing port at Ros an Mhíl Harbour including companies that supply diesel/oil, process fish, and repair nets/boats. The harbour serves fishing fleets operating off the coast of Galway and is suitably located between the major fishing ports of Dingle and Castletownbere to the south and Killybegs to the north. Ros an Mhíl Harbour also supports ferry and leisure activities.

5.4.2 Local Hydrology

The Proposed development site is located within the Water Framework Directive (WFD) Cashla_SC_010 sub-catchment which in turn is located within the Galway Bay North Catchment (31). A review of the EPA map-viewer[4] determined that there are no watercourses traversing the Proposed development site. The nearest are three

[4] EPA Maps Accessed: 29th May 2025

small 1st Order streams (Carrowroe South Stream and two unnamed streams) that drain into Cashla Bay[5] near Sruthán Pier to the west of the Proposed development site on the opposite side of the bay. These three streams are all constituents of the Carrowroe_South_010 River Waterbody[6]. The Carrowroe South Stream is the only EPA-registered watercourse flowing into and out of Loughaunwillan (Loch an Mhuilinn)[7], a large lake containing eighteen islands located approximately 1.3 kilometres northwest of the Proposed development site across the bay – refer to **Figure 5-2**.

Watercourses on the same side of the bay as the Proposed development site include the 4th Order Cashla River and its tributary the 2nd Order Rossaveel River which are both part of the Cashla_010 River Waterbody[8]. The Cashla River empties into the Cashla Estuary[9], approximately 2.4 river kilometres[10] upstream of the DWQ Proposed development site - see **Figure 5-2**.

Compliance with the reporting requirements of the WFD (Directive 2000/60/EC) obliges each European Union (EU) member state to publish reports providing summary information about individual waterbodies relating to their status, risks and objectives. The WFD Ecological Status (2016–2021) of the Carrowroe_South_010 River Waterbody is 'Moderate' while the Cashla_010 River Waterbody and the Loughaunwillan Lake Waterbody both have a status of 'Good'. Cashla Bay Coastal Waterbody and Cashla Estuary Transitional Waterbody both have an ecological status of 'High', however, neither are on a 'published monitoring programme'[11].

There are no EPA water quality monitoring stations downstream of the Proposed development site. The nearest monitoring station[12] is on the Cashla River where the Cashla Bridge crosses R336, approximately 3.4 river kilometres upstream of the Proposed development site. The latest river Q-value[13] for the station is 'Q4, Good' and it was recorded by the EPA in 2024.

The Carrowroe_South_010 River Waterbody has been assigned a WFD risk status of 'Review'[14], while the Cashla_010 River Waterbody is classed as being 'At risk'[15]. Cashla Bay Coastal Waterbody and Cashla Estuary Transitional Waterbody have both been classified as being 'Not at risk[16]' (EPA, 2024).

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[5] EPA Coastal Waterbody Code: IE_WE_190_0000

[6] EPA River Waterbody Code: IE_WE_31C050910

[7] EPA Lake Waterbody Code: IE_WE_31_120

[8] EPA River Waterbody Code: IE_WE_31C010100

[9] EPA Transitional Waterbody Code: IE_WE_190_0100

[10] River kilometres (rkm): measure of the distance in kilometres along the path of a watercourse (as opposed to a linear measure such "as the crow flies").

[11] Data - Catchments.ie - Catchments.ie Accessed: 22nd May 2025

[12] EPA Monitoring Station Code: RS31C010100

[13] Quality Rating (Q) System devised by Toner *et al.* (2005). This method categorises invertebrates into one of five groups (A-E), depending on their sensitivity to pollution. Q values range from Q1-Q5 with Q1 being the poorest quality and Q5 being pristine/unpolluted conditions. The system is used by the EPA and is the standard biological assessment technique used when surveying rivers in Ireland under the WFD.

[14] *Review* – either additional information is needed to ascertain the waterbody's status, or measures have been undertaken but the results have not yet been monitored (EPA Maps Accessed: 15th May 2025).

[15] *At risk* - either the waterbody is currently not achieving its WFD environmental objective of Good or High Ecological Status, or there is an upward trend in nutrients/ammonia, and should this trend continue, the waterbody Status will decline and fail to meet WFD objectives by 2027. EPA Maps Accessed: 11th May 2025.

[16] *Not at risk* – waterbody is meeting its WFD objectives. Requires maintenance of existing measures to protect satisfactory status EPA Maps Accessed: 22nd May 2025.

The Proposed development site overlies the Spiddal Ground Waterbody[17] and is characterised as 'poorly productive bedrock' with a WFD Ecological Status (2016–2021) of 'Good' and a risk status of 'Not at risk'.

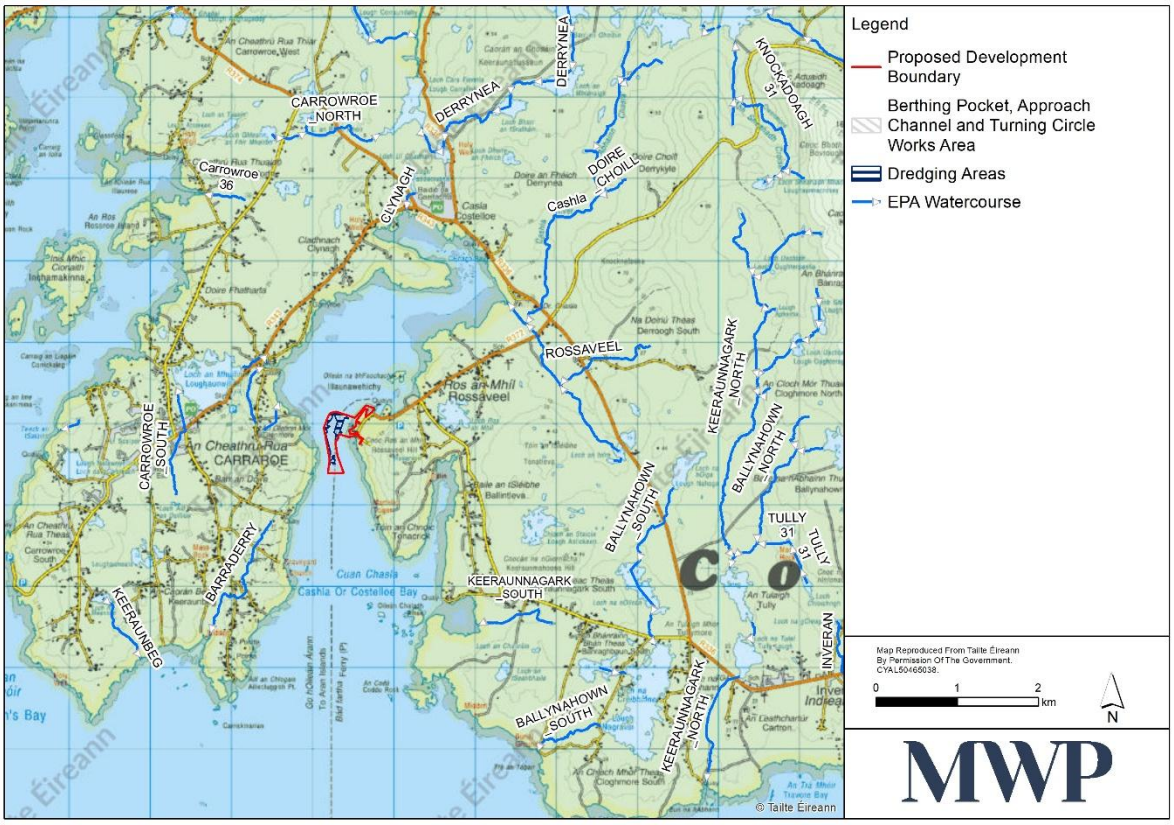

Figure 5-2: Hydrology of Proposed development site and surrounding areas in County Galway.

5.4.3 Designated Sites

The following compiles a list of nature conservation sites which lie within a potential zone of impact (ZOI) for later analysis which may or may not be significantly impacted upon by the Proposed Development. Each site is characterised in the context of its conservation interests. Following this, the potential effects associated with the proposal will be identified before an assessment is made of the likely significance of these effects.

5.4.3.1 Sites of International Importance

Natura 2000 sites are sites of international importance for nature conservation and are designated and protected under European legislation. Two types of sites are incorporated within the Natura 2000 network; Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are protected under the Habitats Directive 92/43/EEC, while SPAs are protected under the Birds Directive 2009/147/EC. Both of these European Directives are transposed into Irish legislation under the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Collectively, SACs and SPAs are referred to as Natura 2000 sites or European sites.

[17] EPA Ground Waterbody Code: IE_WE_G_0004

The screening stage of Appropriate Assessment involves compiling a 'long list' of European sites within a potential zone of influence (ZOI). The ZOI of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the conservation interests of a Natura 2000 site. The ZOI is established using the Source-Pathway-Receptor (SPR) model with reference to the Office of the Planning Regulator (OPR) Practice Note 'Appropriate Assessment Screening for Development Management' (OPR, 2021). For an impact to occur there must be a risk initiated by having a 'source' (e.g., excavation), a 'receptor' (e.g., a protected species associated with aquatic or riparian habitats), and an impact pathway between the source and the receptor (e.g., a waterbody which connects the Proposed development site to the protected species or habitats).

The precautionary principle has been adopted in identifying potentially affected European sites. These sites are characterised in the context of the rationale for designation and the qualifying features (see **Table 5-2**). The European sites identified at this stage may or may not have been significantly impacted upon by the Proposed development. All SACs and SPAs within a potential ZOI of the Proposed Development site have been examined and identified with the application of the SPR model and are presented in **Table 5-2** and **Figure 5-3**.

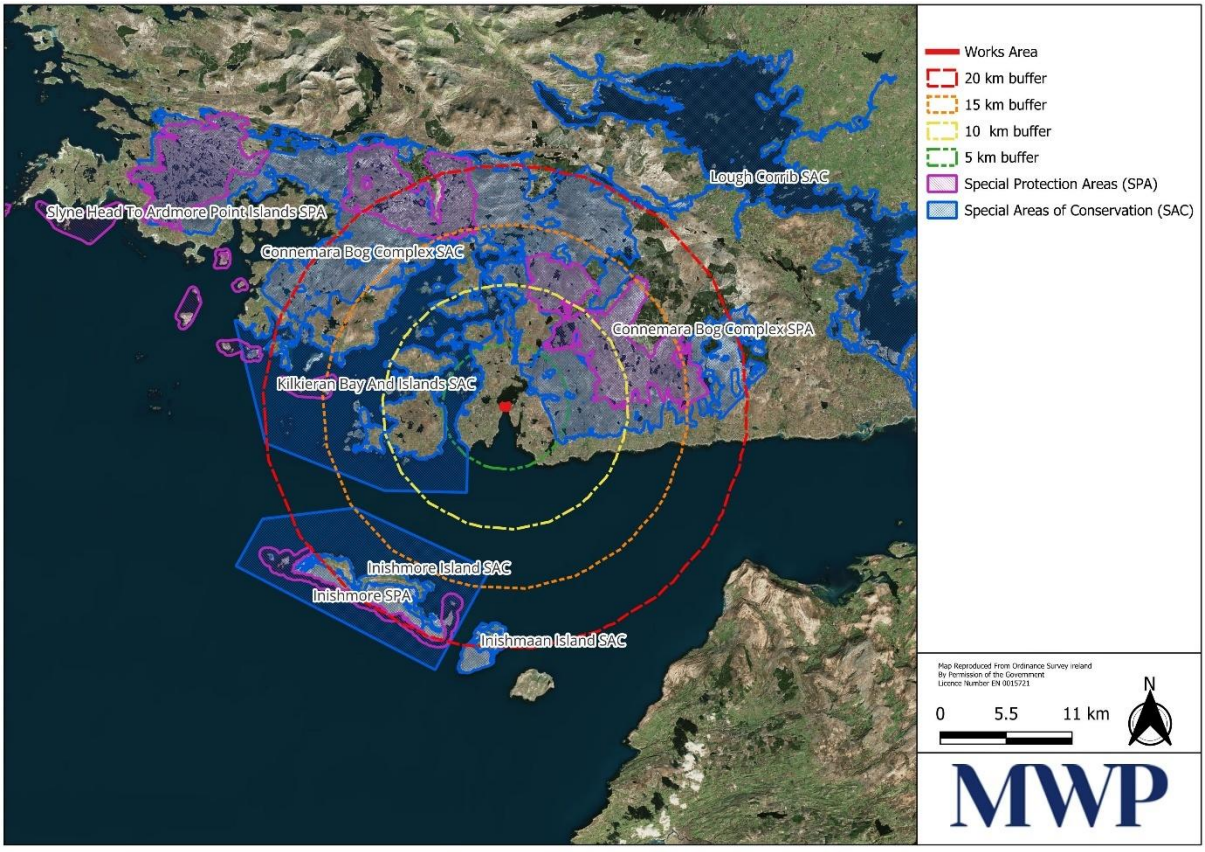

Figure 5-3. SACs and SPAs within vicinity of the Proposed development site

Table 5-2. Qualifying features of conservation interest of Natura 2000 sites within the potential ZOI

Designated Site	Site Code	Qualifying features of conservation interest
Connemara Bog Complex SAC	002034	▪ Coastal lagoons* [1150] ▪ Reefs [1170]

Designated Site	Site Code	Qualifying features of conservation interest
		▪ Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] ▪ Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] ▪ Natural dystrophic lakes and ponds [3160] ▪ Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] ▪ Northern Atlantic wet heaths with *Erica tetralix* [4010] ▪ European dry heaths [4030] ▪ *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] ▪ Blanket bogs (* if active bog) [7130] ▪ Transition mires and quaking bogs [7140] ▪ Depressions on peat substrates of the Rhynchosporion [7150] ▪ Alkaline fens [7230] ▪ Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] ▪ Marsh Fritillary (*Euphydryas aurinia*) [1065] ▪ Salmon (*Salmo salar*) [1106] ▪ Otter (*Lutra lutra*) [1355] ▪ Slender Naiad (*Najas flexilis*) [1833]
Kilkieran Bay and Islands SAC	002111	▪ Mudflats and sandflats not covered by seawater at low tide [1140] ▪ Coastal lagoons* [1150] ▪ Large shallow inlets and bays [1160] ▪ Reefs [1170] ▪ Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] ▪ Mediterranean salt meadows (*Juncetalia maritimi*) [1410] ▪ Machairs (* in Ireland) [21A0] ▪ Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] ▪ Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] ▪ Harbour Porpoise *(Phocoena phocoena)* [1351] ▪ Otter (*Lutra lutra*) [1355] ▪ Harbour Seal (*Phoca vitulina*) [1365] ▪ Slender Naiad (*Najas flexilis*) [1833]
Connemara Bog Complex SPA	004181	▪ Cormorant *(Phalacrocorax carbo)* [A017] ▪ Merlin *(Falco columbarius)* [A098] ▪ Golden Plover *(Pluvialis apricaria)* [A140] ▪ Common Gull *(Larus canus)* [A182]

5.4.3.1.1 Connemara Bog Complex SAC

The Connemara Bog Complex SAC (004181) is a large, ecologically diverse site extending over parts of County Galway. It encompasses a mosaic of upland and lowland peatlands, interspersed with lakes, rivers, and heath. The SAC is notable for its extensive active blanket bogs [7130], transition mires [7140], alkaline fens [7230], and rare dystrophic waterbodies [3160]. These habitats support a rich assemblage of flora and fauna, including rare species such as Marsh Fritillary [1065], Slender Naiad [1833], Otter [1355], and Atlantic Salmon [1106].

5.4.3.1.2 Kilkieran Bay and Islands SAC

Kilkieran Bay and Islands SAC (002111) encompasses a complex of marine and coastal habitats including reefs [1170], coastal lagoons [1150], machairs [21A0], and extensive salt meadows [1330, 1410]. It supports both terrestrial and marine species such as Otter [1355], Harbour Seal [1365], and Harbour Porpoise [1351]. The presence of Slender Naiad [1833] in standing waters within the site further underscores its ecological importance.

5.4.3.1.3 Connemara Bog Complex SPA

This Connemara Bog Complex SPA (002034) overlaps geographically with the Connemara Bog Complex SAC and is designated for several bird species, notably Golden Plover [A140] and Merlin [A098], both of which are sensitive to disturbance and habitat degradation. The SPA supports important foraging and breeding grounds for these species in the form of peatland and open moor habitats.

