12. Biodiversity

12.1 Introduction

This chapter describes the likely significant effects of the proposed development on biodiversity, including flora (plants), fauna (animals), and habitats in both the terrestrial and aquatic environment. Mitigation measures are also described, where applicable or appropriate, that avoid or minimise adverse biodiversity effects.

Chapter 4 ***Description of the Proposed Development*** provides a full description of the proposed development. An Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) has also been prepared for the proposed development, and these will be submitted to An Coimisiún Pleanála (ACP) as part of the planning application documentation.

The potential effects on biodiversity in this chapter should be considered in conjunction with the other chapters of the EIS including **Chapter 4** ***Description*** **of** ***The Proposed Development*****, Chapter 8** ***Air Quality***, **Chapter 9** ***Climate***, **Chapter 13** ***Soils, Geology, Hydrogeology, Hydrology and Coastal Recession***, **Chapter 16** ***Cumulative Impacts, Other Impacts and Interactions*** as well as the Construction Environmental Management Plan (CEMP) in **Appendix 5.1**.

12.2 Assessment Methodology

12.2.1 General

The biodiversity assessment addresses the potential likely significant direct, indirect and cumulative effects of the proposed development on terrestrial and aquatic biodiversity, including flora, fauna, and habitats in proximity to the proposed development site. The assessment has been carried out in three stages:

1. Desktop assessment to determine existing information and records in relation to:
    a. Sites, species, and habitats protected under Council Directive 92/43/EEC (Habitats Directive), and sites and species protected under Council Directive 2009/147/EC (Birds Directive), within the zone of influence of the proposed development and more distant hydrologically linked sites. The Zone of Influence (ZoI) comprises the area within which the proposed development may potentially affect the conservation objectives (or qualifying interests) of a Natura 2000 site
    b. Biodiversity, habitats, and species present near the proposed development
2. Site visits and field surveys by the specialist ecologists to establish the existing ecological conditions within the footprint of the proposed development and within the vicinity of all the proposed development elements
3. Evaluation of the proposed development and determination of the scale and extent of potential likely direct and indirect significant effects on biodiversity (i.e., flora, fauna, and habitats) and the identification of appropriate mitigation and monitoring which may be required

12.2.2 Relevant Legislation

Flora and fauna in Ireland are protected at a national level by the Wildlife Act 1976, as amended, and the European Communities (Birds and Natural Habitats) Regulations 2011. They are also protected at a European level by the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (2009/147/EC).

Under this legislation, sites of nature conservation importance are then designated in order to legally protect faunal and floral species and important/vulnerable habitats.

The relevant categories of designation are as follows:

- Special Areas of Conservation (SAC) are designated under the European Communities (Birds and Natural Habitats) Regulations 2011 to meet the EU Habitats Directive (92/43/EEC)

- Special Protection Areas (SPAs) are designated under the EU Birds Directive (79/409/EEC) amended in 2009 as the Directive 2009/147/EC; and
- Natural Heritage Areas (NHAs) and Proposed Natural Heritage Areas (pNHA) are listed under the Wildlife (Amendment) Act 2000. A NHA is designated for its wildlife value and receives statutory protection. A list of pNHAs was published on a non-statutory basis in 1995, but these have not since been statutorily proposed or designated

Relevant European Legislation

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (The Habitats Directive)
- Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (The Birds Directive)
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy (The Water Framework Directive)
- Directive 2006/44/EC of the European Parliament and of the Council of 6 September 2006 on the quality of fresh waters needing protection or improvement in order to support fish life (The Fish Directive (consolidated))

Relevant Irish Legislation

- The Wildlife Act 1976, as amended by the Wildlife Act 1976 (Protection of Wild Animals) Regulations, 1980, the Wildlife (Amendment) Act 2000, the Wildlife (Amendment) Act 2010, Wildlife (Amendment) Act 2012, European Communities (Wildlife Act, 1976) (Amendment) Regulations 2017. (The Wildlife Act)
- European Communities (Conservation of Wild Birds) Regulations 1985 (S.I. 291/1985) as amended by S.I. 31/1995
- European Communities (Natural Habitats) Regulations, S.I. 94/1997 as amended by S.I. 233/1998 & S.I. 378/2005 (The Habitats Regulations)
- Fisheries (Consolidation) Act, 1959 (as amended), hereafter referred to as the Fisheries Act
- European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011)
- Flora (Protection) Order, 2022 (S.I. No. 235/2022)

In addition to the above, in assessing the likely significant effects on the prevailing biodiversity arising from the proposed works (including decommissioning works), due regard, where relevant, has been given to relevant legislation and guidance, including the following:

- EIA Directive (2014/52/EU)
- Planning and Development Acts 2000, as amended and the Planning and Development Regulations 2001, as amended
- Wildlife Act 1976, as amended
- EU Water Framework Directive 2000/60/EC
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended)
- Ireland's (4th) National Biodiversity Action Plan 2023-2030
- EU Biodiversity Strategy for 2030 (EU, 2020)
- EU Strategy on Green Infrastructure (EU, 2013)
- National Parks and Wildlife Service (NPWS) Threat Response Plans (NPWS, Various) and

- Cork County Development Plan 2022-2028 (Cork County Council 2022)

12.2.3 Guidance

This chapter of the EIS follows the Environmental Protection Agency's *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA 2022). It also takes account of the *Draft Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (Department of Environment, Community and Local Government, August 2018), *Guidelines on Ecological Impact Assessment in the UK and Ireland, 2nd edition* (Chartered Institute of Ecology and Environmental Management CIEEM 2016) and *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, Version 1.1* (CIEEM, 2018).

Reference was also made to the following documents where relevant:

- *Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)* (European Union (EU), 2017)
- *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* (EC Environment Directorate-General, 2018)
- *Guidance on integrating climate changes and biodiversity into environmental impact assessment* (EU Commission 2013)
- *Assessment of plans & projects in relation to N2K sites – Methodological Guidance* (EC 2021)
- *Biodiversity Net Gain Good practice principles for development* (CIEEM 2019)
- *Biodiversity Net Gain. A practical guide.* (CIEEM 2016)
- *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters* Inland Fisheries Ireland (2016)
- *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive* (EC 2021)
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority (NRA) 2009)
- *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011)
- *A Guide to Habitats in Ireland* (Fossitt, 2000)
- *Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. National Roads Authority, Dublin* (National Roads Authority (NRA) 2005a)
- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (National Roads Authority (NRA) 2005b)
- *Guidelines for the treatment of bats during the construction of national road schemes* (National Roads Authority (NRA) 2005c)
- *Guidelines for the protection and preservation of trees, hedgerows and scrub prior to, during and post construction of national road schemes.* (National Roads Authority (NRA) 2006)
- *Guidelines for the treatment of Otters prior to the construction of National Road Schemes* (National Roads Authority (NRA) 2008)
- *Bird Census Techniques* (Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. 2000)
- *Bird Monitoring Methods - a Manual of Techniques for Key UK Species.* (Gilbert, G., Gibbons, D.W. & Evans, J. (1998))
- *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edn)' (Collins, 2023) and

- *Bat Mitigation Guidelines for Ireland Volume 2*. (F. Marnell, C. Kelleher and E. Mullen NPWS (2022))

12.2.4 Desktop Study

A desktop study was carried out to collate the available information on the local ecological environment. The purpose of the desktop study was to identify features of ecological value occurring within the proposed development site and those occurring near to it which have the potential to be affected by the proposed development. A desktop review also allows the key ecological issues to be identified early in the assessment process and facilitates the planning of surveys. Sources of information utilised for this report include the following:

- National Parks and Wildlife Service (NPWS) - www.npws.ie
- Environmental Protection Agency (EPA) – www.epa.ie
- National Biodiversity Data Centre (NBDC) – www.biodiversityireland.ie
- Bat Conservation Ireland - www.batconservationireland.org
- Birdwatch Ireland - www.birdwatchireland.ie
- Ireland's (4th) National Biodiversity Action Plan 2023-2030
- Cork County Development Plan 2022-2028 (Cork County Council 2022)
- Cork Biodiversity Action Plan 2009-2014
- Ringaskiddy Resource Recovery Centre Environmental Impact Statement (2015)
- M28 Cork to Ringaskiddy Project Environmental Impact Statement Volume 2 (2017)

12.2.5 Site Surveys

This assessment is based on surveys at the proposed development site. Site surveys were carried out from on several dates outlined in **Table 12.1**. It is noted that ecological survey work was previously carried out at the Indaver site in 2014/2015 and 2008 and this is referred to where relevant.

Table 12.1 Survey types and survey dates

Survey Type	Survey Dates
Habitat Survey	29th September 2022, 22nd October 2024, 29th May 2025, 23rd July 2025, 7th August 2025
Badger Survey, Otter Survey, General Mammal Survey	10th October 2022, 12th November 2024, 29th November 2025, 18th December 2024, 16th January 2025, 1st May 2025, 29th May 2025, 7th August 2025
Bat Survey	15th September 2022, 19th September 2022, 6th September 2024, 18th September 2024
Breeding Bird Survey	1st April 2025, 1st May 2025 and 22nd June 2025,
Winter Bird Survey	22nd October 2024, 12th November 2024, 29th November 2024, 18th December 2024, 16th January 2025, 7th February 2025, 11th March 2025
Other surveys	Seals (1st May 2025), Floral surveys (29th May 2025 and 23rd July 2025)

12.2.5.1 Habitats

Habitats were mapped according to the classification scheme outlined in the Heritage Council publication *A Guide to Habitats in Ireland* (Fossitt, 2000) and following the guidelines contained in *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). Habitats were cross referenced with Habitats Directive Annex I habitats. Dates of the main habitat surveys are included in **Table 12.1**.

During these surveys, the proposed development site was also surveyed for invasive species and rare floral species (Wyse *et al*., 2016; Stace 2019). It is noted that a considerable number of site visits were carried during the overall assessment process including winter bird surveys, bat surveys and Badger surveys. Observations in relation to habitats made during these site visits are included in the habitat descriptions where relevant.

12.2.5.2 Badger

Badger *Meles meles* trail camera and general activity surveys were carried out at the proposed development site between November 2024 and May 2025 (Refer to **Table 12.1**). Trail camera surveys were based on Scottish Natural Heritage methods (SNH 2018) and general Badger surveys followed guidelines from the Harris *et al.* (1989) and National Roads Authority (NRA 2005a). Potential habitat including grassland, scrub and woodland to a minimum of 150m from the proposed development site boundary were systematically checked for signs of Badger activity or habitation. These signs include the presence of main, annex, subsidiary, and outlier setts, foraging evidence (e.g., snuffle holes), latrines, access runs and trails, hairs caught on wires and bushes, tracks, and prints.

12.2.5.3 Bats

Bat activity surveys (dusk) were conducted within the proposed development site under suitable weather conditions on several dates outlined in **Table 12.1**. The surveys were carried out 15 minutes before sunset and approximately an hour before dawn (Collins 2023). Dusk surveys used Elekon Batloggers, Batbox Duet and EchoMeter Touch 2 PRO bat detectors. An activity/emergence survey using a Pulsar Helion 2 XP50 Pro Thermal Imaging Camera was also carried out to identify potential emergence points from suitable trees within the survey area. The primary purpose of the bat surveys was to assess usage of trees and habitats, located within or in close proximity to the proposed development site boundary. Activity surveys were also carried out to identify foraging and/or commuting routes within the proposed development site boundary (i.e., hedgerows/treelines, scrub, semi-natural grassland etc.).

A preliminary roost assessment was carried at ground level on all trees earmarked for removal within the proposed development site as per Collins (2023). These assessments followed the guidelines set out in *'Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th ed)'* (Collins, 2023).

12.2.5.4 Otter

All habitats within 150m of the proposed development site on several dates between November 2024 and May 2025 for signs of Otter *Lutra lutra* (Refer to **Table 12.1** for dates). The Gobby Beach area was also surveyed. Observations relating to Otter that were made during other surveys, such as wintering bird surveys and Badger surveys, were also recorded where relevant.

Otter survey methodology followed guidance outlined in NRA (2008) and included searches for breeding or resting sites within 150m of the proposed development site boundary. Trail cameras were also utilised to assess usage patterns. Other evidence of Otter, including spraints, footprints, or feeding remains, was also recorded where present.

12.2.5.5 Breeding Birds

The breeding bird survey was based on the BTO Common Bird Census (CBC) methodology and Breeding Bird Survey (BBS) (Gilbert *et al.* 1998 and Bibby *et al.* 2000) which aims to capture a snapshot of breeding bird activity within the survey area. The survey area focused on terrestrial habitats within the proposed development site boundary. Dates of survey are included in **Table 12.1**.

The proposed development site was walked so that all habitats within 50m of all potential nesting features were surveyed. The ornithological surveyor slowly walked through the proposed development site, stopping at regular intervals to scan with binoculars and to listen for bird calls or song. Birds were identified by sight and song. All species seen or heard in the survey area and immediate environs were recorded including those in flight. Visits were made during favourable weather conditions.

All species encountered during the survey were mapped and coded using standard BTO species codes and activity recorded using the BTO codes for breeding evidence.

In an effort to minimise potential disturbance, no attempts were made to locate nests as observed behaviours are generally sufficient to determine probable or confirmed breeding. The conservation status of birds was also recorded. Bird species listed in Annex I of the Birds Directive are considered a conservation priority. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland (BOCCI). These are bird species suffering declines in population size. BirdWatch Ireland and the Royal Society for the Protection of Birds have identified and classified these species by the rate of decline into Red and Amber lists (Gilbert *et al.* 2021). Red List bird species are of high conservation concern and the Amber List species are of medium conservation concern. Green listed species are regularly occurring bird species whose conservation status is currently considered favourable.

12.2.5.6 Wintering Birds

Winter bird surveys were carried out between October 2024 and March 2025. Dates of winter bird surveys are included in **Table 12.1**. These surveys focused on grassland habitats within greenfield area of the proposed development site as well as grassland habitats to the south and coastal habitats to the east which could provide potential foraging or roosting habitats for wintering waterbirds and waders.

The survey methodology was based on that used by the British Trust for Ornithology (BTO), Wetland Bird Survey (WeBS) and also that for the Irish Wetland Bird Survey (I-WeBS), as outlined in Gilbert *et al.* (1998). The winter bird survey was undertaken using 8.5×45 binoculars and a Hawke Endurance Ed Spotting Scope 15-45×60 spotting scope.

12.2.6 Consultation

The consultation process which informed the scope of this EIS is described in **Chapter 1 *Introduction*** and **Appendix 1.2 *Consultation***.

Meetings were held with Dr. Jervis Good and Danny O' Keefe (National Parks and Wildlife Service of the Department of Arts, Heritage and the Gaeltacht) on 27th May 2015, 8th September 2015 and 21st of January 2025. In its letter dated 11th September 2015 the Development Application Unit specifically requested that the following be addressed:

- Effects on otters (including coastal protection measures and bioaccumulation of pollutants)
- Effects on Annex 1 bird species and regularly occurring migratory birds, to which the conservation objectives of the SPA do not apply, e.g. little egret (a piscivorous species), whimbrel (in terms of collision risk) etc.
- Effects on red listed and amber listed bird species (e.g. yellow-hammer (habitat removal), barn owl (rodenticide use), etc.
- Effects of any blasting or pile driving (if required during construction) on marine mammals occurring in the Lower Harbour
- Effects of coastal protection measures on the fauna and flora of the shingle beach; a survey for protected flora should be undertaken

Issues raised during those pre-application meetings that relate specifically to the Cork Harbour SPA are examined separately in the AA screening/NIS which accompanies this application.

Issues raised during the consultation process relating to biodiversity are addressed where relevant within this chapter.

12.2.7 Limitations

Standard survey methods were followed. However, any biases or limitations associated with these methods could potentially affect the results collected. Although every effort was made to provide a full assessment and comprehensive description of the study area, natural fluctuations in populations may not be fully reflected due to the instantaneous nature of the field surveys. However, the field surveys together with the background knowledge provided by the desk study, provides a robust representation of the baseline for the habitats and species within the zone of influence.

Extensive survey work was carried out to determine Badger usage of the proposed development site and landholding. However, there are difficulties in mapping areas of Badger territory and other species in third party lands outside the control of the applicant. It can be difficult to determine territory size in Badger populations particularly where they may include multiple landholdings. Therefore, in this case a conservative approach was adopted in determining impact on Badger social groups.

12.3 Baseline Environment

12.3.1 General Landscape

The Indaver site is approximately 13.55 hectares in size and surrounds the Hammond Lane Metal Company facility. The main development area is located in the eastern section of the proposed development site (see **Figure 1.3**). Field levels will be raised in the western section of the proposed development site. These lands will also be used during the construction phase of the proposed development.

The Indaver site runs east-west parallel to the L2545 Ringaskiddy Road, an extension of the N28, which leads to Haulbowline Island and runs along the northern boundary of the proposed development site. The eastern boundary of the proposed development site extends to the foreshore of Cork Harbour along Gobby Beach. The single carriageway from Barnahely to Ringaskiddy element of the M28 Cork to Ringaskiddy project (known as the '*Protected Road Scheme'*) is currently being constructed within the northwestern boundary of the proposed development site.

To the south, the study area is bordered by agricultural land dominated by intensive pasture. A Martello Tower is located on the crest of a small hill (43m approx.) in agricultural land to the south of the study area.

To the east, the proposed development site extends towards the edge of the Cork Harbour West Channel that separates the mainland from Spike Island. The shoreline here is characterised by shingle beach with steep earthen cliffs.

The waste-to-energy facility element of the proposed development is located in the eastern section of the study area, between the coast and the Hammond Lane facility. A small walkway will be created along the eastern boundary between the public car park and the Martello tower to facilitate recreational users. A rectangle of land, to the northeast of the proposed development site is not included in the development area but is included in the study area.

A high proportion of the study area, including the proposed development site, is covered in scrub, which has become more dominant over time in the absence of development. The remainder of the proposed development site consists of grassland formerly under conventional agricultural management which has now reverted to semi-natural grassland in the absence of management. The proposed development site and the proposed development are shown in **Figures 4.1, Figure 4.2** and **4.7** of **Volume 3** ***Figures*****.**

12.3.2 Designated Sites/Conservation Areas

12.3.2.1 European Sites

SACs and candidate cSACs are protected under the Habitats Directive 92/43/EEC and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. SPAs are protected under the Birds Directive 2009/147/EC and European Communities (Birds and Natural Habitats) Regulations 2011, as amended. Collectively, these sites are referred to as Natura 2000 or European sites.

In accordance with the European Commission Methodological Guidance (EC 2018), a list of Natura 2000 sites that can be potentially affected by the proposed development has been compiled. All SAC, cSAC and SPA sites which could potentially be impacted by the proposed development have been identified. **Table 12.2** lists the relevant Natura 2000 sites, the location of which are shown in **Figure 12.1**.

The proposed development does not overlap with a Natura 2000 site. Natura 2000 sites within the potential zone of influence of the proposed development site are listed in **Table 12.2**.