5.4.3.2 Sites of National Importance

In Ireland, sites of national importance for nature conservation are designated as Natural Heritage Areas (NHAs) or proposed Natural Heritage Areas (pNHAs) under the Wildlife Act 1976, as amended. NHAs are areas considered important for the habitats present or which hold species of plants and animals whose habitat needs protection. A list of pNHAs was published on a non-statutory basis in 1995, but these have not since been statutorily designated. Prior to statutory designation, pNHAs are subject to limited protection.

Sites of national importance within a potential ZOI of the Proposed Development have been identified and are listed in Table 5-3. A total of two pNHAs have been identified. There are no NHAs located within the potential ZOI of the Proposed Development.

Table 5-3. pNHA sites within the potential ZOI of the Proposed Development

Core Designated Site	Site Code	Features of Interest	Proximity to study area
Connemara Bog Complex pNHA	002034	Overlaps with the Connemara Bog Complex pNHA SAC.	3 km east
Kinvarra Saltmarsh pNHA	002075	Overlaps with Kilkieran Bay and Islands SAC.	4.2 km to the north

5.4.3.3 Additional Sites

Ramsar Sites

The Ramsar Convention on Wetlands of International Importance, particularly as Waterfowl Habitat, is an international treaty focused on the conservation and sustainable use of wetlands. It provides a framework for both national initiatives and international cooperation aimed at protecting wetlands and their resources.

A key commitment of Ramsar Contracting Parties is to identify and place suitable wetlands onto the List of Wetlands of International Importance. Ireland presently has 45 sites designated as Wetlands of International Importance. An on-line search was undertaken to search for Ramsar sites potentially located within the ZOI of the Proposed Development. There are no Ramsar sites within a 15 km radius of the study area[18].

Important Bird and Biodiversity Areas (IBAs)

Important Bird and Biodiversity Areas (IBAs) are sites selected as important for bird conservation because they regularly hold significant populations of one or more globally or regionally threatened, endemic or congregator bird species or highly representative bird assemblages. The European IBA programme aims to identify, monitor and protect key sites for birds all over the continent. It aims to ensure that the conservation value of IBAs in Europe (now numbering more than 5,000 sites or about 40% of all IBAs identified globally to date) is maintained, and where possible enhanced. The programme aims to guide the implementation of national conservation strategies, through the promotion and development of national protected-area programmes.

An on-line search was undertaken to search for IBA sites potentially located within the ZOI of the Proposed Development. The 'Connemara Islands' IBA[19] overlaps with the site development area (**Figure 5-4**). The 'Connemara Bogs' (south-east) and 'Roundstone Bog' IBA[20] is located approximately 1.8 km to the northeast at the closest point and largely overlaps with the Connemara Bog Complex SAC. There are no additional IBA sites within the ZOI of the study area[21].

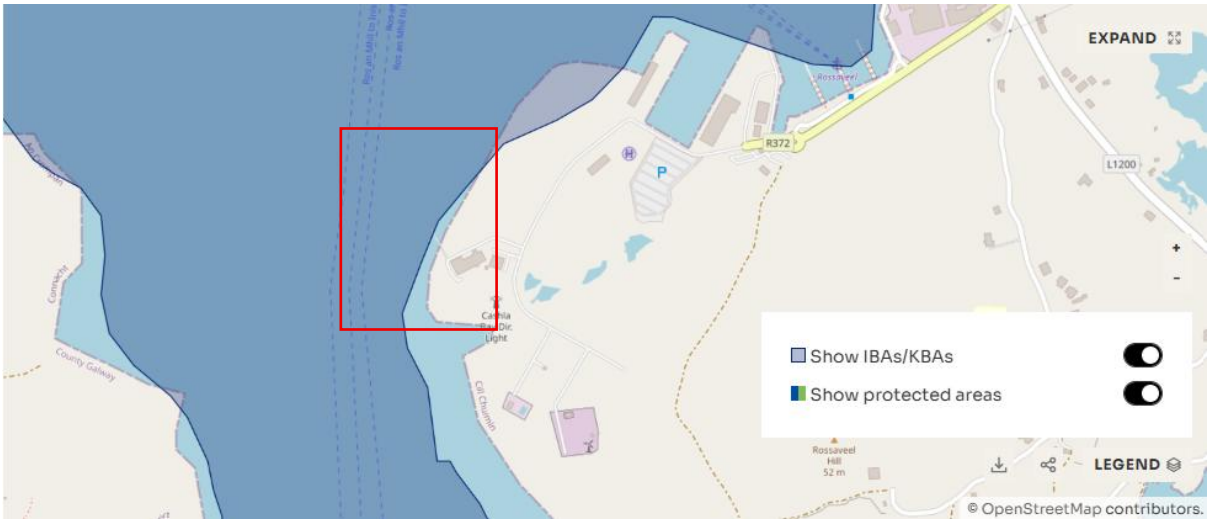

Figure 5-4: IBA overlapping with the Proposed site development.

Salmonid Rivers

Water channels in Ireland may be designated as a Salmonid River in line with the European Communities (Quality of Salmonid Waters) Regulations, 1988. None of the watercourses within the vicinity of the Proposed Development site are designated as Salmonid Rivers[22].

[18] https://rsis.ramsar.org/

[19] https://datazone.birdlife.org/site/factsheet/connemara-islands

[20] https://datazone.birdlife.org/site/factsheet/connemara-bogs-southeast-including-roundstone-bog

[21] http://datazone.birdlife.org/site/mapsearch

[22] EPA Maps

5.4.4 Habitat survey

5.4.4.1 Desktop Study

NPWS EU Habitats Directive Annex Habitats Article 17 Datasets

The NPWS Article 17 spatial datasets for Annex I habitats were accessed via the NPWS interactive map-viewer[23] and reviewed. These datasets document the occurrence of Annex I habitats in Ireland.

A review of the coastal habitat spatial dataset determined that the Proposed development site is mapped as priority Annex I 'Large shallow inlets and bays [1160]' and 'Atlantic salt meadows [1330]'. This distribution mapping is based on the results of the Coastal Monitoring Project (2004-2006), a project carried out on behalf of NPWS to meet Irelands obligations under Article 17 of the EU Habitats Directive in relation to reporting on the conservation status of Annex I sand dune habitats in Ireland.

The overall proposed development site is comprised mainly of artificial surfaces and open marine water. Habitats within the immediate environs are of a similar nature but with slightly more variation. Refer to the habitat map in Figure 5-10.

5.4.4.2 Field Survey

The proposed development site is located within a coastal area characterised by a predominance of artificial and modified habitats. These include large expanses of spoil and bare ground created through land reclamation and infill (ED2), alongside extensive areas of artificial surfaces associated with existing piers, buildings, roads, and stonework (BL3, BL1). The shoreline and immediate marine environment are dominated by sea walls, piers, jetties (CC1), exposed and moderately exposed rocky shores (LR1, LR2), and open marine waters (MW1). Inland and transitional zones support a variety of semi-natural and recolonising habitats, including scrub (WS1), recolonising bare ground (ED3), amenity grassland (GA2), lagoons and upper salt marsh (CW1, CM2), and a large tract of scrub-heath mosaic (WS1/HH1). These habitats were identified and classified following Fossitt (2000). Detailed habitat descriptions are presented in the following sections, with habitats within the proposed development site discussed in Section 5.4.4.2 to 5.4.4.2.10. Refer to accompanying Figure 5-5 to Figure 5-9 and Figure 5-10 for photographic and spatial references.

5.4.4.2.1 Buildings and Artificial Surfaces (BL3), and Stone Walls and Other Stonework (BL1)

Buildings and artificial surfaces (BL3) is the predominant terrestrial habitat type within the proposed development boundary. It encompasses the reclaimed land, both Pier 1 and Pier 2, the Údarás na Gaeltachta buildings, Cashla Bay Lighthouse, the R372 and other local roads, and all existing structures and car parks with finished artificial surfaces. The reclaimed land was created predominantly by importation of engineering fill material, and to a lesser extent reusing blasted and dredged seabed substratum - Refer to Figure 5-5. Small areas of Stone walls and other stonework (BL1) consisting of large rocks and boulders occur on reclaimed land to the west and north of the Údarás na Gaeltachta buildings (see also Figure 5-7 and Figure 5-8).

[23] https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a

Figure 5-5. Westernmost Údarás na Gaeltachta building classified as Building and Artificial Surfaces (BL3) with Stone Walls and Other Stonework (BL1) in the centre, and Spoil and Bare Ground (ED2) in front.

5.4.4.2.2 Sea Walls, Piers and Jetties (CC1)

On the seaward sides of the proposed development area, there are Sea walls, piers and jetties (CC1) consisting mainly of protective rows of large rocks and boulders that are partially or totally inundated by seawater during tidal movements. The rocks and boulders of the upper shore that are subject to wave splash and sea spray display patches of the black lichen (*Verrucaria maura*). At the lower shore, where the rocks and boulders are periodically completely inundated, fucoids and kelps occur. Refer to Figure 5-6.

Also categorised as this habitat type is the rectangular berm of protective rocks constructed at the western side of the site at the proposed DWQ location. Measuring approximately 215 metres long and 60 metres wide, this rectangle of rocks is covered in layers of ephemeral green seaweed (*Enteromorpha* spp.) during the summer months - see Figure 5-6.

5.4.4.2.3 Open Marine Water (MW1)

Extending away from the site to the west, north and south into the bay is Open marine water (MW1). This also describes the marine habitat found within the protective rectangular berm - see Figure 5-6.

Figure 5-6. Sea Walls, Piers and Jetties (CC1) and Open Marine Water (MW1) – (left) at northeast corner with Pier 1 in the background, and (right) rectangular berm area of rock at the proposed DWQ location with layer of green seaweed (*Enteromorpha* spp.).

5.4.4.2.4 Exposed Rocky Shores (LR1)

An area of Exposed rocky shore (LR1) occurs south of the Údarás na Gaeltachta buildings, extending southwards along the coastline towards the Lir Environmental Research wind turbine. As is typical of this habitat type, the rocks of the extreme upper shore exhibit distinct bands of lichen within a lichen zone created by the differing levels of sea spray or wave splash exerted on an area – refer to Figure 5-7. Grey lichens (*Ramalina* spp.) occur at the upper reaches of the lichen zone, yellow lichens (*Xanthoria* spp.) are found within the middle region with black lichen (*Verrucaria maura*) present at the lowest reaches of the lichen zone. Rocks of the lower littoral and upper infralittoral zones are dominated by brown seaweeds (fucoids).

5.4.4.2.5 Moderately Exposed Rocky Shores (LR2)

The small section of shoreline south of Cashla Bay Lighthouse is classified as Moderately exposed rocky shore (LR2) and is comprised of boulders and rock and a smaller lichen zone than more exposed rocky shorelines. Black lichen and fucoids occur on the lower shore while at upper sections there are some patchy occurrences of terrestrial vascular plants like scurvygrass (*Cochlearia* spp.) and thrift (*Armeria maritima*) – see Figure 5-7.

Figure 5-7. West-facing view across Cashla Bay - Open Marine Water (MW1) and Exposed Rocky Shores (LR1) (with visible lichen zone) transitioning to Moderately Exposed Rocky Shores (LR2). Cashla Bay Lighthouse, categorised as Buildings and Artificial Surfaces (BL3).

5.4.4.2.6 Scrub (WS1) / Recolonising Bare Ground (ED3)

Two areas comprised of Scrub (WS1) / Recolonising Bare Ground (ED3) mosaic are located to the southeast of the study area adjacent to both the Lir Environmental Research wind turbine and the R372. Vegetation within these areas is varied but dominated by gorse (*Ulex europeaus*), bramble (*Rubus fruticosus* agg.), and willow (*Salix* spp.) and typical ruderal species including dandelion (*Taraxacum* spp.) and ragwort (*Sencio* spp.) – see Figure 5-8.

There is also a relatively large central area of this habitat surrounding a concreted artificial surface located between the R372 and the coastline. Vegetation in this part of the site is similar to that of the same habitat type near the Lir Environmental Research wind turbine but is slightly more established and with additional species including ivy (*Hedera helix*), plantain (*Plantago major*), bird's-foot-trefoil (*Lotus corniculatus*), and heather (*Calluna vulgaris*).

5.4.4.2.7 Scrub (WS1)

An area of Scrub (WS1) in the northwestern region of the study area is dominated by dense gorse, bramble, heather, and bracken (*Pteridium aquilinum*) with patches of purple moor-grass (*Molinia caerulea*) and scattered willow trees also present - refer to Figure 5-8.

Several smaller pockets of scrub are located to the southeast of the study area towards the Lir Environmental Research wind turbine, and at the southern side of the Údarás na Gaeltachta buildings, around the Cashla Bay Lighthouse and on the eastern side of the R372 opposite the lighthouse. Vegetation in these areas is varied and includes species such as gorse, willow, bramble, silverweed (*Potentilla anserina*), bramble, ivy, teasel (*Dipsacus fullonum*) and fescues (*Festuca* spp.)

Figure 5-8. Area of Scrub (WS1) / Recolonising Bare Ground (ED3) adjacent to the R372 classified as Buildings and Artificial Surfaces (BL3) (left), and Scrub (WS1) at the northeast corner of the study area near Pier 1.

5.4.4.2.8 Lagoons and Saline Lakes (CW1), and Upper Salt Marsh (CM2)

The centrally located brackish pools of standing water that stretch diagonally from southwest to northeast across the study area are classified as Lagoons and saline lakes (CW1) - refer to Figure 5-9. The pools are separated from the sea by a stretch of the R372 near the Údarás na Gaeltachta buildings with a potential small outlet from the pools to the sea on the western side of the R372. Water currents are almost entirely absent from the pools while any tidal influence exerted on them is extremely limited. Vegetation appears to be sparse in the pools and limited to salt-tolerant species such as tasselweeds (*Ruppia* spp.) and stoneworts (Charophytes).

At the northern fringes of the pools situated nearest the R372, a narrow area of Upper salt marsh (CM2) occurs comprised predominantly of grasses and rushes (*Juncus* spp.) with other species including arrowgrass (*Triglochin* spp.) and ribwort plantain (*Plantago lanceolata*) also present - see Figure 5-9.

5.4.4.2.9 Scrub (WS1) / Dry siliceous heath (HH1)

The eastern side of the study area consists of a large tract of Scrub (WS1) / Dry siliceous heath (HH1) mosaic stretching from close to the Harbour Offices on Pier 1 southwards to where the R372 terminates near the Lir Environmental Research wind turbine. Dominant floral species at this habitat includes gorse of varying heights, dense bracken, willow, ivy, and ling (*Calluna vulgaris*) with the occasional occurrence of single, young stands of holly (*Ilex aquifolium*) and rowan (*Sorbus aucuparia*). Ground flora at the edge of this habitat supports species including dandelion, primrose (*Primula vulgaris*), coltsfoot (*Tussilago farfara*), and silverweed. See Figure 5-9.

Figure 5-9. Northeast-facing view of Lagoons and Saline Lakes (CW1) fringed by Upper Salt Marsh (CM2) (in the middleground) and large tract of Scrub (WS1) / Dry Siliceous Heath (HH1) extending away to the right.

5.4.4.2.10 Amenity Grassland (improved) (GA2)

There is a small area of Amenity grassland (improved) (GA2) located at the two Údarás na Gaeltachta buildings. Species variation at this maintained habitat is low and is limited to grasses with the occasional occurrence of broadleaved herb species such as daisy (*Bellis perennis*), dandelion, and plantain (*Plantago* spp.).