A potential source-pathway-receptor link has been identified between the source (the proposed development) and these receptors (Great Island Channel SAC, Cork Harbour SPA, Sovereign Islands SPA and Ballycotton Bay SPA) via the following potential pathways were identified:

- Habitat loss
- Disturbance of displacement of SCI birds
- Collision risk (with stack) for SCI birds
- Emissions to water
- Emissions to air
- Accidental release of firewater
- Disposal of bottom ash
- Disposal of boiler ash and flue gas cleaning residues
- Trans-boundary effects
- Changes in predator behaviour
- Flooding and/or erosion
- In-combination effects

Further information on these Natura 2000 sites is also provided below. Full details on these potential effects are included in the AA screening and NIS which accompanies this updated EIS.

Table 12.2 Natura 2000 sites within the zone of influence of the proposed development site

Natura 2000 site	Site Code	Qualifying Interests/Special Conservation Interests	Distance at closest point and potential source-pathway-receptor link
Special Area of Conservation (SAC)			
Great Island Channel SAC	001058	Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	Located c. 5.6km north.
Special Protection Area (SPA)			
Cork Harbour SPA	004030	Little Grebe (Tachybaptus ruficollis) [A004] Great Crested Grebe (Podiceps cristatus) [A005] Cormorant (Phalacrocorax carbo) [A017] Grey Heron (Ardea cinerea) [A028] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Red-breasted Merganser (Mergus serrator) [A069] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160 Redshank (Tringa tetanus) [A162] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182]	Located c. 405m south.

Natura 2000 site	Site Code	Qualifying Interests/Special Conservation Interests	Distance at closest point and potential source-pathway-receptor link
		Lesser Black-backed Gull (Larus fuscus) [A183] Common Tern (Sterna hirundo) [A193] Wetland and Waterbirds [A999]	
Ballycotton Bay SPA	004022	Teal (Anas crecca) [A052] Ringed plover (Charadrius hiaticula) [A137] Golden plover (Pluvialis apricaria) [A140] Grey plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed godwit (Limosa limosa) [A156] Bar-tailed godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Turnstone (Arenaria interpres) [A169] Common gull (Larus canus) [A182] Lesser black-backed gull (Larus fuscus) [A183] Wetland and waterbirds [A999]	18.4km east.
Sovereign Islands SPA	004124	Cormorant (Phalacrocorax carbo) [A017]	19.7km southwest

Great Island Channel SAC stretches from Little Island to Midleton, with its southern boundary being formed by Great Island. It is an integral part of Cork Harbour which contains several other sites of conservation interest. Geologically, Cork Harbour consists of two large areas of open water in a limestone basin, separated from each other and the open sea by ridges of Old Red Sandstone. Within this system, Great Island Channel forms the eastern stretch of the river basin and compared to the rest of Cork Harbour, is relatively undisturbed. Within the site is the estuary of the Owennacurra and Dungourney Rivers. These rivers, which flow through Midleton, provide the main source of freshwater to the North Channel. The site is a Special Area of Conservation (SAC) for two habitats listed on Annex I; [1140] Tidal Mudflats and Sandflats and [1330] Atlantic Salt Meadows.

Cork Harbour SPA is a large, sheltered bay system, with several river estuaries – principally those of the Rivers Lee, Douglas, Owenabue and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenabue River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poulnabibe inlets. Cork Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e., > 20,000) and also for its populations of Black-tailed Godwit and Redshank. In addition, it supports nationally important wintering populations of 22 species, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive.

Ballycotton Bay SPA is situated on the south coast of Co. Cork, Ballycotton Bay is an east-facing coastal complex, which stretches northwards from Ballycotton to Ballynamona, a distance of c. 2 km. The site comprises two sheltered inlets which receive the flows of several small rivers. The principal habitat within the site is inter-tidal sand and mudflats. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Teal, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Turnstone, Common Gull and Lesser Black-backed Gull. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The Sovereign Islands are two very small marine islands located approximately 1 km off the coastline at the entrance to Oysterhaven Bay in Co. Cork. Both islands are largely devoid of soil apart from small amounts of organic matter trapped in cracks. Vegetation is sparse, with plants such as Sea Beet (*Beta vulgaris*), Spurrey (*Spergularia* spp.) and Orache (*Atriplex* spp.) recorded. The surrounding sea, to a distance of 200 m, is included. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant. The islands are important for breeding seabirds, with most occurring on the eastern stack. A Cormorant colony has been known since the late 1960s and 156 pairs were recorded here in 1999. A more recent survey in 2008 recorded 89 pairs. Herring Gull and Great Black-backed Gull also breed, with 10 and 75 pairs respectively in 1999.

12.3.2.2 Nationally Protected Sites

NHAs and pNHAs are national designations under the Wildlife Act 1976, as amended. A Natural Heritage Area (NHA) is designated for its wildlife value and receives statutory protection. These areas are considered nationally important for the habitats present or which holds species of plants and animals whose habitats needs protection. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation.

pNHAs were published on a non-statutory basis in 1995 and have not since been statutorily proposed or designated. These sites are also of significance for wildlife and habitats. Prior to statutory designation, pNHAs are still subject to limited protection, in the form of:

- Agri-environmental farm planning schemes support the objective of maintaining and enhancing the conservation status of pNHAs
- There is a requirement for the Forest Service to gain NPWS approval before they will pay afforestation grants on pNHA lands; and
- A recognition of the ecological value of pNHAs by Planning and Licencing Authorities

The NHAs and pNHAs located in the vicinity of the proposed development site are listed in **Table 12.3** and are shown in **Figure 12.1.**

Table 12.3 Natural Heritage Area (NHA)/proposed Natural Heritage Area (pNHA) in the vicinity of the proposed development site

NHA/pNHA	Site Code	Overlapping with Natura 2000 site	Distance at closest point and potential source-pathway-receptor link
Lough Beg pNHA	001066	Cork Harbour SPA	300m south. As part of the Cork Harbour SPA, Lough Beg plays a part in supporting internationally important numbers of waders (over 20,000) and of two particular species, the Black-tailed Godwit and Redshank. Wildfowl are relatively numerous as compared to other parts of the Harbour and include Wigeon, Teal and Shelduck Golden Plover, Lapwing and Dunlin.
Monkstown Creek pNHA	001978	Cork Harbour SPA	1.5km north. The area is of value because its mudflats provide an important feeding area for waterfowl including: Shelduck, Teal, Redshank and Dunlin. The pNHA also supports a Cormorant roosting site.
Whitegate Bay pNHA	001084	Cork Harbour SPA	c.2.8km east. This site forms part of the Cork Harbour Special Protection Area. It comprises open water with extensive mudflats. Species particularly associated with this part of the SPA include Grebes, diving ducks and waders and include Shelduck, Wigeon, Dunlin, Knot, Curlew, Redshank, Bar-tailed Godwit, turnstone, Oystercatcher and Ringed Plover.
Owenabue River pNHA	001990	Cork Harbour SPA	c.3km south. This pNHA forms part of Cork Harbour SPA. It supports a range of wetland habitats and is an important overwintering area for a range of wetland bird species including and Dunlin, Redshank and Curlew.
Templebreedy National School, Crosshaven pNHA	000107	None	3.3km south. Supports nursery population of Leisler's Bats (Nyctalus leisleri)
Cuskinny Marsh pNHA	001987	None	c.3.5km northeast. This site is located 2.5km east of the centre of Cobh on the shores of Cork Harbour. Cuskinny Marsh is of interest because it contains a nice mix of habitats, within a small area, and supports locally important numbers of wildfowl.
Fountainstown Swamp pNHA	000371	None	c.6km south Site supports wetland habitats including Swamp and Wet Woodland with abundant Hemlock Water-dropwort (Oenanthe crocata). Site also supports a range of wetland bird species including: • Mallard (Anas platyrhynchos) • Grey Heron (Ardea cinerea)
Rostellan Lough, Aghada Shore And Poulnabibe Inlet pNHA	001076	Cork Harbour SPA	c. 5km east. This site occupies the north-east corner of Cork Harbour SPA, west of Saleen and Rostellan. Little Grebe, Pochard, and Tufted Duck are frequent species, along with Mallard and Snipe. Mudflats occur westwards to Aghada and these were utilised by many feeding waders, while the sea offshore is used by species such as Scaup, Goldeneye and Great Crested Grebe.

NHA/pNHA	Site Code	Overlapping with Natura 2000 site	Distance at closest point and potential source-pathway-receptor link
Great Island Channel pNHA	001058	Great Island Channel SAC and Cork Harbour SPA	5.6km north See Great Island Channel SAC and Cork Harbour SPA.
Douglas River Estuary pNHA	001046	Cork Harbour SPA	6.3km north. This site comprises the estuary of the Douglas River in Cork Harbour. It supports a range of wetland habitats and is an important overwintering area for a range of wetland bird species including: Teal, Wigeon, Shelduck, Red-breasted Merganser, Oystercatcher, Lapwing, Golden, Curlew, Black-tailed Godwit, Bar-tailed Godwit Redshank and Dunlin.
Rockfarm Quarry Little Island pNHA	001074	None	7.5km north. Rock Farm Quarry is located c. 9km west of Cork City on Little Island in the River Lee estuary. The area is of considerable interest botanically because of its species diversity and the presence of ‘'raritie'' for the region, such as the dense-flowered orchid and the Portland Spurge.
Minane Bridge Marsh pNHA	001966	None	8.5km southwest. This site comprises the narrow Ringabella estuary incorporating flooded wet fields supporting marsh vegetation and colonising woodland. The site is important for birds, butterflies and other insects.
Dunkettle Shore pNHA	001082	Cork Harbour SPA	9.6km north. This site is located at the mouth of Glashaboy River, where it meets the Lee estuary. It is an integral part of Cork Harbour SPA. It supports a range of wetland habitats and is an important overwintering area for a range of wetland bird species including: Teal, Oystercatcher, Ringed Plover, Curlew, Black-tailed Godwit, Bar-tailed Godwit, Redshank, Knot, Dunlin and Lapwing. A Heronry occurs to the east of the site.
Ballycotton, Ballynamona and Shanagarry pNHA	000076	Ballycotton Bay SPA	10.7km southeast See Ballycotton Bay SPA.
Carrigacrump Caves pNHA	001408	None	10.8km east. This site is located in an area of outcropping limestone in east Co. Cork. The core system has eight entrances and most of the passages are of the canyon type and water floored. The entrances of the caves are in a disused quarry which contains some areas of undisturbed limestone grassland that includes some locally rare plants such as Carline Thistle (Carlina vulgaris) and Long-stalked Crane’s-bill (Geranium columbinum). In addition, the naturalised flora is unusual.
Glanmire Wood proposed pNHA	001054	None	c.11.1km north. Glanmire Wood occurs on the east bank of the Glashaboy River, immediately south of Glanmire village. The main habitat of interest is mixed broad-leaved woodlands dominate by oak (Quercus sp.), beech (Fagus sylvatica) and sycamore (Acer pseudoplatanus) with a few conifers. This site is of interest because this type of woodland is rare in east Cork.

NHA/pNHA	Site Code	Overlapping with Natura 2000 site	Distance at closest point and potential source-pathway-receptor link
Carrigshane Hill pNHA	001042	None	13.1km northeast This area is important as a representative of the herb rich community grassland community found near the exposed limestone – a habitat under threat from quarrying. The presence of Thick- leaved Stonecrop adds further interest to this site.
Leamlara Wood pNHA	001064	None	13.4km northeast. This site is situated 6km north-west of Midleton in the steep sided valley of the Leamlara River. This area is of local importance as there are few areas of semi-natural oak woodland in east Cork, and it is a good example of this community.
Cork Lough pNHA	001081	None	14km northwest. This small lake is situated in the north-west of Cork City, 1km. north of the River Lee. The site is a N.H.A. of local important for its bird community
Ballynaclashy House, North of Midleton pNHA	000099	None	c.14.2km northeast. Site supports a nursery roost of Whiskered Bat (Myotis mystacinus)
Lough Aderry and Ballybutler pNHA	000446	None	15.3km northeast. The site comprises two lowland lakes and associated wetland habitats and species including the rare Orange Foxtail (Alopecurus aequalis) grass and Musk Thistle (Carduus nutans). Site is of importance for wetland bird species
Lee Valley pNHA	000094	None	16.2km northwest. Site supports areas of native woodland, unimproved grassland and wet-land habitats and associated species including plants, insects and birds within the riparian corridor of the River Lee.
Blarney Bog pNHA	001857	None	18.7km northwest.
Shournagh Valley pNHA	000103	None	19.6km northwest. Site supports areas of oak and wet woodland within the riparian corridor of the Shournagh River.

A number of pNHAs form part of the Cork Harbour complex; Monkstown Creek pNHA, Lough Beg pNHA and Whitegate Bay pNHA. The proposed development site is hydrologically connected to Cork Harbour and therefore potentially connected to these sites. These sites are part of a network of sites which support important bird numbers within Cork Harbour and are considered relevant to this proposed development. The remaining sites are located a considerable distance from the proposed development and no potential effects on these other sites has been identified.

12.3.2.3 Ramsar Sites

The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of 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. Cork Harbour is listed as a Ramsar site, which is a non-statutory designation.

12.3.2.4 Important Bird Areas

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.

Through their designation they aim to form a network of sites ensuring that migratory species find suitable breeding, stop-over and wintering places along their respective flyways.

The function of the IBA Programme is to identify, protect and manage a network of sites that are important for the long-term viability of naturally occurring bird populations, across the geographical range of those bird species for which a site-based approach is appropriate **(Table 12.4**). The proposed development site lies approximately 405m north of Cork Harbour IBA (Site Code: IE088).

The Cork Harbour IBA site qualifies for designation under the following IBA Criteria (2000):

- A4iii–- The site is known or thought to hold, on a regular basis, ≥ 20,000 waterbirds or ≥ 10,000 pairs of seabird of one or more species
- B1i–- The site is known or thought to hold ≥ 1% of a flyway or other distinct population of a waterbird species
- B2–- The site is one of the most important in the country for a species with an unfavourable conservation status in Europe and for which the site-protection approach is thought to be appropriate
- C3–- The site is known to regularly hold at least 1% of a flyway population or of the EU population of a species threatened at the EU level (not listed on Annex 1 of The Birds Directive)
- C4–- The site is known to regularly hold at least 20,000 migratory waterbirds and/or 10,000 pairs of migratory species of one or more species
- C6–- The site is one of the five most important in the European region in question for a species or subspecies considered threatened in the European Union

Table 12.4 Summary of Cork Harbour IBA Trigger Species

Species	Current IUCN Red List Category	Season	Year(s) of estimate	Population estimate	IBA Criteria Triggered
Eurasian Curlew *(Numenius arquata*)	NT	winter	1995	1,669 individuals	B2
Bar-tailed Godwit *(Limosa lapponica*)	NT	winter	1996	456 individuals	B2
Black-tailed Godwit (*Limosa limosa*)	NT	winter	1996	1,399 individuals	B1i, C3
Dunlin (*Calidris alpine*)	LC	winter	1995	12,050 individuals	B1i, B2, C3
Common Redshank (*Tringa tetanus*)	LC	winter	1996	1,344 individuals	B1i, C3
Common Tern *(Sterna hirundo*)	LC	breeding	1995	102 breeding pairs	C6
A4iii Species group–- waterbirds	n/a	winter	-	20,000 individuals	A4iii, C4

12.3.3 Flora

The proposed development area lies within Ordnance Survey National Grid 10km square (hectad) W76. The National Biodiversity Data Centre (NBDC) online database provides data on the distribution of mammals, birds, and invertebrates within the 10km tetrads. **Table 12.5** lists threatened/endangered species, designations and 10km hectad.

The NBDC database lists two protected plant species within W76 i.e., Meadow Barley *Hordeum secalinum* and Pennyroyal *Mentha pulegium*. These species are protected by the Flora Protection Order 2022 (S.I. No. 235 of 2022).

Table 12.5 NBDC listed threatened/endangered flowering plants for hectad W76

Flowering plant Species	Latin Name	Designations
Little-robin	*Geranium purpureum*	Flora Protection Order 2022 (S.I. No. 235 of 2022) & Vulnerable
Round-leaved Crane's-bill	*Geranium rotundifolium*	Endangered
Meadow Barley	*Hordeum secalinum*	Flora Protection Order 2022 (S.I. No. 235 of 2022) & endangered
Pennyroyal	*Mentha pulegium*	Endangered
Sharp-leaved Fluellen	*Kickxia elatine*	Endangered

Source NBDC database 06/05/25

Grey Sedge (*Carex divulsa*), which is classified as having an occasional occurrence in Ireland (Webb et al., 1996), was recorded within the proposed development site on previous occasions (2001 and 2008) but was not recorded on the proposed development site during 2024 and 2025 surveys. Bee Orchid (*Ophrys apifera*) has a scattered distribution in Ireland and was recorded in the study area in 2014/ 2015, this species was not recorded during the 2024/2025 surveys. The dominance and continuing encroachment of scrub habitat at the proposed development site mean that rarer grassland and/or herbaceous species are unlikely to occur. No protected, rare or threatened floral species were recorded within the proposed development site during the 2024/2025 site surveys.

It is noted that the Bristly Oxtongue (*Helminthotheca echioides*), which is a nationally rare species (Wyse-Jackson *et al.,* 2016), was recorded growing on bare/disturbed ground habitat outside the proposed development site (along the L2545 road) during the August 2025 site survey. This species is not listed on the Flora (Protection) Order 2022 (S.I. No. 235 of 2022) and is not listed in the NBDC records for W77. Records on the distribution of Bristly Oxtongue are largely confined to the south-eastern area of Ireland. It is noted that this plant naturally recolonises relatively loose, recolonising bare ground and is likely to naturally colonise areas of spoil and bare ground within the proposed development site over time.

12.3.4 Habitats

Terrestrial habitat mapping was carried out in line with the methodology outlined in the Heritage Council publication *Best Practice Guidance for Habitat Survey and Mapping* (Heritage Council, 2011). All habitats within the study area were classified to level 3 of the classification scheme outlined in *A Guide to Habitats in Ireland* (Fossitt, 2000) and cross-referenced with habitats listed under Annex I of the Habitats Directive. A floral species list is included in **Appendix 12.1**.