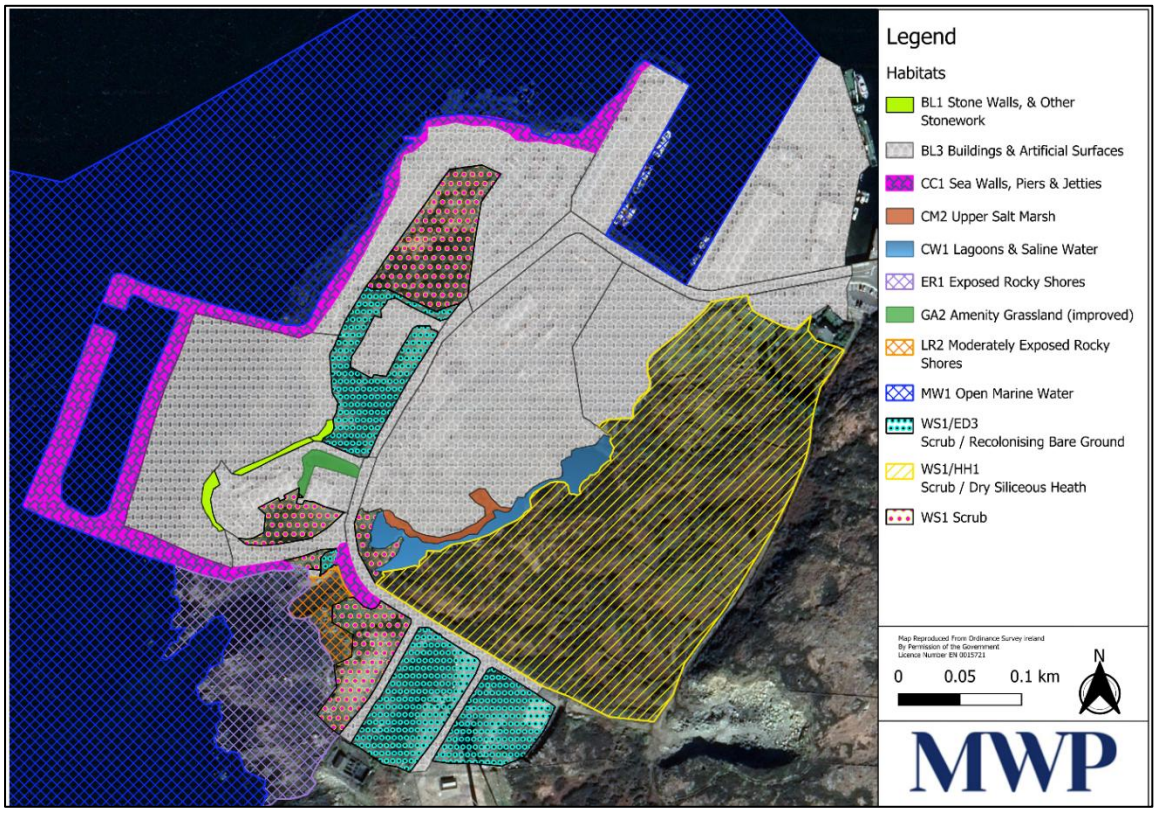

Figure 5-10: 2025 Habitat map of the proposed development site near Ros an Mhíl Harbour in County Galway.

5.4.5 Rare and Protected Flora

5.4.5.1 Desktop Study and Field Survey

The desktop study included a review ofrare and protected species data held by the NBDC and NPWS and EU Habitats Directive Article 17 spatial data for annexed terrestrial species available on-line[24]. The search targeted plant species listed in Annex II of the EU Habitats Directive, the Flora Protection Order species (FPO) (2022), and species listed in the Irish Red Data Book (Wyse Jackson, *et al*. 2016).

Previous species records for rare and protected flora as identified during the desk study are listed in

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The proposed development site is located within the 2 km Ordnance Survey National Grid hectads L92S and L92M, and within the broader 10 km hectad L92. Species records for these hectads were obtained from the National Biodiversity Data Centre (NBDC) online database and reviewed. Within the 10 km hectad L92, recorded species include 12 flora species.

[24] https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a?item=2

Table 5-4 Desktop records of rare and protected flora species within hectad L92 and results of field surveys at the Site

Name	Designations and Status	Record Date	Record Source	Nearest Record to Proposed Development Site	Habitat Requirements[25,26]	Field Results/ Suitability of site to support this species
Common Maërl (*Phymatolithon calcareum*)	Annex V	1988	Seaweeds of Ireland	Carraroe approximately 8 km west	Subtidal maërl beds in clean, well-lit, high-salinity waters; typically found on infralittoral clean gravel or coarse sand.	Not identified within the study area during site surveys.
Coral Maërl (*Lithothamnion corallioides*)	Annex V	1988	Seaweeds of Ireland	n/a	Subtidal maërl beds on muddy gravel substrates in areas with moderate to high water flow; found at depths less than 20 m.	Not identified within the study area during site surveys.
Autumn Lady's-tresses (*Spiranthes spiralis*)	Near threatened	2023	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Carraroe approximately 8 km west	Dry, calcareous grasslands, meadows, and heaths; prefers well-drained soils.	Not identified within the study area during site surveys.

[25] https://www.irishwildflowers.ie/habitats.html

[26] https://bsbi.org/species-accounts

Name	Designations and Status	Record Date	Record Source	Nearest Record to Proposed Development Site	Habitat Requirements[25,26]	Field Results/ Suitability of site to support this species
Darnel (*Lolium temulentum*)	Regionally Extinct	1993	Irish Crop Wild Relative Database	Baile na tSleibhe, Baile na hAbhann, Connemara, Co. Galway approximately 10 km north west	Arable lands, particularly in cereal fields; thrives in moist, well-drained soils.	Not identified within the study area during site surveys.
Fragrant Agrimony (*Agrimonia procera*)	Near threatened	2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Carraroe approximately 8 km west	Dry, well-drained grassy places; often found in hedgerows and woodland margins; prefers neutral to slightly acidic soils.	Not identified within the study area during site surveys.
Greater Knapweed (*Centaurea scabiosa*)	Near threatened	2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Carraroe approximately 8 km west	Dry grasslands, hedgerows, and chalk downlands; favors lime-rich, well-drained soils.	Not identified within the study area during site surveys.
Green-winged Orchid (*Orchis morio*)	Vulnerable	2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Carraroe approximately 8 km west	Damp to dry unimproved grasslands on base-poor to base-rich soils; sensitive to habitat disturbance.	Not identified within the study area during site surveys.

Name	Designations and Status	Record Date	Record Source	Nearest Record to Proposed Development Site	Habitat Requirements[25,26]	Field Results/ Suitability of site to support this species
Least Bur-reed (*Sparganium natans*)	Near threatened	2016	Irish Vascular Plant Data - Robert Northridge	Loughaunwillan approximately 7 km north east	Shallow, calm freshwater bodies; often submerged in nutrient-poor waters.	Not identified within the study area during site surveys.
Pipewort (*Eriocaulon aquaticum*)	Near threatened	2022	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Loughaunwillan approximately 7 km north east	Peaty, oligotrophic freshwater lakes and bog margins; rare and sensitive species.	Not identified within the study area during site surveys.
Sea-kale (*Crambe maritima*)	Near threatened	2024	Vascular plants: Online Atlas of Vascular Plants 2012 Onwards	Within Ros an Mhíl	Coastal shingle and upper beaches; salt-tolerant pioneer species.	Not identified within the study area during site surveys.
Six-stamened Waterwort (*Elatine hexandra*)	Near threatened	2016	Irish Vascular Plant Data - Robert Northridge	Loughaunwillan approximately 7 km north east	Shallow, oligotrophic to mesotrophic lakes with sandy or muddy bottoms.	Not identified within the study area during site surveys.
Slender Naiad (*Najas flexilis*)	Vulnerable	2019	Water Framework Directive Lake Macrophyte Status Survey Data 2007 to 2019	Loughaunwillan approximately 7 km north east	Clear, nutrient-poor lakes with submerged vegetation; often in marl-rich waters.	Not identified within the study area during site surveys.

5.4.6 Invasive Alien Plants

5.4.6.1 Desk Study

A search for records of invasive plant species held by the NBDC for the hectad L92 was carried out with a focus on non-native plant species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015). Documented six records of high-impact invasive species within L92 Wireweed (*Sargassum muticum*), Canadian Waterweed (*Elodea canadensis*), Giant Hogweed (*Heracleum mantegazzianum*), Himalayan Knotweed (*Persicaria wallichii*), Indian Balsam (*Impatiens glandulifera*), Japanese Knotweed (*Fallopia japonica*), Japanese Rose (*Rosa rugosa*) and Pampas-grass (*Cortaderia selloana*). NBDC documented both Giant Hogweed (*Heracleum mantegazzianum*) and Japanese Rose (*Rosa rugosa*) close to the vicinity of the Site[27].

5.4.6.2 Field Surveys

During MWP multidisciplinary ecological field surveys of the study area, no high-impact invasive plant species listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) were recorded on-site.

5.4.7 Mammals (excluding bats)

5.4.7.1 Desk Study

Records of protected non-volant and marine mammals were retrieved from the NBDC database for the hectad L92 and information received from the NPWS data request for rare and protected species was also reviewed. The EU Habitats Directive Article 17 spatial data for annexed terrestrial and marine species were also accessed and reviewed[28]. The relevant records obtained in relation to protected mammals (excluding bats) are listed in **Table 5-5**.

Table 5-5. Desktop records of protected mammals (excluding bats) from hectad L92

Species Name	Level of Protection	Record Date	Record Source	Nearest Record to the Site
Badger (*Meles meles)*	Wildlife Act, 1976 (as amended)	2016	NBDC	Recorded within 1km grid square L9726, approximately 1 km from the site (recorded 2017).
Pygmy shrew *(Sorex minutus)*	Wildlife Act, 1976 (as amended)	1969	NBDC	Recorded within 1km grid square L967256, which partially overlaps the study area (recorded 2013).

[27] https://maps.biodiversityireland.ie/Map

[28] https://storymaps.arcgis.com/collections/1a721520030d404f899d658d5b6e159a?item=2

Species Name	Level of Protection	Record Date	Record Source	Nearest Record to the Site
Otter (*Lutra lutra*)	Annex II & IV EU Habitats Directive, Wildlife Act, 1976 (as amended)	2012; 2018	NPWS; NBDC	Recorded within 1km grid square L948256, approximately 6 km west of the site near Carraroe (recorded 2011).
Irish hare (*Lepus timidus hibernicus*)	Annex V EU Habitats Directive, Wildlife Act, 1976 (as amended)	2007; 2021	NPWS; NBDC	Recorded within 1km grid square L9624, which partially overlaps the study area (recorded 2011).
Red Fox (*Vulpes vulpes*)	Atlas of Mammals in Ireland 2010-2015	2015		Recorded in Cloghmore South, approximately 4 km from the site.
Hedgehog (*Erinaceus europaeus*)	Wildlife Act, 1976 (as amended)	2021	NBDC	Recorded within 1km grid square L964250, which partially overlaps the study area (recorded 2022).

In addition, the invasive terrestrial mammal species American mink (*Mustela vison*), brown rat (*Rattus norvegicus*), Bank Vole (*Myodes glareolus*) and feral goat (*Capra hircus*) have all also been previously recorded in the subject hectad by the NBDC.

5.4.7.2 Field Surveys

No definitive evidence of protected non-volant mammal species was recorded during the current field surveys. Nonetheless, several mammal trails were observed across the study area, particularly in open grassland habitats. A number of shallow scrapes and small openings were also noted, which are most likely associated with Irish hare, a species frequently encountered during the surveys. These signs suggest occasional mammal activity, although no breeding or resting sites for protected mammal species were identified.

No signs of badger , such as setts, latrines, or foraging evidence, were recorded, and the site lacks suitable woodland or agricultural edge habitat typically associated with the species. Similarly, no evidence of pine marten or otter , such as scats/spraints, prints, or holts, was identified during this assessment.

Overall, the site is considered to provide limited value to non-volant mammal species, based on the current survey findings.

5.4.8 Bats

5.4.8.1 Desk Study

A review of the NBDC's Bat Habitat Suitability Index (BHSI) available on-line (see Section 5.2.6.3) determined that for the area encompassed within the Site, and also including the lands extending away from the Site, the BHSI rating that has been assigned for 'all bats' combined is 24.56 out of 100, based on the analysis of the habitat and

landscape associations of Irish bats compiled in Lundy *et al.* (2011). The BHSI ratings assigned for bats indicate that the Site and surrounding area is of relatively low overall value for bats.

5.4.8.2 Field Surveys

A site walkover survey undertaken by MWP on 15th April 2025 confirmed the absence of suitable habitat features for supporting bat species within the Site. As with the findings of the 2010 baseline survey, the proposed quay location and surrounding area remain highly exposed, comprising predominantly open coastal habitats with limited structural complexity, shelter, or vegetation cover. No features offering potential roosting opportunities, such as mature trees with cavities, old stone structures, or buildings with access points, were identified. Furthermore, the limited extent of suitable foraging habitat, coupled with persistent exposure to coastal winds, reduces the likelihood of regular bat activity. No signs of bat presence were detected during the walkover survey, and overall, the Site continues to be assessed as having negligible potential for supporting bats.

5.4.9 Birds

5.4.9.1 Desk Study

The Connemara Bog Complex SPA (Site Code: 004181) is located approximately 1.6 km northeast of the Site and is designated for the protection of several bird species, including cormorant (*Phalacrocorax carbo*), merlin (*Falco columbarius*), golden plover (*Pluvialis apricaria*), and common gull (Larus canus), all of which have been recorded within the 10 km hectad (L92) encompassing the Proposed development area. This is the nearest SPA to the Site, with additional European sites designated for birds located in the wider Connemara region. The I-WeBS sub-site 'Clynagh Bay – 0G421' is situated to the north of Cashla Bay and extends southwards around Tóin na hAirde, terminating approximately 1.6 km from Ros an Mhíl. Although no recent summary data is available online for this sub-site, a data request submitted to BirdWatch Ireland returned historical records from the 1999/2000 and 2001/02 count periods. Species recorded include cormorant, mute swan (*Cygnus olor*), shelduck (*Tadorna tadorna*), wigeon (*Mareca penelope*), teal (*Anas crecca*), mallard (*Anas platyrhynchos*), red-breasted merganser (Mergus serrator), little grebe (Tachybaptus ruficollis), grey heron (Ardea cinerea), oystercatcher (*Haematopus ostralegus*), ringed plover (*Charadrius hiaticula*), dunlin (*Calidris alpina*), curlew (*Numenius arquata*), and redshank (*Tringa totanus*). Additional species of interest recorded within the 2 km grid square (L92M) surrounding the site in the past decade include kingfisher (*Alcedo atthis*), shag (*Phalacrocorax aristotelis*), and great-crested grebe (*Podiceps cristatus*).

5.4.9.2 Field Surveys

A range of bird species was recorded during the MWP walkover survey undertaken on 15th April 2025 (Table 5-6). Four waterbird species were observed within the study area: black-headed gull (*Chroicocephalus ridibundus*), mallard (*Anas platyrhynchos*), little egret (*Egretta garzetta*), and cormorant (*Phalacrocorax carbo*). The latter species is a Qualifying Interest (QI) of the nearby Connemara Bog Complex SPA. Cormorants were noted sunning and swimming among rocks in the bay at various locations, while black-headed gulls and mallards were recorded foraging and roosting within the central lagoon area of the Site. A single little egret was observed foraging on rocks to the west of the lighthouse. In addition to these waterbirds, terrestrial species recorded included various corvids across the Site, two willow warblers (*Phylloscopus trochilus*) in scrub habitat at the centre of the Site, and one rock pipit (*Anthus petrosus*) seen and heard calling along the northwestern rocky shoreline. These observations indicate that the Site supports a modest assemblage of foraging and roosting bird species, with the coastal and wetland habitats offering localized ecological value for both resident and transient birds.

Table 5-6. Waterbird species observed during site walkover survey undertaken on April 15th 2025.

Bird Species	Number Observed	Location	Behaviour	QI of Connemara Bog Complex SPA
Black-headed gull (*Chroicocephalus ridibundus*)	3	Lagoons in centre of site	Foraging	No
Mallard (*Anas platyrhynchos*)	2 (male & female)	Lagoons outside the site	Foraging, roosting	No
Little egret (*Egretta garzetta*)	1	Rocks west of lighthouse	Foraging	No
Cormorant (*Phalacrocorax carbo*)	3	Out in bay on rocks at various locations	Spreading wings in sun, swimming	Yes

5.4.10 Reptiles & Amphibians

5.4.10.1 Desk Study

The NBDC hold a record of amphibians for common frog (*Rana temporaria*) and Smooth Newt (*Lissotriton vulgaris*) within the hectad L92, most recently recorded in 2003 and 2023 respectively. NBDC also holds a record of a reptile such as common lizard (*Zootoca vivipara*), recorded in 2021. These species are protected under the Wildlife Act, 1976 (and Wildlife (Amendment) Act, 2000) and common frog is also listed under Annex V of the EU Habitats Directive.

5.4.10.2 Field Surveys

Based on the habitats recorded during the MWP walkover survey in April 2025, the areas most likely to support amphibian species such as common frog and smooth newt as well as reptile species such as common lizard include the lagoons located in the centre of the site, vegetated earth banks, areas of scrub, and rocky coastal margins. The lagoons provide suitable freshwater habitat for amphibian breeding, particularly where shallow, vegetated margins are present. Adjacent scrub and damp grassland may offer important terrestrial habitat for foraging, shelter, and dispersal. For reptiles, the rocky shoreline, particularly in sun-exposed areas, offers ideal basking sites for thermoregulation, while coastal grassland and vegetated earth banks provide cover and foraging opportunities. These features, where structurally diverse and undisturbed, can support the ecological requirements of both amphibians and reptiles.

5.4.11 Terrestrial Macro-invertebrates

5.4.11.1 Desk Study

Records are held by the NBDC for the hectad L92 for a wide variety of species of butterfly and hymenopteran (Large Red Tailed Bumble Bee (Bombus (*Melanobombus) lapidarius*), Megachile (*Megachile*) centuncularis and Moss Carder-bee (*Bombus (Thoracombus*) *muscorum*)).

Of note are records of marsh fritillary, Dingy Skipper, Grayling, Large Heath, Small Blue, Small Heath and Wall. The marsh fritillary butterfly is the only Irish butterfly species listed under Annex II of the EU Habitats Directive. It requires the presence of the devil's bit scabious occurring in a suitably short sward. The study area does not contain suitable habitat for marsh fritillary butterfly, and it is not considered further here.

5.4.11.2 Field Surveys

Based on the habitats recorded during the MWP walkover survey in April 2025, the site appears to offer limited suitability for supporting a diverse range of butterfly and hymenopteran species of conservation interest. The key habitats typically associated with such invertebrates—namely species-rich calcareous or wet grasslands, unimproved coastal grasslands, and structurally diverse, flower-rich meadows—were not observed during the survey. While some limited areas of scrub and vegetated earth banks may provide foraging opportunities for generalist pollinators such as the large red-tailed bumblebee (*Bombus lapidarius*), leafcutter bee (*Megachile centuncularis*), and moss carder-bee (*Bombus muscorum*), these habitats were not extensive or floristically rich enough to support notable populations. Additionally, the habitat features required by butterfly species of conservation concern such as marsh fritillary, dingy skipper, grayling, large heath, small blue, small heath, and wall were not present. Therefore, it is unlikely that the site supports a significant diversity or abundance of butterfly or specialist hymenopteran species.

5.4.12 Identification of IEFs

5.4.12.1 Selection of Designated Sites as IEFs

In conclusion, to determine any potential impacts of the construction and operation of a proposed deep water quay development on nearby European sites, a screening process for Appropriate Assessment was undertaken. There are five European sites located within a potential ZOI of the proposed development.

As the location of the proposed quay and associated dredging/infill works lies outside the boundaries of any Natura 2000 site, there would be no direct loss of designated habitat. However, potential indirect effects, such as underwater noise and increased suspended sediment levels resulting from construction activities like drilling, blasting, and dredging, were considered.

The assessment, as completed in 2010, concluded that the proposed development would not be likely to result in significant effects on the conservation objectives or ecological integrity of nearby Natura 2000 sites. On this basis, a Stage 2 Appropriate Assessment was deemed unnecessary at that time.

It has been concluded, based on objective information during the 2025 assessment, that the proposed development, either individually or in combination with other plans or projects, is not likely to have significant effects on the following European site:

- Slyne Head to Ardmore Point Islands SPA (004159).

However, it cannot be objectively concluded at this stage that the proposed development in County Galway will not result in significant effects on the following designated European sites due to the impacts identified in the AASR:

- Connemara Bog Complex SAC (002034)
- Kilkieran Bay and Islands SAC (002111)
- Connemara Bog Complex SPA (004181)
- Inishmore Island SAC (000213)

Therefore, it has been concluded that, in respect of these European sites, the project should proceed to Stage 2 of the Appropriate Assessment process and as such, a Natura Impact Statement is required. It is concluded that all other European sites have been correctly screened out or excluded from further consideration based on objective information that the project, individually or in-combination with other plans or projects, will have no,

or no appreciable, effects on those sites. The Natura Impact Statement (NIS) subsequently concluded based on a detailed and objective analysis and evaluation of all relevant information, particularly the nature of the predicted impacts from the Proposed development and with the implementation of the mitigation measures proposed, that the Proposed development did not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion.

None of the designated sites are therefore considered to comprise IEFs in relation to the project and thus will not be considered further in this evaluation. Refer to the screening for Appropriate Assessment report and the NIS for the proposed Ros a Mhíl Deep Water Quay submitted with the planning application (MWP, 2025) which accompanies the planning application for the Proposed Development for more information.

Due to the fact that two nationally designated sites identified to be within the potential ZOI of the proposal, namely Connemara Bog Complex pNHA and Kinvarra Saltmarsh pNHA, spatially overlap with Natura 2000 sites, as outlined in **Sections 5.4.3.1,** it is considered that potential impacts on these designated sites arising from the project have been fully considered as part of the screening for Appropriate Assessment report. Significant effects on these pNHAs or other nature conservation sites are therefore not envisaged. Therefore, these sites will not be considered further in this evaluation.

No designated sites within the potential ZOI of the Proposed Development are considered to comprise IEFs, and designated sites will not be considered further in this chapter.

5.4.12.2 Selection of Habitats as IEFs

The habitat types within the study area are evaluated in **Table 5-7** for their conservation importance in line with the ecological evaluation scheme outlined in **Section 5.2.7**. Those habitats identified as being of 'Local importance (higher value)' or higher and which are likely to be impacted by the Proposed Development are selected as IEFs.

5.4.12.3 Selection of Flora & Fauna Species as IEFs

In relation to rare and protected flora, there are no desktop records for any rare and/or protected plant species within the study area. In relation to the rare and/or protected species outlined in **Section 5.4.5.1**, none of these species were recorded during ecological surveys of the study area. These species are not considered to comprise IEFs for the project, and therefore these species will not be considered further in this evaluation.

The following table (**Table 5-8**) presents an evaluation of the ecological value of the terrestrial faunal species or species groups identified within the receiving environment of the Proposed Development and rationale for inclusion, or, exclusion as IEFs. As for habitats, species identified as being of 'Local importance (higher value)' or higher and which are likely to be impacted by the Proposed Development are selected as IEFs.

Table 5-7. Selection of habitats as IEFs for the Proposed Development

Habitat Type	Extent/Location within study area	Ecological value in context of study area (NRA, 2009)	Approx Area of Loss (Ha/Km)	Rationale	IEF (Yes/No)
Spoil and bare ground (ED2)	Small terrestrial habitat type within the proposed development site	Local importance (lower value)	0.027 Ha	Artificial habitat created through deposition of engineering fill and dredged material occurring within the site. Vegetation is sparse or absent across most of the area, resulting in low botanical diversity. The unconsolidated substrate provides little structure or food resources for wildlife. Of limited ecological value overall, though may offer marginal opportunities for opportunistic invertebrates or ground-foraging birds.	No
Buildings and artificial surfaces (BL3)/ Stone walls and other stonework (BL1)	Occurs in the central north section of the Site.	Local importance (lower value)	0.033+0.034 Ha	Highly modified artificial habitats with hard, impervious surfaces and negligible vegetation cover occurring within the site. Of low botanical diversity and limited ecological value. These habitats offer minimal foraging or shelter opportunities for fauna, though stonework areas may occasionally support limited invertebrate use or provide basking sites for thermophilic species such as common lizard. Overall, considered of low biodiversity value.	No
Sea walls, piers and jetties (CC1)	Occurs on the edge of the land to the north of the site.	Local importance (lower value)	0.029+1.158 Ha	Artificial coastal habitat comprising large rock armour and structural elements exposed to tidal influence occurring within the site. While of limited botanical diversity, these features support marine algae such as fucoids, ephemeral green seaweed (*Enteromorpha* spp.), and lichens like *Verrucaria maura* in the splash zone. These structures can offer localized foraging and shelter opportunities for intertidal invertebrates and coastal bird species but are generally of low ecological value overall due to their artificial and structurally uniform nature.	No
Open marine water (MW1)	Associated with field boundaries. Extending away from the site to the west, north and south into	Local importance (higher value)	3.902 Ha	Marine habitat of moderate to high ecological value, supporting a diverse range of marine flora and fauna depending on water quality, depth, and tidal conditions occurring within the site. This includes areas within the	**Not assessed in this Chapter**

Habitat Type	Extent/Location within study area	Ecological value in context of study area (NRA, 2009)	Approx Area of Loss (Ha/Km)	Rationale	IEF (Yes/No)
	the bay. This also describes the marine habitat found within the protective rectangular berm			protective berm where water is partially enclosed. While not botanically diverse in a terrestrial sense, this habitat is important for fish, marine invertebrates, diving birds, and other marine life. It may also provide foraging opportunities for otter and seabirds.	**(refer to Chapter 8)**
Exposed rocky shores (LR1)	Mainly associated with hard standing areas of hotel building within the Site.	Local importance (lower value)	Not within the site	Coastal habitat subject to high levels of wave action and sea spray, resulting in a well-defined zonation of lichens and seaweeds. Of limited botanical diversity in the terrestrial sense, but ecologically important for intertidal invertebrates and marine algae. The habitat provides foraging opportunities for coastal birds and may support marine biodiversity within tide pools and crevices. Its structural complexity offers some refuge to specialist fauna, although overall value is moderated by harsh environmental conditions.	No
Moderately exposed rocky shores (LR2)	Narrow strip borders the internal access road in centre of Site.	Local importance (lower value)	Not within the site	Shoreline habitat with reduced wave exposure compared to LR1, supporting a narrower lichen zone and patchy upper shore vascular vegetation including species such as thrift (*Armeria maritima*) and scurvygrass (*Cochlearia* spp.). Fucoid seaweeds and black lichen dominate the lower zones. Of local ecological value for marine invertebrates and bird species, particularly where vegetation is present. The slightly more sheltered conditions allow for modest increases in habitat complexity and biodiversity relative to more exposed rocky shorelines.	No
Scrub (WS1) / Recolonising bare ground (ED3)	Occur locally within the south-western corner of the Site.	Local importance (lower value)	Not within the site	Mosaic habitat of early successional vegetation and scrub, established on previously disturbed ground. Species composition includes gorse, willow, and ruderal herbs, with some areas showing greater botanical diversity and structural complexity. Of moderate ecological value, providing cover, nesting sites, and foraging habitat for passerines and small mammals. The presence of flowering herbs and scrub species supports a range of invertebrates, including pollinators. Value	No

Habitat Type	Extent/Location within study area	Ecological value in context of study area (NRA, 2009)	Approx Area of Loss (Ha/Km)	Rationale	IEF (Yes/No)
				increases in more established areas with greater species richness and structural variation.	
Scrub (WS1)	Adjoining the local beach access road within the Site.	Local importance (higher value)	Not within the construction site but does occur adjacent to it.	Semi-natural scrub habitat of moderate botanical diversity, dominated by gorse, bramble, and heather, with patches of bracken and purple moor-grass occurring in a very small portion of the site. Scattered willow adds vertical structure. Of value to avifauna and small mammals for nesting, foraging, and cover. Flowering species support pollinating insects, while dense vegetation may provide occasional roosting sites for bats. Ecological value is locally significant due to the structural complexity and habitat continuity with adjacent semi-natural habitats. Precautionary Principle.	**Yes**
Lagoons and saline lakes (CW1)/ Upper salt marsh (CM2)	Comprising the derelict hotel building, outbuildings and hard standing areas, derelict cottage, internal access road within the Site, as well as the local beach access road serving Inny Strand.	Local importance (lower value) to Local importance (higher value)	Not within the site	Habitat of local ecological interest characterised by brackish standing water with minimal tidal exchange and associated upper saltmarsh fringe. Aquatic vegetation is sparse, comprising salt-tolerant species such as tasselweeds and charophytes, while the saltmarsh margin supports grasses, rushes, and halophytic herbs. Of value to aquatic invertebrates, amphibians (such as common frog), and foraging birds. The saline gradient and habitat mosaic contribute to niche diversity. Seasonal value may be elevated for breeding or migratory bird species and invertebrates reliant on brackish environments.	No
Scrub (WS1) / Dry siliceous heath (HH1)	Associated with field boundaries throughout the Site and the wider area.	Local importance (lower value)	Not within the site	Mosaic habitat of scrub and dry heath with moderate to high structural and botanical diversity. Dominated by gorse, ling, bracken, and willow with an understorey supporting diverse ground flora. Of high value to invertebrates, including pollinators such as butterflies and hymenoptera, and to birds and small mammals for cover and foraging. Heathland elements enhance local biodiversity and provide potential habitat for Annex I species. This habitat supports a complex ecological community and contributes significantly to the habitat heterogeneity of the site.	No

Habitat Type	Extent/Location within study area	Ecological value in context of study area (NRA, 2009)	Approx Area of Loss (Ha/Km)	Rationale	IEF (Yes/No)
Amenity grassland (improved) (GA2)	Occurs in isolated sections largely outside but immediately adjacent to the southern and southwestern fringes of the Site boundary.	Local Importance – Higher Value / International Importance*	Not within the site	Highly managed and regularly maintained grassland of low botanical diversity, dominated by common grass species with scattered broadleaved herbs such as daisy, dandelion, and plantain. Of limited ecological value due to uniform structure and species-poor composition. Occasional foraging use by generalist bird and invertebrate species likely, but overall biodiversity value is low.	No

Table 5-8. Evaluation of fauna as IEFs for the Proposed Development

Ecological receptor	Legislative protection	Ecological Value in Context of Study Area	Rationale	Important Ecological Feature
Mammals (excl. bats)				
Hedgehog (*Erinaceus europaeus*)	Wildlife Act, 1976 (as amended)	Local importance (higher value)	Not recorded on site; however, suitable habitat exists and there are desktop records in the greater area. Precautionary principle.	**Yes**
Badger (*Meles meles*)	Wildlife Act, 1976 (as amended)	Local importance (higher value)	Not recorded on site; however, suitable habitat exists and there are desktop records in the area. Precautionary principle.	**Yes**
Pygmy Shrew (*Sorex minutus*)	Wildlife Act, 1976 (as amended)	Local importance (higher value)	Not recorded during ecological surveys but suitable habitat occurs. Precautionary principle.	**Yes**
Irish hare (*Lepus timidus hibernicus*)	Annex V EU Habitats Directive, Wildlife Act, 1976 (as amended)	Local Importance (higher level)	Recorded frequently on-site.	**Yes**
Otter (*Lutra lutra*)	Annex II, IV EU Habitats Directive, Wildlife Act, 1976 (as amended)	Local importance (higher level)	Not recorded on-site but surrounding shoreline comprises suitable foraging/commuting habitat.	**Yes**
Birds				

Ecological receptor	Legislative protection	Ecological Value in Context of Study Area	Rationale	Important Ecological Feature
Waders	Annex I of EU Birds Directive and/or Wildlife Act, 1976	Local Importance (higher level)	No waders were located on site however are typically associated with grassland habitats located outside the proposed development site (bar-tailed godwit, common greenshank, common redshank, sandpiper, common snipe, dunlin, eurasian curlew, eurasian oystercatcher, eurasian woodcock, european golden plover, grey plover, jack snipe, northern lapwing, ringed plover). Precautionary principle.	Yes
Gulls	Annex I of EU Birds Directive and/or Wildlife Act, 1976	Local Importance (higher level)	Herring gull, lesser black-backed gull, great black-backed gull, Mediterranean gull, black-headed gull, little gull and common gull were recorded using coastal habitats in the vicinity of the Site during surveys. Black-headed Gull was the only gull recorded on-site; however, the grassland habitats within the Site are suitable for a variety of foraging/loafing gulls generally.	Yes
Other corvids & Passerines	Wildlife Act, 1976	Local Importance (higher level)	There are no habitats within the site however around the Site there are suitable habitats for a wide variety of corvid and passerine species, none were recorded within and around the Site during surveys. Precautionary principle.	Yes
Seabirds	Annex I of EU Birds Directive and/or Wildlife Act, 1976	Local Importance (higher level)	Seabirds were not recorded using the Site. However, this stretch of coastline and the marine waters of Casala Bay are suitable for a wide variety of seabird species, and several were recorded in the area surrounding the Site.	Yes
Waterbirds (Ducks, Geese & Other Waterbird species)	Annex I of EU Birds Directive and/or Wildlife Act, 1976	Local Importance (higher level)	Waterbirds such as mallard, little egret and cormorant were recorded using the lagoons surrounding the site. however, this stretch of coastline is suitable for a wide variety of waterbird species, and several were recorded in the area surrounding the Site.	Yes
Reptiles & Amphibians				
Common frog (*Rana temporaria*)	Annex V of the Habitats Directive	Local Importance (higher value)	Suitable foraging and breeding habitats present on site, and both adult frogs and tadpoles recorded during surveys.	Yes