A current habitat map is included as **Figure 12.2** and the habitats recorded on the proposed development site are described below in **Table 12.6.** The ecological value of habitats is defined by the classification scheme outlined in *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2009) which is included in **Appendix 12.6.**

Table 12.6 Terrestrial Habitat Values

Habitat	Description/ Habitats Directive Annex I Status	Ecological value (NRA guidelines)
Scrub WS1/Immature woodland WS2	The proposed development will be concentrated in the eastern part of the study area. This area which previously supported grassland communities (in 2001 and 2008), is now almost entirely dominated by a scrub/immature woodland mosaic. Over the past 10 years, trees within the scrub have become more established leading the classification of as a woodland mosaic. This habitat has development through natural succession in the absence of grazing or other forms of agricultural management. Willow is dominant, with White Willow, Grey Willow and Goat Willow. Other species noted include Gorse, Bramble, Bracken, Hawthorn, Blackthorn, Crack Willow, Pedunculate Oak, Ash, Beech Sycamore and Elder. The encroachment of scrub has resulted in the loss of most of the grassland within this area although some tracks remain within this habitat. Areas previously classified as dry meadows and grassy verge have become overgrown with herbaceous species. Herbaceous species include Rush sp., Knapweed sp., Yellow-wort, Cat's Ear, Meadow, Vetchling. Birds-foot, Ribwort plantain, Woody nightshade, Cocksfoot, Yorkshire fog, False Oat Grass, Common Bent, Sow thistle, Silverweed and Pheasant bush.	Local importance (Higher value)
Scrub WS1	Scrub has continued to develop in areas of the proposed development site previously managed for agricultural with an area of scrub on the lower field at the north of the site near the L2545 Ringaskiddy road. This areas of scrub is dominated by immature Willow, with Buddleia and Wild clematis also recorded. At the centre of the site, to the south and west of the Hammond Lane Facility, scrub dominated the sloped ground, although this is lower growing than the scrub/immature woodland at the east of the site. Gorse, Bracken and Bramble dominate within this area.	Local importance (Lower value)
Dry meadow and grassy verge GS2	Previously (2014/2015) classified as improved agricultural grassland, this area has developed into dry meadow and grassy verge habitat in the absence of agricultural management. This is a more diverse grassland than was previously recorded with species including Red fescue, Cocksfoot, Yorkshire fog, False oat grass, Common bent, Creeping buttercup, Curled dock, Broadleaved dock, Hogweed, Nettle, Bracken, Meadow vetchling, Suckling clover, Buttercup, Sorrel, Ragweed, Knapweed, Clover,	Local importance (Lower value)

Habitat	Description/ Habitats Directive Annex I Status	Ecological value (NRA guidelines)
	Hawkweed and Sow thistle. Some encroachment of scrub is evident along the boundary, largely Bramble, Bracken and immature Elm. A field on the lower ground along the L2545 Ringaskiddy road has also developed into this semi-natural grassland habitat in the absence of agricultural management. The development of this grassland on formerly fertile ground means that this is of relatively low diversity. Dry meadow and grassy verge GS2 corresponds to the Habitats Directive Annex I habitat: 'lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) (6510)'. However, the dry meadow and grassy verge habitat within the proposed development site is very common locally and does not represent a valuable example of this Annex I habitat type.	
Conifer woodland WD3	A small area of planted conifers was recorded, which consists of Sitka Spruce and Monterey Cypress. The trees are approximately 25-30 years old. This area is now completely surrounded by scrub habitats and the boundary of this habitat is ill-defined.	Local importance (Lower value)
Spoil and bare ground ED2	An area of land at the west of the proposed development site has been acquired as part of the M28 motorway construction. This area is currently under construction.	Local importance (Lower value)
Earth bank BL1	The western side of the northern boundary is bordered by an area of vegetated earth bank dominated by immature Willow, Red fescue, Cocksfoot, Wild strawberry, Ribwort plantain, Common Bent, Broadleaved dock, Hogweed, Red clover, Knapweed, Wild clematis, Rye grass and Creeping bent.	Local importance (Lower value)
Treelines WL2	The north-eastern boundary of the proposed development site consists of treeline dominated by Sycamore and Beech. Hawthorn, Blackthorn, Gorse and Bramble also noted. The short section of treeline along the western boundary is more sheltered.	Local importance (Higher value)
Hedgerow WL1/Scrub WS1	A hedgerow runs along the southern boundary. This boundary is denser at the centre, with typical native hedgerow with a Blackthorn and Hawthorn dominant with occasional Gorse. However, other areas are more scrub like with occasional trees/scrub species such as Gorse and Crab apple dominated by herbaceous species including Bramble, Bracken, Wood sage, False oat grass, Male fern, Harts togue fern, immature Sycamore and immature Elder.	Local importance (Lower value)

12.3.5 Invasive Species

Non-native plants are defined as those plants which have been introduced outside of their native range by humans and their activities, either purposefully or accidentally. Invasive non-native species are so-called as they typically display one or more of the following characteristics or features: (1) prolific reproduction through seed dispersal and/or re-growth from plant fragments; (2) rapid growth patterns; and, (3) resistance to standard weed control methods.

Where a non-native species displays invasive qualities and is not managed it can potentially: (1) out compete native vegetation, affecting plant community structure and habitat for wildlife; (2) cause damage to infrastructure including road carriageways, footpaths, walls and foundations; and, (3) have an adverse effect on landscape quality.

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that:

'Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, ['refers only to exotic species thereof'][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence.'

The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed and Himalayan Balsam, as follows: *"any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence."*

No third schedule invasive species were recorded within the proposed development site boundary. It is noted that Japanese Knotweed was previously recorded at the site during the 2014/2015 surveys. However, this species has been treated onsite and there were no signs of active growth during the 2024/2025 site surveys.

The non-native invasive species Buddleia, Winter Heliotrope, Cotoneaster, Sycamore, Montbretia, Travellers' Joy and Pheasant Bush were recorded within and adjacent to the proposed development site. These species are not included in the Third Schedule of the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011). Therefore, their presence at the site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (S.I. 477 of 2011).

Sycamore, Montbretia and Cotoneaster are on the "*Amber List: Recorded Species*" (which under the right conditions could represent a significant impact on native species or habitats) while Buddleia, Pheasant Bush, Traveller's Joy and Winter Heliotrope are on the "*Amber List: Uncertain Risk*" (their ecological impact remains uncertain due to lack of data showing impact or lack of impact). Buddleia, Winter Heliotrope, Cotoneaster and Travellers' Joy are also included in the NRA *Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads* (NRA, 2010) as these species have been shown to have an adverse effect on landscape quality, native biodiversity or infrastructure.

Cotoneaster, Buddleia and Sycamore were recorded from the scrub areas within the proposed development site, while Travellers' Joy, Sycamore and Buddleia were found to have invaded scrub and hedgerows throughout the study area. Winter Heliotrope and Montbretia were found present along the boundary of the L2545 Ringaskiddy Road.

12.3.6 Terrestrial Mammals

12.3.6.1 Bats

In Ireland, nine species of bat are currently known to be resident with the residency of the tenth recorded species yet to be proven.

A review of existing bat records within the hectad W76 of the planning boundary indicates that six of the nine Irish bat species listed in **Table 12.7**, have been recorded within W76.

It is noted that Nathusius's Pipistrelle have not been included in this database, but they could potentially occur in this general area. However, the closest record for Nathusius's Pipistrelle is approximately 23km west of the proposed development site (BCI 2011). Lesser Horseshoe Bat is the only species of bat listed on Annex II of the Habitats Directive (Directive 92/43/EEC). The closest record of this species is approximately 20km northwest of the proposed development site near Ballincollig (Clare Heardman and Danny O'Keeffe 2013).

Table 12.7 Presence of Irish bat species within hectad W76

Common name	Scientific name	Presence
Lesser Noctule	*Nyctalus leisleri*	Present
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	Present
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Present

Common name	Scientific name	Presence
Daubenton's Bat	*Myotis daubentonii*	Present
Natterer's Bat	*Myotis nattereri*	Present
Brown Long-eared Bat	*Plecotus auritus*	Present
Whiskered Bat	*Myotis mystacinus*	Absent
Lesser Horseshoe	*Rhinolophus hipposideros*	Absent
Nathusius's Pipistrelle	*Pipistrellus nathusii*	Absent

Source NBDC 06/05/25

Surveys by DixonBrosnan in 2022 and 2024 indicated that there are no suitable roosting sites for bats within the proposed development site boundary. There are no structures which could potentially support roosts, and the trees are all relatively young and lack the structural complexity (i.e. rotten wood, holes etc), that would provide suitable roosting sites for bats. The hedgerows and treelines on external boundaries are of some local value for feeding bats, but do not provide roosting habitat.

DixonBrosnan carried out night-time transect bat activity surveys using Elekon Batloggers, Batbox Duet and EchoMeter Touch 2 PRO bat detectors. The survey recorded small numbers of foraging Common Pipistrelle and Soprano Pipistrelle foraging and commuting activity at different areas within the proposed development site, largely hedgerows/treelines along northern and southern site boundaries as well as within scrub habitat at the east of the site. Leisler's Bats were recorded commuting over the proposed development site early during all survey periods, although there were no prolonged records of this species. Brown Long-eared bat was recorded at the south-east corner of the proposed development site on one occasion (September 2024). As expected, most activity occurred close to better quality treelines. No other bat species were detected. Overall, bat activity levels were low throughout all 2022 and 2024 surveys.

Small numbers of Common and Soprano Pipistrelle were recorded foraging/commuting within the proposed development site. The highest level of activity was along the southern treeline, however it is noted that there was significant light spillage at the northern and central areas within the proposed development site from the Hammond Lane Facility and the adjoining L2545 Ringasiddy Road. Common Pipistrelle, Soprano Pipistrelle and Brown-long eared bat was recorded within the denser, taller scrub at the west. Lower levels of activity were recorded along the northern boundary hedgerow.

These results are broadly similar to the results of previously surveys caried out in August/September 2015 (and in 2008). During these surveys the highest level of activity was along the external hedgerow along the southern boundary and the scrub/woodland in the eastern section of the proposed development site. These surveys found that bat activity was low, with only limited Common and Soprano Pipistrelle activity recorded. Only small numbers of individuals were recorded. The improvement in the bat monitoring technology within the intervening years may partly explain the records for Leisler's Bat and Brown Long-eared bat in 2024. However, the denser vegetation at the west of the site is likely to be more valuable bats as it matures.