Ecological receptor	Legislative protection	Ecological Value in Context of Study Area	Rationale	Important Ecological Feature
	Wildlife Act, 1976 (as amended)			
Smooth newt (*Lissotriton vulgaris*)	Wildlife Act, 1976 (as amended)	Local importance (higher value)	Not recorded during surveys and no records in the greater area; however, suitable habitats occur. Precautionary principle.	**Yes**
Common lizard (*Zootoca vivipara*)	Wildlife Act, 1976 (as amended)	Local importance (higher value)	Not recorded during surveys; however, pockets of suitable habitat and records exist for surrounding area. Precautionary principle.	**Yes**
Terrestrial Macro-Invertebrates				
Marsh Fritillary (*Euphydryas aurinia*)	Annex II on EU Habitats Directive	Local importance (lower value)	The species was not recorded on-site during field surveys. No suitable habitat was recorded within the Site.	No
Other terrestrial macro-invertebrates (bees, butterflies etc.)	N/a	Local importance (higher value)	Terrestrial invertebrates have an important role at the lower level of ecosystem food chains, for example, essential prey resource for small mammals, bats and birds. A variety of species were recorded on-site during surveys.	**Yes**
Bats				
All bat species	Annex IV of EU Habitats Directive; lesser horseshoe bat also listed in Annex II; Wildlife Act, 1976 (as amended)	Local Importance (higher level)[29]	No potential bat roosting sites identified within the site.	**Yes**

[29] The ecological value which has been assigned to brown long-eared bat is 'Negligible' in the context of the study area; however, it is included here and brought forward for impact assessment on a highly precautionary basis. All other bat species are considered to be of 'Local Importance (higher value)' at the Site.

5.4.13 Do-Nothing Scenario

In the event that the Proposed Development does not proceed beyond the planning stage, the existing land-use patterns and conditions within the site are expected to persist. The project site, located within Ros an Mhíl Harbour, currently comprises modified coastal land used for port-related activity and is bordered by a mix of hard infrastructure and natural marine environments. Without the proposed DWQ, the harbour will continue to face capacity and operational constraints, particularly in accommodating larger and more modern fishing vessels that represent the evolving profile of the fishing industry operating off the west coast of Ireland. This may result in increased pressure on existing quay infrastructure, reduced competitiveness of the port, and limited opportunities for economic growth in the marine sector. From a biodiversity perspective, the existing habitats within the site boundary largely composed of artificial surfaces, modified shoreline, and areas of intermittent use—are likely to remain in their current state, with no significant restoration or enhancement. Natural succession in these areas may be limited, and unmanaged infrastructure may continue to deteriorate, leading to a potential decline in structural integrity and the associated habitat value for opportunistic species such as gulls or waders.

5.5 Description of Likely Effects

This section identifies and assessed the impacts and effects of the construction and operational phase of the Proposed Development on the local natural environment. Since the design life of all elements of the Proposed development is considered permanent, a decommissioning phase has not been assessed in this report and will not be considered further in this chapter.

Development projects generally may potentially impact on the natural environment (habitats, flora, fauna and water quality). For the Proposed Development, by virtue of the nature and location of the Site, both the construction and operational phases are likely to have the most effects on biodiversity. This section will identify in detail the ecological impacts of the construction and operational phases of the Proposed Development on the receiving natural environment. The potential impacts are considered and assessed to ensure that all effects on IEFs are adequately addressed and no significant residual effects are likely to remain following the implementation of mitigation measures.

5.5.1 Construction Phase Effects

5.5.1.1 Noise

Field surveys undertaken in 2025 confirmed the absence of otter and other key mammal IEFs, including hedgehog, badger, and pygmy shrew, within the study area. The only mammal species recorded was the Irish hare, which was observed to be active within the site boundary. The study area is situated within an operational industrial harbour characterized by continuous human activity, frequent vehicular movements, and elevated ambient noise levels. As such, it is considered unsuitable as resting or foraging habitat for otter or similarly sensitive species. Accordingly, potential impacts on these mammal IEFs are assessed as **Temporary to Short-term, Likely, Not Significant to Slight, Negative Effects**.

Given these baseline conditions and the absence of otter activity during the 2025 surveys, the likelihood of disturbance or displacement of otter resulting from future construction noise or site activity is minimal. Consequently, the impact on this IEF is also assessed as **Temporary to Short-term, Likely, Not Significant to Slight, Negative Effects**.

Regarding waterbirds, a small coastal lagoon located to the east of the Proposed development site was identified as potential foraging habitat. However, this habitat is limited in both extent and quality compared to other larger, higher-quality wetland areas located outside the Zone of Influence (ZoI) of the proposed works. Historical and recent assessments indicate that waterbirds in the area are habituated to the ongoing industrial activities and associated noise levels. Therefore, the additional temporary noise and disturbance related to construction activities are unlikely to cause significant disturbance to waterbirds.

The majority of the construction footprint consists of 'Scrub' habitat, which, while opportunistically used by gulls and other birds for foraging and resting, is a common habitat type that is neither rare nor of conservation concern in the wider landscape. Historical surveys from 2010 and ongoing observations from 2025 confirm that the site does not support significant populations of gulls or other waterbirds. As such, the loss of foraging and resting habitat for gulls during the construction phase is assessed as Short-term, Likely, Not Significant, Negative Effects.

Disturbance or displacement effects on gulls and other waterbirds within and adjacent to the site due to construction-related noise and increased human presence are assessed as Temporary to Short-term, Likely, Not Significant to Slight, Negative Effects.

Table 5-9. Potential Noise effects on mammals including otter (*Lutra lutra*) and birds identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance and/or displacement						
Hedgehog (*Erinaceus europaeus*)	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Badger (*Meles meles*)	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Pygmy Shrew (*Sorex minutus*)	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Irish hare (*Lepus timidus hibernicus*)	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Otter (*Lutra lutra*)	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Bats	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Waders	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Gulls	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Other corvids & Passerines	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Seabirds	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Waterbirds (Ducks, Geese & Other Waterbird species)	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Waterbirds and Gulls	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely

5.5.1.2 Habitat Destruction

The proposed development is not expected to result in any direct or permanent habitat loss due to vegetation clearance. However, there remains a potential for incidental encroachment into areas of Scrub habitat (classified as WS1) during the construction phase. Such encroachment could occur through accidental movement of machinery or personnel into adjacent vegetated zones. The 'Scrub' habitat within the site is assessed as being of Local Importance – higher Value. Potential habitat alteration or disturbance effects on the Scrub during the construction phase are therefore assessed as **Temporary to Short-term, Likely, Not Significant, Negative Effects**.

Table 5-10. Potential habitat destruction effects on 'Scrub' identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Habitat Alteration/Disturbance						
Scrub (WS1)	Negative	Not significant	Localised	Temporary to Short-term	Direct and Indirect	Likely

5.5.1.3 Pollution

During the future construction works, there remains a potential risk of pollution-related impacts on adjacent habitats, primarily arising from dust generation and the accidental release of fuels, oils, or construction materials (e.g., concrete). Dust may be generated through site preparation, operation of the concrete batching plant, heavy vehicle movements, and material handling. Under dry and/or windy conditions, airborne dust could disperse beyond the immediate site boundary, potentially settling on nearby habitats such as Scrub (WS1). This may interfere with plant physiological processes, including photosynthesis, particularly in sensitive plant communities. Similarly, construction activities involving plant and machinery pose a risk of accidental spills or leaks of hydrocarbons, chemicals, or other substances, which could degrade local soil or water quality, affecting flora and fauna in the vicinity. Given that no direct habitat clearance is planned, the potential habitat alteration or disturbance effects on Scrub during the future construction phase are assessed as **Temporary to Short-term, Likely, Slight, Negative Effects**.

Table 5-11. Potential pollution effects on 'Scrub' identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Habitat Alteration/Disturbance						
Scrub (WS1)	Negative	Not significant	Localised	Temporary to Short-term	Direct and Indirect	Likely
Fauna	Negative	Not significant	Localised	Temporary to Short-term	Direct and Indirect	Likely

5.5.1.4 Introduction of Non-native Invasive Species

Although no non-native invasive species were recorded within the proposed works area during previous ecological surveys (2010) and the 2025 survey, future construction activities—including delivery of materials, operation of the concrete batching plant, re-establishment of the site compound, and dredging—carry a renewed risk of unintentional introduction or spread of such species. This risk primarily arises from the movement of construction machinery, vehicles, and imported materials, which may act as vectors for invasive plant seeds, fragments, or aquatic invasive species. The potential introduction or spread of non-native invasive species is therefore assessed as **Medium-term, Likely, Moderate, Negative Effects**.

Table 5-12. Potential Introduction of non-native invasive species effects on habitats and fauna identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Habitat Alteration/Disturbance						
Scrub (WS1) (Habitats)	Negative	Moderate	Localised	Medium-term	Direct	Likely
Fauna	Negative	Not significant	Localised	Temporary to Short-term	Direct and Indirect	Likely

5.5.1.5 Mammals (excluding Bats)

Future construction activities including re-establishing the site compound and concrete batching plant, installing pre-cast units, dredging, quay wall construction, and backfilling will involve increased human presence, machinery movement, and noise generation. These factors may cause temporary disturbance or displacement of terrestrial mammal species identified as IEFs, such as Irish hare, hedgehog and pygmy shrew.

Although no direct habitat loss is anticipated, incidental encroachment into adjacent habitats, such as Scrub (WS1), may occur. These habitats provide potential but non-critical foraging and resting opportunities for the aforementioned mammals and are common throughout the wider landscape. No evidence of badger activity was recorded on site, and the habitat is considered suboptimal for otter, lacking shoreline or freshwater features essential to this species. Consequently, effects on badger and otter are expected to be minimal.

Disturbance effects may arise from temporary increases in noise, vibration, artificial lighting, and the potential for accidental injury during construction works. Indirect effects could include temporary alterations in foraging conditions or prey availability due to human activity or changes in water quality.

Given the limited habitat suitability on site and the temporary nature of the works, disturbance and displacement effects on terrestrial mammals (excluding bats) are assessed as **Temporary to Short-term, Likely, Not Significant to Slight, Negative Effects**.

Table 5-13. Potential effects on mammals (excl. bats) identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement						
Hedgehog	Negative	Slight	Localised	Temporary to Short-term	Direct	Likely
Badger	Negative	Slight	Localised	Temporary to Short-term	Direct	Likely
Pygmy shrew	Negative	Slight	Localised	Temporary to Short-term	Direct	Likely
Irish hare	Negative	Slight	Localised	Temporary to Short-term	Direct	Likely
Otter	Negative	Slight	Localised	Temporary to Short-term	Direct and indirect	Likely

5.5.1.6 Birds

Direct disturbance and displacement of avian IEFs may occur during the future construction phase due to increased human activity, elevated noise levels, vibrations from piling and dredging operations, artificial lighting, and movement of heavy machinery. These effects are anticipated primarily during periods of active site works. While no permanent habitat loss is expected, indirect disturbance could arise from temporary reductions in habitat quality, alteration of local prey availability, or degradation of water quality resulting from construction runoff or accidental spillages. No further loss of vegetated or semi-natural habitat is predicted. The previously cleared 'Scrub' and 'Dry-Humid Acid Grassland' areas potential foraging or resting habitats for waders, gulls, corvids, and passerines have been assessed as not supporting significant populations of these species. The surrounding landscape continues to provide extensive similar habitats, and future works will be confined to already disturbed or engineered zones.

Disturbance and displacement impacts on wader species during the future works phase are assessed as **Temporary to Short-term, Likely, Slight, Negative Effects**. These effects will primarily result from site activity and noise but are not expected to have lasting consequences due to the mobility of the species and the availability of alternative habitats nearby.

Seabirds and waterbirds foraging or transiting near the site may experience intermittent disturbance from increased vessel movements, noise, and lighting during quay wall construction and dredging. However, as no shoreline or key foraging habitats will be lost or directly modified, effects on these species are assessed as **Temporary to Short-term, Likely, Not Significant to Slight, Negative Effects**.

Similarly, future construction activities may temporarily affect gulls, corvids, and passerines using adjacent areas for foraging or roosting. Breeding by these species within the active construction zone is considered unlikely given the extent of prior disturbance and the absence of suitable vegetation. Disturbance and/or displacement effects on these avian IEFs are assessed as **Temporary to Short-term, Likely, Not Significant to Slight, Negative Effects**.

Table 5-14. Potential effects on birds/avian groups identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement (noise/ human activity/water quality)						
Waders found to be associated with the Site	Negative	Slight	Localised	Temporary to Short-term	Direct and Indirect	Likely
Gulls	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct and Indirect	Likely
Other Corvids and Passerines	Negative	Not significant	Localised	Temporary to Short-term	Direct	Likely
Seabirds	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct and Indirect	Likely
Waterbirds (Ducks, Geese and Other Waterbirds)	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct and Indirect	Likely

5.5.1.7 Reptiles and Amphibians

No further habitat loss is anticipated during the future works phase. Habitats previously present on-site that may have supported common frog, smooth newt, and common lizard have already been removed. These species are typically associated with semi-natural habitats such as drains, scrub, and rough grassland, which are common and widespread in the surrounding landscape. Therefore, no habitat loss or alteration effects on reptile and amphibian IEFs are expected during the remaining construction activities.

Direct disturbance and/or displacement of these species could potentially occur due to increased noise, vibration, and human activity, particularly during dredging, rock blasting (if required), and operation of heavy machinery. These effects are assessed as **Temporary to Short-term, Likely, Not Significant to Slight, Negative Effects**.

Indirect disturbance and/or displacement effects may also arise from temporary deterioration in water quality associated with dredging, concrete works, or accidental runoff. Such impacts could affect foraging, resting, or potential aquatic breeding habitats within the wider area. These effects are assessed as **Temporary to Short-term, Likely, Moderate, Negative Effects**.

Table 5-15. Potential effects on reptiles and amphibians identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement (noise/ human activity)						
Common frog	Negative	Not significant to Slight	Localised	Temporary to Short-term	Direct	Likely
Smooth newt	Negative	Not significant	Localised	Temporary to Short-term	Direct	Likely
Common lizard	Negative	Not significant	Localised	Temporary to Short-term	Direct	Likely

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Disturbance/Displacement (water quality)						
Common frog	Negative	Moderate	Localised	Temporary to Short-term	Indirect	Likely
Smooth newt	Negative	Moderate	Localised	Temporary to Short-term	Indirect	Likely

5.5.1.8 Terrestrial Macro Invertebrates

No further habitat loss is anticipated during the future works phase. Habitats previously present on-site that may have supported common frog, smooth newt, and common lizard have already been removed. These species are typically associated with semi-natural habitats such as drains, scrub, and rough grassland, which are common and widespread in the surrounding landscape. Therefore, no habitat loss or alteration effects on reptile and amphibian IEFs are expected during the remaining construction activities.

Direct disturbance and/or displacement of these species could potentially occur due to increased noise, vibration, and human activity, particularly during dredging, rock blasting (if required), and operation of heavy machinery. These impacts are assessed as **Temporary to Short-term, Likely, Not Significant to Slight, Negative effects**.

Indirect disturbance and/or displacement effects may also arise from temporary deterioration in water quality associated with dredging, concrete works, or accidental runoff. Such impacts could affect foraging, resting, or potential aquatic breeding habitats within the wider area. These effects are assessed as **Temporary to Short-term, Likely, Moderate, Negative effects**.

Table 5-16. Potential effects on terrestrial macro-invertebrates identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement	Negative	Not significant	Localised	Temporary to Short-term	Direct and Indirect	Likely

5.5.1.9 Water Quality

There are no drainage ditches or streams within the Site; therefore, the primary risk of water quality impact during the construction phase arises from accidental spills or runoff reaching the adjacent shoreline of Cashla Bay. Construction activities have the potential to generate sediment-laden runoff or result in accidental releases of fuels, oils, cementitious materials, or other pollutants. These substances could be transported directly to the marine environment via surface runoff, particularly during periods of heavy rainfall. Surface water runoff and discharges from construction working areas are likely during construction, although overall the quantity of surface runoff did not change as a result of the construction works. Occasional and low quantity discharges could arise from pumping in order to dewater foundation excavations. This would be discharged to the water management drainage system. Pollution sources could arise as a result of soil erosion or from oil, fuel, or chemical storage and use. Proposals for management of water quality and quantity from the proposed project are presented in EIAR **Volume 3: Appendix 2A: CEMP**.

Given the direct connection between the Site and Cashla Bay, uncontrolled runoff or spillages could lead to contamination of surface water and marine habitats. Consequently, potential effects on marine water quality as

a result of construction-related runoff and accidental spillage are assessed as **Temporary to Short-term, Likely, Moderate, Negative effects**.

Table 5-17. Potential effects on water quality and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Construction Activity (run-off or ingress of silt, pollutants, nutrients etc)						
Marine water quality	Negative	Moderate	Localised	Temporary to Short-term	Direct and Indirect	Likely

5.5.2 Operational Phase Effects

5.5.2.1 Noise

During the operational phase of the Proposed Development at Ros an Mhíl Harbour, significant noise-related effects on terrestrial species are not anticipated. The primary sources of noise will originate from vessel operations, vehicular movements, and cargo handling activities along the newly constructed quay. These activities are characteristic of a typical working harbour environment and will be largely confined to the reclaimed and developed quay area, which does not support sensitive or high-value terrestrial habitats.

No further habitat loss is anticipated during the operational phase, thus potential noise impacts are limited to disturbance or temporary displacement of fauna in the adjacent terrestrial environment. Baseline ecological surveys indicate that the surrounding terrestrial habitat supports primarily common and widespread species, including birds, small mammals, and invertebrates, which are accustomed to intermittent anthropogenic disturbance owing to the site's historical and ongoing use.

Although some increased human activity and vehicular traffic may lead to elevated noise levels during peak operational periods, such effects are expected to be intermittent, localised, and short-term. Given the absence of high-sensitivity terrestrial ecological receptors, such as breeding colonies of protected bird species, in close proximity to the operational area, any indirect effects such as temporary displacement or altered behavioural patterns are predicted to be minor and not ecologically significant.

The surrounding environment currently experiences low to moderate background noise levels associated with human activity. Consequently, the incremental noise contribution from operational activities is unlikely to cause meaningful disruption to the existing ecological baseline. Therefore, potential noise effects during operation are assessed as **Long-term, Likely, but Not Significant, resulting in Slight to Neutral** ecological effects.

Table 5-18. Potential Noise effects on mammals including otter (Lutra lutra) and birds identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance and/or displacement						
Hedgehog (*Erinaceus europaeus*)	Slight to Neutral	Not significant to Slight	Localised	Long-term	Direct	Likely
Badger (*Meles meles*)	Slight to Neutral	Not significant to Slight	Localised	Long-term	Direct	Likely

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Pygmy Shrew (*Sorex minutus*)	Slight to Neutral	Not significant to Slight	Localised	Long-term	Direct	Likely
Irish hare (*Lepus timidus hibernicus*)	Slight to Neutral	Not significant to Slight	Localised	Long-term	Direct	Likely
Otter (*Lutra lutra*)	Slight to Neutral	Not significant to Slight	Localised	Long-term	Direct	Likely
Waterbirds and Gulls	Slight to Neutral	Not significant to Slight	Localised	Long-term	Direct	Likely

5.5.2.2 Habitats

During the operational phase of the Proposed Development at Ros an Mhíl Harbour, significant effects on habitats and flora are not anticipated. The majority of habitat loss and alteration will have occurred during the construction phase, with no further habitat removal required to facilitate quay operations. The operational footprint will be largely confined to hardstanding areas established as part of the quay infrastructure, including the quay apron, access roads, and associated services.

Any bare or disturbed ground remaining following construction is expected to be reinstated or capped, and managed under standard landscape and maintenance practices. These measures will reduce the likelihood of colonisation by invasive or ruderal species and limit potential erosion, surface runoff, or degradation of adjacent habitats.

As an active harbour facility, the operational phase will result in a substantial and sustained increase in human activity, including vehicle movements, vessel berthing, and routine cargo operations. However, such activities will remain localised within the newly developed quay area and will not encroach upon the surrounding terrestrial habitats, which are characterised by a history of agricultural improvement or prior disturbance.

Indirect effects may arise from increased personnel presence, potentially influencing edge habitats adjacent to the quay. However, these habitats do not support sensitive or botanically diverse vegetation communities and are already subject to regular disturbance. Consequently, any such effects are expected to be minor in scale and duration. Baseline ecological surveys recorded no sensitive terrestrial habitats or notable flora species within the immediate operational zone. Therefore, habitat degradation or disturbance to flora during the operational phase is unlikely to be ecologically significant.

Based on these considerations, the potential effects on habitats and associated flora during the operational phase are assessed as Long-term, Likely, and Not Significant to Slight Negative Effects.

Table 5-19. Potential habitat effects on 'Scrub' and 'Dry-Humid Acid Grassland' identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Habitat Alteration/Disturbance by encroachment						
Scrub (WS1)	Negative	Not significant	Localised	Long-term	Direct and Indirect	Likely

5.5.2.3 Pollution

During the operational phase of the Proposed Development, potential pollution effects are expected to arise primarily from ongoing port activities such as vessel movements, fuelling, cargo handling, and associated vehicular traffic. However, no significant new sources of pollution beyond those typical of standard port infrastructure are anticipated. With the completion of construction, no further excavation, dredging, or land reclamation will occur, significantly reducing the risk of sediment release or direct contamination of adjacent marine or terrestrial environments. The quay features a sealed concrete surface with integrated drainage designed to manage surface water runoff and minimise uncontrolled pollutant discharge into the marine environment. Key pollution risks during operation include accidental hydrocarbon spills, contaminated runoff from hardstanding areas during rainfall, air emissions from vessel engines and heavy vehicles, and waste accumulation from port users and visiting vessels. The quay's design incorporates concrete toe kerbs and low seawalls to contain runoff, while drainage systems are equipped with oil interceptors or similar filtration to prevent pollutant entry into marine waters. Standard operational procedures such as spill response plans, waste management protocols, and regular cleaning will be implemented to mitigate risks. Given the quay's sheltered location and orientation away from sensitive receptors, the potential for pollution to migrate off-site is low. Consequently, the operational phase is assessed to have **Long-term, Unlikely, Slight to Not Significant** negative effects on adjacent habitats.

Table 5-20. Potential pollution effects on 'Scrub' identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Habitat Alteration/Disturbance						
Scrub (WS1)	Negative	Not significant	Localised	Long-term	Direct and Indirect	Unlikely

5.5.2.4 Introduction of Non-native Invasive Species

During the operational phase of the Proposed Development at Ros an Mhíl Harbour, there is potential for the introduction and spread of non-native invasive species due to increased vessel traffic, port-side activities, and continued disturbance of previously stabilised habitats. Vessels arriving from both international and domestic ports pose a recognised biosecurity risk, with species of concern including marine invaders such as *Didemnum vexillum* (sea squirt), *Crepidula fornicata* (slipper limpet), and *Undaria pinnatifida* (wakame), as well as terrestrial or transitional invaders like *Fallopia japonica* (Japanese knotweed), *Gunnera tinctoria*, and *Crassula helmsii*. These species can outcompete native flora and fauna, degrade habitats, alter ecosystem dynamics, and threaten the ecological integrity of nearby sensitive sites. Areas of bare or disturbed ground, including the concrete quay surface and perimeter edges, are particularly vulnerable to colonisation if not subject to routine management. Factors increasing establishment risk during operation include frequent berthing of international vessels (notably reefers and deep-sea trawlers), increased human activity with occasional double-banking of vessels facilitating organism transfer, and insufficient biosecurity awareness or inspection protocols. However, the quay itself is a hard-engineered environment of low ecological value, and operational management plans are expected to incorporate biosecurity measures to mitigate risks. Provided these mitigation and monitoring protocols are fully implemented, the risk of significant long-term effects on biodiversity from non-native invasive species during the operational phase is assessed as **Long-term, Likely, and Not Significant to Slight Negative effects**.

Table 5-21. Potential Introduction of non-native invasive species effects on 'Scrub' and 'Dry-Humid Acid Grassland' identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Habitat Alteration/Disturbance						
Habitats	Negative	Not significant	Localised	Long-term	Direct	Likely

5.5.2.5 Mammals (excluding Bats)

During the operational phase of the Proposed Development, increased human activity, vehicular traffic, artificial lighting, and noise emissions have the potential to cause disturbance or displacement of terrestrial and aquatic mammal species. The quay and surrounding infrastructure will function primarily as an active port area during daytime hours, with peak vessel movements expected seasonally in line with fishing activity. Due to the highly modified, hard-engineered nature of the quay—characterised by concrete surfaces, sea walls, and minimal vegetation—the site itself is considered to have low value for terrestrial mammals. However, adjacent habitats, including reclaimed land and more natural coastal margins, may intermittently support common and protected species such as otter (*Lutra lutra*), hedgehog (*Erinaceus europaeus*), pygmy shrew (*Sorex minutus*), Irish stoat (*Mustela erminea hibernica*), Irish hare (*Lepus timidus hibernicus*), and badger (*Meles meles*), which can be sensitive to noise and human presence but are unlikely to frequent the highly trafficked quay zones. Species already adapted to human presence, such as hedgehogs and pygmy shrews, are expected to recolonise peripheral areas after construction and tolerate operational noise and activity. Nocturnal or crepuscular mammals, including badgers and otters, may be more susceptible to disturbance caused by increased lighting during night-time operations, noise from machinery and vessel activity, human movements during loading and unloading, and potential stormwater or wastewater discharges that could alter prey availability or otter foraging areas. Nonetheless, operational activities will be largely confined to the quay and berthing areas, with minimal incursion into adjacent semi-natural habitats. Most activity will occur during daylight hours, reducing disturbance to species active at dusk, night, or dawn. Artificial lighting will be managed using directional fixtures, shielding, and minimisation of light spill to reduce ecological effects. Vehicle movements will be controlled through speed limits and traffic management to minimise collision risks. Although baseline surveys recorded limited mammal activity, a precautionary approach has been adopted. With the implementation of best-practice mitigation measures such as lighting controls, waste management, and habitat avoidance, operational effects on mammals are expected to be minimal. Therefore, the operational phase effects on terrestrial and aquatic mammals (excluding bats) are assessed as **Long-term, Likely, and Not Significant to Slight Negative effects**.

Table 5-22. Potential effects on mammals (excl. bats) identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement						
Hedgehog	Negative	Not Significant to Slight	Localised	Long-term	Direct	Likely
Badger	Negative	Not Significant to Slight	Localised	Long-term	Direct	Likely
Pygmy shrew	Negative	Not Significant to Slight	Localised	Long-term	Direct	Likely

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
Irish hare	Negative	Not Significant to Slight	Localised	Long-term	Direct	Likely
Otter	Negative	Not Significant to Slight	Localised	Long-term	Direct and indirect	Likely

5.5.2.6 Birds

During the operational phase of the Proposed Development, the quay will be actively used for berthing fishing vessels and supporting port activities, leading to increased human presence, vessel traffic, machinery use, and artificial lighting. These factors have the potential to cause disturbance and displacement of birds, particularly those identified as IEFs. While the quay's hard, highly active surfaces provide limited foraging or roosting habitat, adjacent intertidal and nearshore areas remain important for a variety of bird species. Waders, which are especially sensitive to disturbance from human activity and vessel movements, may experience temporary displacement during peak operational periods, particularly in the fishing season from March to September. However, given the pre-existing modified nature of the harbour and surrounding land uses, many species have moderate tolerance to disturbance, and alternative habitats in the wider coastal area provide opportunities for relocation. More adaptable and urban-tolerant species such as gulls, corvids, and passerines are likely to persist and may habituate to operational conditions, while seabirds and waterbirds may avoid immediate berth zones but remain in the broader bay area. Artificial lighting, although necessary for operational safety, may disrupt nocturnal or crepuscular birds, including migratory species, but its impact will be mitigated by shielding, directional controls, and minimisation of unnecessary lighting. Overall, displacement and disturbance effects on avian IEFs during operation are assessed as **Long-term, Likely, and Not Significant to Slight Negative Effects**, with artificial lighting effects specifically assessed as **Long-term, Likely, and Slight Negative effects**.

Table 5-23. Potential effects on birds/avian groups identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement (noise/ human activity/water quality)						
Waders found to be associated with the Site	Negative	Not significant to slight	Localised	Long-term	Direct	Likely
Gulls	Negative	Not significant to slight	Localised	Long-term	Direct	Likely
Other Corvids and Passerines	Negative	Not significant to slight	Localised	Long-term	Direct	Likely
Seabirds	Negative	Not significant to slight	Localised	Long-term	Direct	Likely
Waterbirds (Ducks, Geese and Other Waterbirds)	Negative	Not significant to slight	Localised	Long-term	Direct	Likely
Disturbance/Displacement (artificial lighting)						
Avian species which migrate, forage or are otherwise active at night/during low light conditions	Negative	Slight to Moderate	Localised	Long-term	Indirect	Likely

5.5.2.7 Reptiles and Amphibians

No significant disturbance or displacement effects are anticipated for reptile and amphibian species identified as IEFs. Following completion of construction, any individuals temporarily displaced by construction activities are expected to return and utilise habitats within and adjacent to the site within a short timeframe. Human activity during the operational phase will be concentrated within the site and its immediate surroundings, peaking during busy operational periods. Potential disturbance and displacement effects on reptile and amphibian IEFs are therefore expected to be greatest in the immediate vicinity of the site, diminishing with increasing distance. Baseline surveys recorded little to no reptile or amphibian activity on-site. Consequently, operational phase effects related to increased noise, artificial lighting, human presence, and vehicle traffic on these species are assessed as **Long-term, Likely, and Not Significant Negative effects**.

Table 5-24. Potential effects on reptiles and amphibians identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement (noise/ human activity)						
Common frog	Negative	Not significant	Localised	Long-term	Direct and Indirect	Likely
Smooth newt	Negative	Not significant	Localised	Long-term	Direct and Indirect	Likely
Common lizard	Negative	Not significant	Localised	Long-term	Direct and Indirect	Likely
Disturbance/Displacement (water quality)						
Common frog	Negative	Moderate	Localised	Temporary to Short-term	Indirect	Likely
Smooth newt	Negative	Moderate	Localised	Temporary to Short-term	Indirect	Likely

5.5.2.8 Terrestrial Macro Invertebrates

Following completion of the construction phase, it is anticipated that any terrestrial macroinvertebrate species temporarily displaced or disturbed by construction activities will recolonise the habitats within and adjacent to the Site within a short timeframe. Potential disturbance or displacement effects on terrestrial macroinvertebrates identified as Important Ecological Features (IEFs) during the operational phase are therefore assessed as **Long-term, Likely, Imperceptible, Negative effects**.