In conclusion, the hedgerows and treelines on external boundaries as well as the internal scrub habitats are of low local value for foraging and commuting bats. There is no roosting habitat within the site boundary feeding bats.

12.3.6.2 Badger

Badgers and their setts are protected under the provisions of the Wildlife Act 1976, as amended, and it is an offence to intentionally, knowingly or unknowingly kill or injure a protected species, or to wilfully interfere with or destroy the breeding site or resting place of a protected wild animal. Badger setts are formed by a complex group of interlinked tunnels and therefore works in proximity to setts can potentially cause damage.

Mammal surveys in 2024 and 2025 identified mammal tracks within the proposed development site and it was determined that a sett, previously unoccupied in 2014/2015, was being used sporadically.

This sett was active until at least 2008, but no activity was recorded during the 2014/2015 surveys. Signs of Badger activity were recorded at this sett in 2024 and 2025 which this appears to be a subsidiary to a main sett. As outlined in **Section 12.3.1**, construction work for the single carriageway from Barnahely to Ringaskiddy element of the M28 Cork to Ringaskiddy project (known as the 'Protected Road Scheme') was ongoing during the 2024 and 2025 surveys. Two artificial setts (and an underpass) which were constructed in proximity to the proposed development site as part of the mitigation measures for the M28 were not in use during the 2024 and 2025 surveys. It is noted that there has been large scale disruption to lands at the west of the proposed development site and this may explain why the previously unoccupied sett within the proposed development site has returned to active usage.

Overall, the lands within the proposed development site are of lower value for Badger i.e. long, semi-natural grassland and scrub/immature woodland. No signs of Badger foraging were recorded within the proposed development site.

12.3.6.3 Otters

Otters, along with their breeding and resting places, are protected under the provisions of the Wildlife Act 1976, as amended. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive, as transposed into Irish law. Otters are also listed as requiring strict protection in Appendix II of the Berne Convention on the Conservation of European Wildlife and Natural Habitats and are included in the Convention on International Trade of Endangered Species (CITES).

Otters are common along the Irish coastline however they are shy and generally nocturnal in areas subject to disturbance. Signs of their presence are readily identifiable, and include spraints, tracks, holts, resting areas, slides and feeding signs. Due to the proximity of the seashore, the site could potentially be used by otters.

Surveys by DixonBrosnan in 2024 and 2025 did not record the presence of otter within a radius of 150m from the study area, although some sprainting activity was recorded 300m north of the proposed development site. It is noted that the upper shore of Gobby Beach, which adjoins the proposed development site, is extensively used by the general public, and that usage is highest in proximity to the car park that is located immediately adjacent to the proposed development site. These circumstances, particularly where dogs are also present, may reduce usage of the area by Otter. Whilst Otters may use the shore areas in proximity to the proposed development site on occasions, no holts were noted in this area, nor are they likely to occur in the area affected by beach nourishment works in the future.

12.3.6.4 Other Terrestrial Mammals

Rabbits are numerous and signs of fox were noted on the proposed development site. Small mammal surveys previously recorded Field Mouse, Bank Vole and Brown Rat. Such species are common in the Irish countryside. Pygmy Shrew, Hedgehog and Stoat were not recorded but may be present.

12.3.7 Marine Mammals

12.3.7.1 Seals

Harbour Seal and Grey Seal are listed on Annex II of the Habitats Directive, and both are known to occur and feed within Cork Harbour. There are no known haul-out sites for Grey Seal in Cork Harbour; generally, this species uses more exposed sites (Kiely, 1998).

Haul-out sites for Harbour seals may occur inshore, for example on estuaries, coves, islands etc. and this species tends to forage within a relatively short distance of such haul-out sites. Over half of foraging trips may be within 5km of the haul-out sites (Cronin *et al*., 2007; Cronin *et al*., 2008).

There are no recorded Grey Seal breeding sites in Cork Harbour (O'Cadhla *et al.* 2007; Morris and Duck 2019), however Grey Seals have been noted hauled out in Cork Harbour. Grey Seals range long distances while foraging and may be expected to be encountered regularly within the harbour. They were the most frequently recorded marine mammal during dredging operations for the Port of Cork in 2014 and 2017 with between 57 and 70% of all sightings being of Grey Seals, usually single individuals (Russell and Levesque 2014; O'Dwyer 2017).

There were no Harbour Seal haul-out sites or breeding sites recorded within Cork Harbour during National Parks and Wildlife Service (NPWS) surveys (Cronin *et al.* 2004; Morris and Duck 2019).

Harbour Seals are much less frequently recorded within Cork Harbour but have been recorded along the shipping channel.

Although there is no evidence for significant haul-out sites or breeding sites in Cork Harbour, there are several small haul-out sites in this general area, as noted below. The beach adjoining the proposed development site is not of value as a haul-out site due to high levels of disturbance by walkers and dogs. No signs of seals were recorded on Gobby Beach during the site surveys.

DixonBrosnan recorded a small haul-out of four seals near Paddy's Point (South of Haulbowline Island) in May 2025. Although there is nothing to indicate that the area in the immediate vicinity of the proposed development site is of particular value for seals, it is within the feeding range for local Harbour Seal populations.

12.3.7.2 Cetaceans

Species that have been recorded by the Irish Whale and Dolphin Group within the overall harbour include Bottlenose Dolphin (*Tursiops truncatus*), Harbour Porpoise (*Phocoena phocoena*), Common Dolphin (*Delphinus delphis*), Risso's dolphin (*Grampus griseus*), Killer Whale (*Orcinus orca*) and Minke Whales (*Balaenoptera acutorostrata*). Of these, Harbour Porpoise is the most widespread and abundant cetacean in inshore Irish waters, with highest abundances in the Irish Sea (Berrow *et al*. 2010). Harbour Porpoise is considered the species most likely to occur in the channel offshore from the proposed development site, however no cetaceans were recorded during the site surveys.

12.3.8 Reptiles and Amphibians

No habitat suitable for amphibians was recorded. Common Lizard is unlikely to be present.

12.3.9 Birds

12.3.9.1 Breeding Birds

Breeding bird surveys were carried out by DixonBrosnan during April, May and June 2025 using transect and point count methods (Gilbert *et al.* 1998 and Bibby *et al.* 2000). A total of 32 bird species were recorded during the breeding bird surveys. The mosaic of semi-natural grassland, scrub and dense scrub/immature woodland was noted as particularly beneficial for warblers, with Blackcap, Whitethroat, Willow Warbler and Chiffchaff recorded. Typical woodland edge and/or urban species were also recorded including Blackbird, Song thrush, Robin etc. It is noted that Skylark and Meadow Pipit were recorded in fields to the south of the proposed development (during winter bird surveys), but these species were not recorded during the breeding bird surveys.

A number of BOCCI species were recorded including the Red List species Kestrel. This species was recorded foraging at the proposed development site, but no signs of breeding were recorded. Other Red List species i.e. Oystercatcher, was recorded foraging along the shoreline of Gobby Beach. A number of Amber listed species were recorded within the proposed development site including Goldcrest, Greenfinch, House Martin, Swallow and Willow Warbler. A number of waterbirds were recorded overflying the proposed development site including Herring Gull, Common Gull, Oystercatcher and Common Tern, but there is no suitable breeding or foraging habitat for these species within the proposed development site boundary.

Of the species recorded during the survey, six species (Oystercatcher, Cormorant, Common Tern, Grey Heron, Black-headed Gull and Common Gull) are listed as birds of special conservation interest for the Cork Harbour SPA. As noted above, there is no breeding or foraging habitat for these species within the proposed development site boundary.

A list of the bird species recorded during breeding bird surveys in 2025 is provided in **Table 12.8** (refer also to **Table 12.9** for the relevant BTO breeding bird survey codes).

Table 12.8 Breeding bird survey results (refer also to Table 12.4 for explanation of codes)

Bird species	Breeding status	Estimated No. of Pairs	Conservation status*
Blackbird	Br-FF	2	
Blackcap	Po-S	1	
Black-headed gull	N-F	0	Amber List
Blue tit	Br-FL	3	
Bullfinch	Pr- A	1	
Chaffinch	Br-FL	2	
Chiffchaff	Pr-D	2-3	
Common gull	N-F	0	Amber List
Common tern	N-F	0	Amber List/Annex I
Common Whitethroat	Pr-A	1	
Dunnock	Po- S	1	
Goldcrest	Pr-D	1	Amber List
Goldfinch	PR-N	1	
Great tit	Br-DD	1	
Greenfinch	Pr-P	1	Amber list
Grey Heron	N-F	0	
Herring gull	N-F	0	Amber list
Hooded crow	N-F	0	
House martin	N-F	0	Amber List
Kestrel	N-F	0	Red list
Long tailed tit	Pr-P	1	
Oystercatcher	N-F	0	Red List
Robin	Br-UN	1	
Rook	N-F	0	
Song thrush	Pr-N	1	
Starling	N-F	0	Amber List
Swallow	N-F	0	Amber List
Willow warbler	Po-S	2	Amber List
Woodpigeon	Pr-D	2-3	

Bird species	Breeding status	Estimated No. of Pairs	Conservation status*
Wren	Br-ff	2	

* Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523—544

Table 12.9 British Trust for Ornithology breeding bird survey codes

Breeding status	Confirmed breeder (Br)	Probable breeder (Pr)	Possible breeder (Po)	Nonbreeder (N)
Observed behaviours	Distraction-display or injury feigning (DD)	Pair in suitable nesting habitat (P)	Observed in suitable nesting habitat (H)	Flying Over (F)
	Used nest or eggshells found from current season (UN)	Permanent Territory (T)	Singing Male (S)	Migrant (M)
	Recently fledged young or downy young (FL)	Courtship and Display (D)		Summering nonbreeder (U)
	Adults entering or leaving nest-site indicating occupied nest (ON)	visiting probable nest site (N)		
	Adult carrying faecal sac or food for young (FF)	Agitated Behaviour (A)		
	Nest containing eggs (NE)	Brood patch of incubating bird (I)		
	Nest with young seen or heard (NY)	Nest Building or excavating nest-hole (B)		

12.3.9.2 Common Tern Breeding

Common Terns are known to breed at the dolphins in the Port of Cork deepwater quay, and a pontoon offshore from the Port of Cork, located c.750m and 1.5km respectively from the proposed development site. The Port of Cork pontoon was installed as part of mitigation for the development of the deepwater quay with the intention of moving birds away from the dolphins. Other sites within the Lower Harbour area which have been occupied in recent years are the rocky island in Lough Beg, Ballybricken Point ADM jetty, the island within the Pfizer Golf Course Lagoon and Raffeen Creek (O'Mahony and Smiddy, 2017).

Common Terns were recorded overflying the proposed development site during the 2025 breeding bird surveys. While Common Tern are likely to forage in the waters of Cork Harbour to the east of the proposed development site, there are no breeding areas for Common Tern located in the vicinity of the proposed development site.

12.3.9.3 Winter Bird Surveys

The winter bird surveys were undertaken on six dates between October 2025 and March 2025 (refer to **Appendix 12.2 *Bird Surveys***). The survey methodology was based on that used by the British Trust for Ornithology's (BTO) Wetland Bird Survey (WeBS) and also that for the Irish Wetland Bird Survey (I-WeBS), as outlined in Gilbert *et al.* (1998). Survey vantage point locations for the winter bird counts are shown in **Appendix 12.2**. **Table 12.10** lists the bird species observed, and the total number of birds recorded.

These surveys focused on grassland habitats within greenfield area of the proposed development site as well as grassland habitats to the south and coastal habitats to the east which could provide potential foraging or roosting habitats for wintering waterbirds and waders. A total of 30 bird species were recorded during the 2024/2025 winter bird surveys as detailed below in **Table 12.10**. It is noted that many of these birds were recorded overflying the coastal waters adjoining the proposed development site and that the survey covered a radius of approximately 300m from each vantage point. The conservation status/designation of birds recorded during winter bird counts is also shown in **Table 12.10**.

Bird species listed in Annex I of the Birds Directive are considered a conservation priority. Three species (Dunlin, Little Egret and Great Northern Diver) are listed on Annex I of the Birds Directive. Certain bird species are listed by BirdWatch Ireland as Birds of Conservation Concern in Ireland. Red List bird species are of high conservation concern and the Amber List species are of medium conservation. Eight red listed species were recorded namely Curlew, Dunlin, Kestrel, Meadow pipit, Oystercatcher, Redshank, Redwing and Snipe. Eleven species recorded are Amber listed Black-headed Gull, Brent Goose, Common Gull, Cormorant, Great-crested Grebe, Herring Gull, Lesser black-backed Gull, Skylark, Starling, Swallow and Turnstone.

The majority of waterbirds and waders listed in **Table 12.10** were recorded along the shoreline and waters of Cork Harbour to the east of the proposed development site. However, occasional Curlew and Oystercatcher were recorded in the fields to the south of the proposed development site on several occasions. These fields were also surveyed as part of the EIS for the M28 motorway (RPS 2015). These surveys recorded peak numbers of 42 Curlew, but Curlew were regularly recorded in small flocks during site surveys. Oystercatchers were recorded on one occasional during the M28 surveys as well as occasional Snipe. The shorter sward within these fields, which are subject to low levels of grazing provide some terrestrial foraging habitats for wading birds. The grassland within the proposed development site is not actively managed and is too long for wading birds. While occasional Snipe were recorded within the proposed development site, overall, the long grass and scrub habitat is not suitable for wading birds and/or waterfowl.

Table 12.10 Birds recorded during winter bird survey and conservation status

Species		Birds Directive Annex I	BOCCI Red List*	BOCCI Amber List*	Cork Harbour SCI Species**
Black-headed Gull	*Larus ridibundus*			X	X
Brent Goose	*Branta bernicla*			X	
Common Gull	*Larus canus*			X	X
Cormorant	*Phalacrocorax carbo*			X	X
Curlew	*Numenius arquata*		X		X
Dunlin	*Calidris alpina schinzii*	X	X		X
Great black-backed Gull	*Larus marinus*				
Great Northern Diver	*Gavia immer*	X			
Great-crested Grebe	*Podiceps cristatus*			X	X
Greenshank	*Tringa nebularia*				
Grey Heron	*Ardea cinerea*				X
Herring Gull	*Larus argentatus*			X	
Kestrel	*Falco tinnunculus*		X		
Lesser black-backed Gull	*Larus fuscus*			X	X

Species		Birds Directive Annex I	BOCCI Red List*	BOCCI Amber List*	Cork Harbour SCI Species**
Little Egret	*Egretta garzetta*	I			
Magpie	*Pica pica*				
Meadow pipit	*Anthus pratensis*		X		
Oystercatcher	*Haematopus ostralegus*		X		X
Redshank	*Tringa totanus*		X		X
Redwing	*Turdus iliacus*		X		
Robin	*Erithacus rubecula*				
Rook	*Corvus frugilegus*				
Sanderling	*Calidris alba*				
Skylark	*Alauda arvensis*			X	
Snipe	*Gallinago gallinago*		X		
Starling	*Sturnus vulgaris*			X	
Turnstone	*Calidris maritima*			X	
Woodpigeon	*Columba palumbus*				
Wren	*Troglodytes troglodytes*				

*Gilbert G, Stanbury A and Lewis L (2021), "Birds of Conservation Concern in Ireland 2020 –2026". Irish Birds 9: 523—544; ** • NPWS (2014) Conservation Objectives: Cork Harbour SPA 004030. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The closest Special Protection Area (SPA) to the proposed development is the Cork Harbour SPA (Site Code 004030). A total of ten species listed as qualifying interests for the Cork Harbour SPA were recorded, namely, Black-headed Gull, Common Gull, Cormorant, Lesser black-backed Gull, Curlew, Dunlin, Oystercatcher, Redshank, Grey Heron and Great-crested Grebe. The AA screening and Natura Impact Statement (NIS), which accompanies this EIS, provides a more detailed appraisal of the impact of the proposed development on Natura 2000 sites including the Cork Harbour SPA.

12.3.9.4 Winter Roost Cormorant

The largest Cormorant nocturnal roost in Cork Harbour occurs on the southern shoreline of Monkstown Creek, c.1.8km from the proposed development site. The total count of 930 Cormorants in Cork Harbour, and of 426 Cormorants at the Monkstown Creek roost, in November 2023 was the highest count recorded in annual roost counts carried out since 2014 (T. Gittings, unpublished data). However, there are no Cormorant roosts within 1km of the proposed development site.

12.3.9.5 Bird Summary

The study area is of local value for a range of terrestrial bird species that are relatively common in the Irish countryside. The study area is of more value than the intensively agriculturally managed land in this area due to the presence of a greater diversity of habitats and semi-natural habitat i.e. scrub, immature woodland, semi-natural grassland. These habitats have developed due to an absence of active management within the proposed development site. However, the study area does not support a community of birds or individual species that would be considered significant conservation priorities, and the study area, which is small, does not provide critical resources for such communities and/or species.

The coastal area adjoining the proposed development site consists primarily of rock and shingle and therefore does not support the high numbers of wintering waders that are characteristic of high value mudflats with high densities of macro-invertebrates. Some species that are considered of high conservation value (Annex I of the Birds Directive, qualifying species for the Cork Harbour SPA and Red List) were noted in this general area. Many of these birds were recorded overflying the channel. The proposed development site itself and the shoreline adjoining the proposed development site, does not support high numbers of these species.

12.3.10 Other Species

The complexity and diversity of vegetation types within the proposed development site provides a mixture of habitats for insects, although encroachment by scrub has reduced the available grassland habitat.

A specialised moth survey was carried out during August 2008 using a mercury vapour lamp trap survey and butterflies were identified during walkover surveys. In total 33 moth and butterfly species were recorded. No species of particular rarity were recorded, although some of the moth species do have specialised or localised distributions. All species recorded are dependent on scrub/semi-natural grassland with the exception of Wainscot Moth, which are associated with wetland reed beds. Reedbed habitat does not occur within the proposed development site but does occur within the vicinity of the proposed development site.

A previous survey of the proposed development site carried out by the Aquatic Services Unit in 2001 recorded 30 moth and butterfly species. A single species of Odonata (Dragonfly and Damselfly species) was recorded. None of the species recorded on the proposed development site during the 2001 survey were considered of special conservation significance, and the report concluded that *"the species recorded strongly suggest that the site is of little entomological interest."*

Given the above background information, specialised surveys were not considered necessary in 2024/2025. Overall, it can be concluded that the proposed development site supports a mixture of common invertebrate species that would be typical for the habitats noted within this general area. The presence of rare or uncommon species is unlikely, and some reduction in species diversity may have occurred since the previous surveys due to an increased dominance of scrub habitat.