Table 5-25. Potential effects on terrestrial macro-invertebrates identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
CONSTRUCTION PHASE						
Disturbance/Displacement	Negative	Not significant	Localised	Temporary to Short-term	Direct and Indirect	Likely

5.5.2.9 Water Quality

During the operational phase of the Proposed Development, potential impacts on surface and groundwater quality may arise primarily from the ingress of sediment, silt, nutrients, and chemical pollutants into the aquatic environment via runoff or discharge. Although no watercourses are present within the site boundary, there remains a risk that contaminants could enter the existing drainage network and subsequently reach coastal waters. However, implementation of Sustainable Drainage Systems (SuDS), including hydrocarbon interceptors and two petrol interceptors, will effectively manage stormwater runoff, minimising the risk of significant adverse effects on freshwater or marine water quality. Surface water runoff and discharges from construction working areas are likely during construction, although overall the quantity of surface runoff did not change as a result of the construction works. Occasional and low quantity discharges could arise from pumping in order to dewater foundation excavations. This would be discharged to the water management drainage system. Pollution sources could arise as a result of soil erosion or from oil, fuel, or chemical storage and use. Proposals for management of water quality and quantity from the proposed project are presented in EIAR Volume 3: Appendix 2A: CEMP. As a result, potential effects on the drainage network and adjacent marine habitats, including Cashla Bay, are assessed as Long-term, Likely, Imperceptible to Not Significant Negative effects.

Table 5-26. Potential effects on terrestrial macro-invertebrates identified as IEFs and the significance of unmitigated effects

Impact	Quality of Effect	Significance	Spatial Extent	Duration	Other Relevant Criteria	Likelihood
OPERATIONAL PHASE						
Disturbance/Displacement	Negative	Imperceptible	Localised	Long-term	Direct and Indirect	Likely

5.6 Mitigation Measures

5.6.1 Construction Phase Mitigation Measures

5.6.1.1 Construction and Environmental Management Plan (CEMP)

A preliminary Construction Environmental Management Plan (CEMP) has been prepared to accompany the planning application (see Appendix 2A in EIAR Vol. 3). A detailed CEMP will be developed by the appointed contractor prior to construction works commencing. This will detail construction practices and environmental management measures which will be implemented to ensure that best practice measures are adhered to, with minimum effect on the surrounding environment. The contractor's detailed CEMP will ensure that the Development was be carried out in accordance with any planning conditions applicable.

All mitigation measures outlined in this document are to be incorporated into the final CEMP and implemented on-site. The CEMP will be submitted to Galway County Council (GCC) for agreement and approval prior to the commencement of any construction activity.

The CEMP will include, but is not limited to, the following environmental controls:

- Water Quality/Sediment and Erosion Control
- Noise, Vibration, Dust and Air Control
- Management of Construction and Demolition Waste
- Fuel and Oils Management

- Management of Concrete, and
- Emergency Response Plan

The CEMP will take cognisance of the following Best Practice Guidance:

- CIRIA C692: Environmental Good Practice on Site, (Audus et al., 2010)
- CIRIA C532: Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al., 2001)
- CIRIA C753 – The SUDS Manual; CIRIA C698 – Site handbook for the construction of SUDS, and

5.6.1.1.1 Appointed Environmental Officer

An appointed Environmental Officer will be employed during the construction phase of the project. Duties will include the review of all method statements, delivery of toolbox talks, undertaking of all required pre-construction surveys for protected species and monitoring of works throughout the construction phase to ensure that works are taking place in compliance with the CEMP and that the requirements of the Conditions of Planning and all environmental controls and EIAR mitigation is implemented in full. As part of toolbox talks, contractor staff and other site personnel, as relevant, will be made aware of the procedure to follow if a protected species or their resting or breeding site is encountered.

The appointed Environmental Officer will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects other than those predicted and mitigated for in the EIAR. The appointed Environmental Officer will have demonstrated professional experience in managing large-scale construction works affecting ecological receptors identified within the EIAR.

5.6.1.1.2 General Protection of Water Quality

Temporary Site Compound/Parking

- Parking will only take place within designated parking areas.
- A designated wash down area within the site compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.

Construction Runoff and Sediment Control

Best practice mitigation measures will be implemented with regard to runoff and sediment control as follows:

- Erosion control, where runoff is prevented from flowing across exposed ground and becoming polluted, and sediment control, where runoff is slowed to allow suspended sediment to settle, are important elements in runoff and sediment control. Erosion and sediment controls are to be implemented prior to any site clearance works commencing.
- Clean water runoff will be intercepted and diverted away from construction site runoff to avoid cross-contamination of clean water with soiled water.
- The amount of material excavated is to be kept to a minimum. Excavations and filling will only be carried out following installation of appropriate sediment controls measures which will slow run-off and trap suspended sediment, particularly if working during prolonged wet weather or if working during an intense rainfall event.
- The drainage system will be inspected regularly during construction, in particular after heavy rainfall/storm events, to check for blockages/drainage issues. Where any drainage issues are identified, these will be addressed on the same day to ensure water quality protection.

Construction Wheel-wash Facilities

- Wheel wash facilities are to be provided at all entrances/exits for the site. All construction vehicles leaving or entering the site will be required to drive through these wheel wash areas.
- Runoff generated at the vehicle washdown area will discharge to the drainage system for treatment and attenuation.

Management of Fuel/Oil etc

The management of fuel/oil and other chemicals on site will have regard to the following elements:

- Chemicals will be bunded and where applicable, stored within double-skinned tanks/containers with the capacity to hold 110% of the volume of chemical contents. Ancillary equipment such as hoses and pipes will be contained within the bund. Bunds will be located on flat ground a minimum distance of 50 m from any watercourse or other water- conducting features, in a designated, secure, impermeable storage area.
- Measures will be implemented throughout the construction stage to prevent contamination of the soil from oil and/or petrol leakages. All plant will be regularly inspected for leaks to ensure it is fit for purpose. All taps, nozzles and valves will be fitted with a lock system that will be regularly checked for signs of damage.
- Where required, refuelling of plant on-site will only be carried out at a designated area within the site compound. Only designated trained operators will be authorised to refuel plant on site. Rigid and articulated vehicles will be fuelled off site as will all site vehicles (jeeps, cars and vans).
- Controls will be regularly inspected and maintained. Regular cleaning and servicing of bunds, gullies, pipe work, and oil interceptors will be carried out to ensure the system is operating at its optimum.
- Procedures and contingency plans will be set up to deal with emergency accidents or spills. An emergency spill kit containing oil boom and absorbers will be kept on site in the event of an accidental spill/emergency. All crews will be trained in the use of spill kit equipment. All emergency procedures and equipment will be in place prior to the commencement of any works.
- The Local Authority will be informed immediately of any spillage or pollution incident that may occur on-site during the construction phase.

Management of Concrete

There shall be a requirement for concrete works at the site. Wet concrete is silty and very alkaline (high pH). It is important to prevent concrete from entering the aquatic environment, including groundwater.

The following measures will be implemented during construction of the Proposed development:

- A designated trained operator experienced in working with concrete will be employed during the concrete pouring phase.
- Any small volumes of incidental wash generated from cleaning hand tools, cement mixers or other plant, as required, will be trapped on-site to allow sediment to settle out and reach neutral pH before the clarified water is released and allowed to percolate to ground. Settled solids will need to be appropriately disposed of off-site.
- Washout of concrete trucks will not occur at the site. Washout of plant is to be carried out in designated, contained, impermeable areas.

5.6.1.1.3 Management of Construction Waste

- Appropriate storage of all non-hazardous and hazardous wastes on-site will be undertaken to minimise potential for environmental effects.
- Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required.
- In the event that any buried waste or potentially contaminated material is encountered, this will be segregated from clean, inert material, and then tested and classified.
- In the unlikely event of hazardous material being encountered, it will be transported for treatment/recovery or disposal in suitable facilities.
- All wastes are to be removed from site by appropriate licenced waste contractors to suitable waste facilities.

5.6.1.1.4 Storage of Materials

- The storage of materials, spoil, containers, stockpiles and waste, however temporary, should follow best practice at all times and be restricted to designated areas only. Material stockpiles should be kept to a minimum size, and be located on impermeable bases, where necessary. Storage of materials will be located away from any temporary drains and moving plant, machinery and vehicles.

5.6.1.1.5 Bio-security

The following measures are recommended in relation to Site bio-security and reducing the risk of introduction or spread of invasive species within the area.

- Prior to being brought to Site, validation should be provided by all suppliers that construction plant, machinery and vehicles are free from invasive species. Similarly, certification is to be obtained from suppliers that all raw materials to be imported to Site including soil, fill, sand, gravel and landscaping materials are free from invasive species.
- All vehicles, machinery and equipment/tools are to arrive to site clean and steam washed. Visual inspections are to take place. All Personal Protective Equipment (PPE) brought to site is to be clean and dry with any attached vegetation or debris removed.
- A schedule of regular site inspections for invasive species is to be prepared and undertaken for the duration of the construction works. These inspections are to encompass the IAPS growing season for the duration of the construction works programme to monitor existing IAPS growth, identify any new IAPS stands, inspect materials storage areas and monitor implementation of IAPS management measures on-site, where required e.g., fencing, signage etc.
- Where there is a requirement for IAPS control areas, all vehicles, equipment/tools, footwear etc used in these areas will be thoroughly cleaned in a designated area once works in that area are complete to prevent spread of IAPS. The use of tracked machinery within IAPS infested areas is to be prohibited. The use of tracked machinery within close proximity of IAPS infested areas is to be strictly controlled. This should be undertaken with direction from the Environmental Officer.

5.6.1.1.6 Management of Alien Invasive Plant Species (IAPS)

- The extents of IAPS infestations on-site are extremely limited and localised. A pre-construction survey for IAPS is to take place in advance of the commencement of site works to inspect existing stands of IAPS for new growth and identify any new stands which may have emerged in the intervening period.
- A construction-stage IAPS management plan will be prepared and will incorporate the following management measures. The construction stage management plan should set out clear processes for the eradication, control and containment of each IAPS on-site and is to include a detailed implementation and treatment schedule (including initial and follow-up treatments) in light of the construction schedule and the prevailing IAPS conditions on-site at the time.
- Where any IAPS is identified within/adjacent to the works footprint, fencing and/or advisory signage is to be erected around stands (minimum 7 m buffer in the case of Japanese knotweed, if encountered).
- No non-essential ground maintenance or any other ground disturbance should take place within IAPS fenced areas. Where works are required within/adjacent to infested areas, the appointed contractor is to develop and implement an appropriate method statement with regard to managing IAPS on-site and ensuring bio-security compliance. This should be done in consultation with a suitably qualified specialist. Under no circumstances is any IAPS plant or rhizome material to be cut, dug out or in any other way disturbed without the advice of a suitably qualified specialist.
- Where application of herbicides is required to treat IAPS on-site, the proximity of ecological receptors is to be taken into account. Herbicide use is to be minimised as much as possible and targeted to the specific IAPS. Where use of herbicides is required, non-residual, aquatic approved herbicides are to be used. Herbicides are not to be used in windy or foggy weather, during or preceding rainfall or where rainfall is forecast within 12 hours or during particularly cold weather to reduce risk of spray drift, run-off or poor plant uptake. Herbicides are to be applied strictly in accordance with the manufacturer's recommendations and by competent, experienced and licenced personnel registered as a Professional Pesticides User.
- Monitoring of control measures should be undertaken approximately six to eight weeks after treatment to determine success of measures used.
- Large areas of disturbed/bare soil should be mulched, where appropriate, and seeded/planted at the earliest opportunity with native species to stabilise the soil and deter any subsequent reinvasion. Planting should be carried out with regard to '*Horticulture Code of Good Practice: To prevent the introduction and spread of invasive non-native species* (Kelly, 2012).
- Where off-site removal of IAPS material or infested soil is required, then the relevant NPWS licence will be required to be procured in advance of removal of IAPS material off-site and in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477). Off-site removal of such material will be undertaken in accordance with licence conditions.
- All management and control measures implemented on-site during the construction phase are to be carried out in accordance with best practice guidance as set out in '*The Management of Invasive Alien Plant Species on National Roads (GE-ENV-01104)'* TII (2020), '*The Management of Noxious Weeds and Non-native Invasive Species on National Roads*' NRA (2010), '*Best Practice Management Guidelines Rhododendron Rhododendron ponticum and Cherry Laurel Prunus laurocerasus'* Maguire, *et al*., (2008), '*Best Practice Management Guidelines Japanese Knotweed Fallopia japonica*' Kelly, *et al*., (2015) and '*Managing Japanese Knotweed on Development Sites: the Knotweed Code of Practice*' UK Environment Agency (2006).

5.6.1.1.7 General Protection of Habitats

- The area of proposed works will be kept to the minimum necessary to minimise disturbance to habitats and flora. Vegetation removal within the Site is to be minimised and be restricted to those areas of vegetation which have been identified for removal (to be clearly marked by contractor staff prior to removal). Removal of vegetation from anywhere outside of marked areas will not be permitted.
- The footprint of the construction area, site compound and materials storage areas will be clearly marked out prior to commencement of works with reference to design drawings, under the supervision of the project engineer and appointed ecologist, so that it is visible to all contractor staff and machine operators.
- The extent of access for all construction plant and machinery is to be clearly marked out, in particular along the southern boundary of the Site to avoid effects on more sensitive habitat, namely areas of 'Scrub (WS1)', which have been identified along the cliff-top immediately adjacent to the Site boundary. A heavy machinery exclusion zone will be established using temporary stakes and signage, as required, to prevent encroachment by heavy machinery onto this habitat. This will be undertaken in consultation with the appointed Environmental Officer. There shall be no side casting of material or any other construction-related activity within this area. All operatives will be made aware of this works exclusion zone.
- All operatives will be made aware of the immediate proximity of the Cashla Bay to the Site as part of toolbox talks.

5.6.1.1.8 General Protection of Fauna

- Disturbance of fauna generally will be reduced by controlling the movement of construction vehicles and personnel.
- Construction materials and wastes are to be kept in designated areas to reduce risk of accidental injury/entrapment of any wildlife on-site.
- In accordance with Section 40 of the Wildlife Acts, vegetation removal, including tree removal, will be conducted outside of the restricted bird nesting period (March 1st to 31st August, inclusive). This will not only protect nesting birds, but a range of biodiversity.
- In the event of for the removal or pruning of vegetation, the Environmental Officer will be present to oversee the removal of vegetation and ensure any necessary mitigation measures are in place in the event that a previously unknown breeding or resting site of any protected mammal species is encountered during the works.
- Mammals and birds are mobile and so are expected to disperse from the area; however, young or hibernating animals are vulnerable to impacts during vegetation clearance. Prior to any vegetation clearance, the area will be checked by the Environmental Officer to check for the presence of young or hibernating animals.
- Should any resting or breeding place of any protected species be discovered within the Site during the pre-construction or construction phases, the Environmental Officer is to be informed immediately, and the advice of NPWS sought. Any works in the area are to cease immediately, and the area is to be cordoned off until the Environmental Officer has authorised recommencement of works.
- All temporary construction lighting is to be switched off outside daylight hours. Construction lighting is to be directed inwards into the Site to reduce indirect alteration of adjacent habitats outside the site and minimise nocturnal effects on faunal species.

- To reduce the level of night-time disturbance to nocturnal fauna, construction activities should be restricted to standard construction hours. Construction work will not take place outside of these hours unless in exceptional circumstances.

5.6.1.1.9 Protection of Birds

5.6.1.1.9.1 Pre-construction Surveys

A pre-construction bird survey of the Site will be conducted by a suitably qualified ecologist in advance of any works to identify any breeding sites along the shoreline. In the event that any bird nesting sites are identified, best-practice mitigation will be recommended by the appointed ecologist in consultation with the Planning Authority/NPWS.

5.6.1.1.9.2 Recommended Timing of Works

It is recommended that, if possible, works are conducted in early autumn or late spring to avoid the main breeding and wintering periods for bird activity. Pushing out works to later in the breeding season will reduce the likelihood of an overlap between construction activity and breeding activity. Typically, this would be from April to July. The summer season had more sightings of waders and other waterbirds compared to the winter season hence it is important to not schedule construction during peak breeding periods.

5.6.1.1.10 Protection of Otter

A pre-construction survey for otter should be undertaken by a suitably qualified ecologist prior to the commencement of any works as per best-practice guidance set out in NRA (2008) in relation to construction works and otter. The purpose of the pre-construction survey is to identify any changes within the Site. The survey should be undertaken no more than 10-12 months in advance of construction. The survey should be supplemented by an additional survey immediately prior to site works commencing if more than four weeks have elapsed since the initial pre-construction survey.

In the event of an otter breeding/resting place being discovered within or in proximity of the Site, all construction activity and site works will be undertaken in accordance with NRA (2008). Implementation of best-practice guidelines for otter will be overseen by the appointed Environmental Officer.

5.6.1.2 Operational Phase Mitigation Measures

5.6.1.2.1 Water Quality

Fuels and other chemicals will be stored in a secure, bunded area positioned at least 25 meters away from the boundary of the Proposed development site. Refuelling of equipment and vehicles will be restricted exclusively to these secure locations to reduce the risk of spills and contamination. All generators, pumps, and other onsite equipment will be placed over appropriately sized drip trays to capture any potential leaks or spillages. Spill kits and hydrocarbon absorbent materials will be readily available on site, and all operators will receive comprehensive training in their proper use to ensure rapid response if spills occur. During operation, asymmetric beam floodlights will be installed with the glass oriented parallel to the ground, ensuring that light is cast downward and minimizing horizontal light spill, thereby reducing disturbance to surrounding wildlife.

Surface and Foul Water Network

For the SuDS strategy to work as designed it is important that the entire drainage system is well maintained. It will be the responsibility of the site management team to ensure the drainage system is maintained. The

recommended programme of maintenance for the proposed storm water network and foul water network will be adhered to. Refer to **Chapter 7** Water of the **EIAR**.

5.6.2 Monitoring

5.6.2.1 Alien Invasive Plant Species (IAPS)

Invasive species will continue to be monitored, and where required, managed throughout the operational phase, in accordance with the construction-stage IAPS management plan.

5.7 Residual Effects

Residual effects are effects that remain, once mitigation has been implemented or, effects that cannot be mitigated. Provided that the ecological mitigation measures outlined in **Section 5.6** are implemented in full, it is considered that the effects on IEFs from potential construction and operational impacts would be avoided, reduced and mitigated sufficiently to ensure that no likely significant residual effects remain. It is considered that the receiving environment within the Proposed Development site has the capacity to accommodate the Proposed Development without significant effects on habitats and faunal features discussed in this chapter. A summary of the unmitigated effects of the construction and operational phases, including mitigation and residual effects, of the Proposed Development are detailed in **Section 5.6** and **Table 5-27**.

Table 5-27 Summary Table of Effects for EIAR

Impact/Activity /Receptor	Quality Of Effect	Pre-Mitigation Significance Rating	Mitigation Measures	Post-Mitigation / Residual Significance Rating
CONSTRUCTION EFFECTS				
Noise				
Disturbance and/ or displacement				
Hedgehog (*Erinaceus europaeus*)	Negative	Not significant to Slight	Pre-construction surveys. Environmental Officer, Storage and Waste Management.	Imperceptible
Badger (*Meles meles*)	Negative	Not significant to Slight		Imperceptible
Pygmy Shrew (*Sorex minutus*)	Negative	Not significant to Slight		Imperceptible
Irish hare (*Lepus timidus hibernicus*)	Negative	Not significant to Slight		Imperceptible
Otter (*Lutra lutra*)	Negative	Not significant to Slight		Imperceptible
Bats	Negative	Not significant to Slight	Pre-construction surveys. Timing. Environmental Officer, Water Quality Management.	Imperceptible
Waders	Negative	Not significant to Slight		Imperceptible
Gulls	Negative	Not significant to Slight		Imperceptible
Other corvids & Passerines	Negative	Not significant to Slight		Imperceptible

Impact/Activity /Receptor	Quality Of Effect	Pre-Mitigation Significance Rating	Mitigation Measures	Post-Mitigation / Residual Significance Rating
Seabirds	Negative	Not significant to Slight		Imperceptible
Waterbirds (Ducks, Geese & Other Waterbird species)	Negative	Not significant to Slight		Imperceptible
Habitats				
Habitat Alteration/ Disturbance				
Scrub (WS1)	Negative	Not significant	The area of proposed works will be kept to the minimum necessary to minimise disturbance to habitats	Not significant
Fauna	Negative	Not significant		Not significant
Habitat Alteration/ Disturbance				
Scrub (WS1) (habitats)	Negative	Moderate	The area of proposed works will be kept to the minimum necessary to minimise disturbance to habitats	Not significant
Fauna	Negative	Not significant	The area of proposed works will be kept to the minimum necessary to minimise disturbance to fauna	Not significant
Disturbance/ Displacement				
Hedgehog	Negative	Slight	The area of proposed works will be kept to the minimum necessary to minimise disturbance to habitats	Imperceptible
Badger	Negative	Slight		Imperceptible
Pygmy Shrew	Negative	Slight		Imperceptible
Irish hare	Negative	Slight		Not significant
Otter	Negative	Slight		Imperceptible to Not significant
Disturbance/Displacement (noise/ human activity/water quality)				
Waders found to be associated with the Site	Negative	Slight	Water Quality Management.	Not significant
Gulls	Negative	Not significant to slight		Not significant
Other Corvids and Passerines	Negative	Not significant		Not significant
Sea Birds	Negative	Not significant to slight		Not significant
Waterbirds (Ducks, Geese and other Waterbirds)	Negative	Not significant to slight		Not significant
Disturbance/ Displacement (noise/ human activity)				
Common frog	Negative	Not significant to slight	Water Quality Management.	Not significant
Smooth newt	Negative	Not significant		Not significant
Common lizard	Negative	Not significant		Not significant
Disturbance/ Displacement (water quality)				

Impact/Activity /Receptor	Quality Of Effect	Pre-Mitigation Significance Rating	Mitigation Measures	Post-Mitigation / Residual Significance Rating
Common frog	Negative	Moderate	Water Quality Management.	Not significant
Smooth newt	Negative	Moderate		Not significant
Terrestrial Macro-invertebrates				
Disturbance/ Displacement	Negative	Not significant	Water Quality Management.	Imperceptible
Construction Activity (run-off or ingress of silt, pollutants, nutrients etc)				
Marine water quality	Negative	Moderate	Water Quality Management.	Not significant
OPERATIONAL EFFECTS				
Disturbance and/or displacement- noise				
Hedgehog (Erinaceus europaeus)	Slight to neutral	Not significant to slight	No Mitigation Required	Not significant
Badger (Meles meles)	Slight to neutral	Not significant to slight		Not significant
Pygmy Shrew (Sorex minutus)	Slight to neutral	Not significant to slight		Not significant
Irish hare (Lepus timidus hibernicus)	Slight to neutral	Not significant to slight		Not significant
Otter (Lutra lutra)	Slight to neutral	Not significant to slight		Imperceptible
Waterbirds and Gulls	Slight to neutral	Not significant to slight		Not significant
Habitat Alteration/Disturbance by encroachment				
Scrub (WS1)	Negative	Not significant	No Mitigation Required	Not significant
Habitat Alteration/Disturbance				
Scrub (WS1)	Negative	Not significant	No Mitigation Required	Not significant
Habitat Alteration/Disturbance				
Habitats	Negative	Not significant	No Mitigation Required	Not significant
Mammals- Disturbance/ Displacement				
Hedgehog	Negative	Not significant to slight	Waste, storage, and pollution management.	Not significant
Badger	Negative	Not significant to slight		Not significant
Pygmy shrew	Negative	Not significant to slight		Not significant
Irish hare	Negative	Not significant to slight		Not significant
Otter	Negative	Not significant to slight		Not significant
Disturbance/Displacement (noise/ human activity/water quality)				
Waders found to be associated with the Site	Negative	Not significant to slight	Waste, storage, pollution and drainage maintenance management. Installation of downward lights.	Not significant
Gulls	Negative	Not significant to slight		Not significant

Impact/Activity /Receptor	Quality Of Effect	Pre-Mitigation Significance Rating	Mitigation Measures	Post-Mitigation / Residual Significance Rating
Other Corvids and Passerines	Negative	Not significant to slight	Mitigation measures outlined in the CEMP	Not significant
Seabirds	Negative	Not significant to slight		Not significant
Waterbirds (Ducks, Geese and Other Waterbirds	Negative	Not significant to slight		Not significant
Disturbance/Displacement (artificial lighting)- Birds				
Avian species which migrate, forage or are otherwise active at night/during low light conditions	Negative	Slight to moderate	Installation of downward lights.	Not significant
Disturbance/Displacement (noise/ human activity)				
Common Frog	Negative	Not significant	Waste, storage, pollution and drainage maintenance management.	Not significant
Smooth newt	Negative	Not significant		Not significant
Common Lizard	Negative	Not significant		Not significant
Disturbance/Displacement (water quality)				
Common Frog	Negative	Moderate	Waste, storage, pollution and drainage maintenance management.	Imperceptible
Smooth Newt	Negative	Moderate		Imperceptible
Terrestrial Macro-invertebrates				
Disturbance/Displacement	Negative	Not significant	Waste, storage, pollution and drainage maintenance management.	Imperceptible
Water Quality				
Disturbance/Displacement	Negative	Imperceptible	Waste, storage, pollution and drainage maintenance management.	Imperceptible

5.8 Cumulative Effects

As well as singular effects, the potential for cumulative effects also needs to be considered. A cumulative impact arises from incremental changes caused by other past, present, or reasonably foreseeable activities interacting synergistically with the impacts generated by the Proposed Development in a manner that has the potential to cause effects on the receiving environment. According to EPA (2022), cumulative effects can be described as 'the addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects'.

The plans, projects activities and pressures identified as plausible sources of impacts to be assessed for their potential to generate cumulative effects are discussed in Sections 5.8.1.1 to 5.8.1.4.

5.8.1.1 Plans

With regards to the potential for in-combination effects, the Galway County Development Plan (CDP) (2022 – 2028)[30] was reviewed. This plan came into effect on the 20th June 2022 and covered the overall period during which both the authorised and unauthorised works took place.

A review of the Galway CDP (2022-2028) determined that the harbour at Ros an Mhíl 'is the largest and busiest port in County Galway with a number of key functions that are pivotal to the success of the marine sector'. Also within the CDP, the importance of the continued development of County Galway's Marine and Coastal Economy is highlighted with specific reference to the expansion of Ros an Mhíl as a port of significance and to ensure its development potential is fully realised in accordance with environmental considerations.'

5.8.1.2 Permitted and Proposed Developments in the Locality

A search of the Galway County Council (GCC) online planning enquiry system[31] for granted or on-going planning applications for the townland of Rossaveel (Ros an Mhíl and Rossaveal were also used as search terms) was undertaken in October 2025 to identify other developments in the locality which may have had the potential to interact with the construction or operational phases of the development. On a precautionary basis, the search period used to inform this desktop exercise was 11th July 2018 (to account for five years prior to the start date of the unauthorised development works) to present day.

In relation to the townland of Rossaveel (Ros an Mhíl and Rossaveal), the on-line search yielded a substantial number of previously permitted and outstanding development applications. The vast majority of these pertained/pertain to construction/renovation/modification of private dwellings. A minor number of granted/outstanding permissions pertain to construction/modification of agricultural buildings (**refer to Chapter 1 of the EIAR**). There were also several previously permitted applications for other minor works at the development site such as the Small Craft Harbour and refurbishment of an existing slipway.

5.8.1.3 EPA Licenced/Registered Facilities

A review of the EPA mapping tool determined that there is one EPA licensed facility within the immediate vicinity of the proposed development, namely Ros an Mhíl Harbour Development (Waste Licence No. W0172-01) located within the footprint of the proposed DWQ. There are no IPPC, IPC or IEL[32] actively licensed facilities within the surrounding areas of the subject site – the nearest is Galoptical Teo (IEL Licence No. P0210-01) located in Cashla almost three kilometres north of the proposed development site.

Other EPA licenced facilities comprise Carraroe[33] Urban Wastewater Treatment (UWWT) plant located across the bay at Sruthán Pier approximately one kilometre northwest of the proposed development site. This wastewater treatment system discharges untreated wastewater to Cashla Bay and the building of a new treatment plant is considered by the EPA to be a priority action[34]. Uisce Éireann is proposing to construct a new Carraroe wastewater

[30] Galway County Council Accessed: 24th May 2025

[31] Select Search Type (eplanning.ie) Accessed: 14th March 2024

[32] Integrated Pollution Control (IPC) Licence (formerly IPPC Licence), and Industrial Emissions Licence (IEL)

[33] Active License Number: D0388-01

[34] Priority-areas-for-website-April-2025.pdf Accessed: 30th May 2025

treatment plant but has been unable to acquire all of the required lands on a voluntary basis and is, therefore, endeavouring to purchase the required lands by way of a Compulsory Purchase Order (CPO)[35].

5.8.1.4 Existing Land-use and On-going Activities

Existing land-use within the immediate vicinity of the development site is concerned mainly with fishing-related activities and services, and recreational/touristic activities.

The existing Pier 1 and Pier 2 immediately northeast of the development site hosts a variety of business and services including the harbourmaster offices, a boat rental company, a company chartering fishing trips, and the Aran Island Ferries Terminal and ticket office. The ferry service operates year-round sailing from Ros an Mhíl to the Aran Islands and is incredibly popular with national and international visitors alike,

Vehicular parking areas are located opposite the southern ends of Piers 1 and 2 while the Irish Coast Guard building with helipad lies south of Pier 1. North east of the ferry pontoons there is the Ros an Mhíl Small Craft Harbour which caters for small, open deck vessels on its pier and berths with an associated two-storey Amenity Building providing welfare facilities and administrative offices. On-going activities associated with these facilities comprise typical boating and other operational activities associated with marinas, boatyards, piers, quays and water-based recreational activities.

The fish processing plant Iasc Mara Teoranta lies immediately southeast of the Small Craft Harbour while adjacent to the plant, the Galway and Aran Fisherman's Co-op operates a Fishery Harbour Centre with a fully automatic ice plant, administrative offices, chill rooms and auction hall from where the majority of catch is sold (mainly whitefish and shellfish)[36].

The small settlement of Ros an Mhíl to the northeast of the proposed development site is characterised generally by one-off private dwellings and holiday homes, schools, bars, and small retail outlets in conjunction with the high recreational and amenity land-use associated with Cashla Bay and the surrounding shoreline. Within the wider area, other recreational, tourism and cultural offerings include accommodation, various marinas and quays, RTÉ Radió na Gaeltachta studios, art galleries, and private marinas/harbours present along the shorelines of Cashla Bay and the North Atlantic Ocean.

5.8.1.5 Potential for Significant In-combination Effects

With regard to potential cumulative impacts arising from habitat loss and alteration, increased lighting, increased noise and human activity and water quality, these aspects of the development have been discussed in detail in relation to permitted and proposed developments in the locality in Section 5.8. In the context of the existing land-use and on-going activities in the locality, significant cumulative habitat or species impacts are not envisaged as a result of the proposal.

With regard to water quality impacts during construction, it is noted that there are no watercourses located within the Site and significant cumulative water quality effects on existing drainage features are not predicted. With regard to water quality impacts during operation, the proposal with regard to the treatment and management of both stormwater and wastewater will ensure no significant operational phase water quality impacts. No significant cumulative water quality impacts are envisaged as a result of potential interaction between the proposal and existing land-use and on-going activities in the locality.

[35] Carraroe Sewerage Scheme | Projects | Uisce Éireann (formerly Irish Water) Accessed: 30th May 2025

[36] Fishery Harbour Centres Accessed: 31st May 2025

In conclusion, significant cumulative or in-combination effects as a result of interaction between any aspect of the Proposed Development and plans, permitted and proposed developments, EPA licenced facilities or other existing land-uses and on-going activities are not predicted (see Table 5-28).

Table 5-28. Characterisation of Cumulative Effects (pre-mitigation) for Proposed Development

Other Activities	Characterisation of Effect			Confidence level
	Quality	Significance	Duration	
Plans	Neutral	Imperceptible	Long-term	Near certain
Permitted and proposed Development	Neutral	Slight to Moderate	Long-term	Near certain
EPA licenced facilities	Neutral	Imperceptible	Long-term	Near certain

5.9 Conclusion

Provided that the Proposed Development is constructed and operated in accordance with the design, best practice and mitigation measures stipulated, significant residual effects on biodiversity are not anticipated on any Important Ecological Feature (IEF) at any scale. The application of mitigation and protection measures throughout the construction and operational phases will ensure that no significant residual impacts will arise from the project, either alone or in combination with other plans or projects. The Applicant is committed to the mitigation, monitoring and enhancement measures set out in this assessment.

References

Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine*. Institute of Ecology and Environmental Management, Winchester.

National Roads Authority (NRA) (2009). *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*'. National Roads Authority, Parkgate Street, Dublin 8.