12.3.11 Marine Ecology

A survey of the intertidal area in proximity to the proposed development was carried out by Dr. Stiofan Creaven on Thursday 18th and Friday 19th June 2015. There have been no development/significant changes on the beach in the years since the last survey and therefore, no update to this survey was deemed necessary. The survey report is included as **Appendix 12.4** of this EIS. The marine flora and fauna were examined with survey effort timed to correspond with low water on a Spring tide when as much of the shore as possible is exposed. The survey consisted of the following:

- a general walkover of the shore parallel to the waterline
- the examination of three shore transects perpendicular to the waterline extending to the low tide mark including the collection of six sediment core samples for faunal analysis
- an excursion to a large boulder on the lower shore
- the recording of a GPS track of the survey route
- the creation of a photographic record of the shoreline as encountered. Two cameras were used to record details of the shore – both cameras were synchronised (to within a second) with GPS time immediately prior to the start of the survey

The survey classified the habitats encountered during the survey as follows:

- The upper shore here can be classed as Barren Littoral Shingle (EUNIS habitat code A2.111). This substrate typically supports virtually no macrofauna. There is often a temporary cover of the green seaweeds Enteromorpha spp. or Ulva spp. during periods of stability in the summer - as was observed during the current survey. This area is likely to be influenced by variable salinity. Energy (exposure) for the site is likely to vary considerably with the seasons.

- Bedrock and boulders were found scattered throughout the mid and lower shore.
- Vertical surfaces on these were characterised by a barnacle-limpet community (EUNIS habitat code A1.1131) *Semibalanus balanoides* and *Patella vulgata* dominated community on bedrock. Occasional cracks and crevices in the rock provided a refuge for small individuals of the mussel *Mytilus edulis,* the winkle Littorina saxatilis and the dog whelk *Nucella lapillus*. This habitat was found in crevices on the prominent glacial erratic and in crevices found in the limestone bedrock outcrop seen on Transect 3.
- Boulder tops, dominated by *Fucus spiralis*, can be classified as *Fucus spiralis* on sheltered upper eulittoral rock (EUNIS habitat code A1.312). In summer, the green alga *Ulva intestinalis* can become very common – as seen on the shore at Ringaskiddy. Vertical surfaces often lack the fucoid cover and are characterised by the barnacle-limpet community (EUNIS habitat code A1.1131) also seen on this beach.
- The presence of a substantial deposit of decaying algal matter in the mid shore complicates the allocation of a habitat type to this zone though the floral and faunal community encountered closely resembles *Fucus vesiculosus* on variable salinity mid eulittoral boulders and stable mixed substrata (EUNIS habitat code A1.323). The presence of ephemeral seaweeds (green algae here) occupying available space and patches of sediment found between the hard substrata containing the lugworm Arenicola marina and the sand mason *Lanice conchilega*, support this classification. The exposure level of this shore probably changes seasonally from sheltered to moderately exposed/exposed during storm events.
- The lower shore is characterised by littoral muddy sands with the habitat falling into a Polychaete/Bivalve-dominated muddy sand shore (EUNIS habitat code A2.24). Based on analysis of infaunal samples taken during the transects, this most closely resembles a *Macoma balthica* and Arenicola marina in muddy sand shores biotope (EUNIS habitat code A2.241) though with Abra present instead of *Macoma*. It also has elements of *Lanice conchilega* in littoral sand (EUNIS habitat code A2.245).
- An attempt was made to obtain faunal samples at all stations visited. Due to the rocky nature of the substrate it was only possible to obtain samples at two stations namely at Station 5 on Transect 1 and at Station 5 on Transect 3. Using a spade, digovers to a depth of 30cm were carried out at those stations where coring for fauna was not possible. The assemblage recorded is close to the EUNIS LS.LSa.MuSa.Lan *Lanice conchilega* in littoral sand grouping but instead of *Macoma balthica*, Abra is present. (EUNIS code A2.24 – Polychaete/bivalve dominated muddy sand shores). The common cockle (*Cerastoderma edule*) was also present here.

The report concluded that these habitats are all commonly encountered in an Irish context. Samples were faunally poor with only ten taxa present. All species found are typical of fine-grained sediments of the North East Atlantic. No rare or uncommon species were recorded.

12.4 Characteristics of the Proposed Development

The proposed development will be located on the Ringaskiddy Peninsula, overlooking Cork's inner harbour approximately 800m east of the village of Ringaskiddy in County Cork. The site of the proposed development is currently a greenfield site of approximately 13.55 hectares and is located on the northern slopes of the Ringaskiddy peninsula at its eastern end. The location of the site is shown in **Figure 1.1** of **Volume 3** ***Figures*** of this EIS.

The main element of the proposed Ringaskiddy Resource Recovery Centre project is a waste-to-energy facility (waste incinerator). Other elements include an upgrade of a section of the L2545 road, coastal protection measures on Gobby Beach, a connection to the national electrical grid, and raising the ground levels in part of the site. Refer to **Figure 1.3** for the overall site layout. The proposed development is described in detail in **Chapter 4** ***Description of the Proposed Development*** of this EIS.

12.5 Potential Effects

During construction, potential effects could arise from increased noise and disturbance during works on land and from spreading of the invasive species Japanese Knotweed during site works. On the adjoining Gobby Beach, effects could arise from increased noise and disturbance associated with the coastal protection works.

Effects on the marine environment could arise during construction from increased run-off of suspended solids or from inadvertent spillages of hydrocarbons during construction works. There will be a loss of semi-natural habitat within the proposed development site during construction works. Beach nourishment works could have potential effects on the upper shoreline of Gobby Beach.

During the operational phase of the proposed development, increased traffic and noise associated with the proposed development site could potentially increase levels of disturbance which could result in the disturbance/displacement of birds and mammals such as Badger, Otter and seals. The stack of the main process building could theoretically create a collision risk for birds thus leading to a risk of increased bird mortality and potential subsequent effects on bird populations. Emissions to air could theoretically have eco-toxicological effects particularly on piscivorous birds, otters and seals due to bioaccumulation. The importation of organic waste could attract increased predator numbers which in turn could have implications for nesting success for birds and for ground nesting birds in particular. Accidents during operation or during the transport of ash and flue gas residues could theoretically have an effect on marine ecology.

12.5.1 Impact Appraisal

Annex III of the amended Directive 2014/52/EU requires that the EIS should assess:

- The magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected)
- The nature of the impact
- The transboundary nature of the impact
- The intensity and complexity of the impact
- The probability of the impact
- The expected onset, duration, frequency and reversibility of the impact
- The cumulation of the impact with the impacts of other existing and/or approved projects and
- The possibility of effectively reducing the impact

Potential effects of the construction, operational and decommissioning phases of proposed development on terrestrial and aquatic biodiversity include:

- Potential effects on habitats
- Potential effects on badgers
- Potential effects on bats
- Potential effects on otter
- Potential effects on other mammals
- Potential effects on birds (breeding and wintering)
- Potential effects on amphibians and reptiles
- Potential effects on other species
- Potential effects on air quality
- Potential effects from non-native invasive species

When describing changes/activities and impacts on ecosystem structure and function, important elements to consider include positive/negative, extent, magnitude, duration, frequency and timing, and reversibility.

Section 3.7 of the *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports',* (EPA 2022) provides standard definitions which have been used to classify the effects in respect of ecology.

12.5.2 Do-nothing Scenario

In the absence of development, it is expected that natural succession would proceed in the absence of agricultural management and/or active use of much of the proposed development site. The general pattern of succession from scrub with patches of grassland to woodland would be expected to continue on areas that are not currently grazed. If sufficient time elapsed without development, the unused areas of the proposed development site would be expected to develop a covering of woodland with a mix of native and introduced species. However non-native invasive species are likely to spread if active control measures are not implemented.

12.5.3 Designated Sites

DixonBrosnan prepared a screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) report (which accompanies this planning application). This report investigated the potential for the proposed development to have significant effects on Natura 2000 sites (SAC/cSAC/SPA) either alone or in combination with other plans or projects. The screening report identified the potential for significant effects on Cork Harbour SPA arising from the proposed development in the absence of mitigation via effects on water quality via potential accidental releases (i.e. silt, hydrocarbons, etc) during the construction phase (including potential in-combination effects), accidental releases from firewater during operation and potential bio-accumulation effects during operation (air emissions) on SCI species. Potential disturbance effects on SCI species for Cork Harbour could potentially occur during construction and operation. The stack could create a collision risk for SCI birds

The proposed development site is hydrologically connected to Cork Harbour and therefore potentially connected to pNHAs in the vicinity i.e. Monkstown Creek pNHA, Lough Beg pNHA and Whitegate Bay pNHA. These sites are part of a network of sites which support important bird numbers within Cork Harbour and are considered relevant to this proposed development. The remaining sites are located a considerable distance from the proposed development and no potential effects on these other sites has been identified. Effects on water quality during construction works could potentially have significant adverse effects on these pNHAs in the absence of mitigation.

12.5.4 Terrestrial Habitats

Effects on terrestrial habitats are generally restricted to direct removal of habitats and possible effects from the spread of invasive species. Levels of dust during construction are predicted to be low and effectively managed by mitigation. The effect on vegetation in adjoining habitats from wind-blown dust is predicted to be negligible. Based on the criteria outlined by the EPA (2022), the potential effects in the absence of mitigation are detailed in **Table 12.11**.

Table 12.11 Potential effects on terrestrial habitats (in the absence of mitigation)

Habitat	Ecological value (NRA guidelines)	Predicted effects
Scrub WS1/Immature woodland WS2	Local importance (Higher value)	The majority of this habitat will be removed to facilitate the proposed development. Negative, slight to moderate and long-term effect at a local level (However, the establishment of scrub to the west of the site (see Landscape masterplan) will provide alternative scrub habitat in the medium to long-term).
Scrub WS1	Local importance (Lower value)	This habitat will be largely retained and enhanced as outlined in the landscape plan. A long-term management plan will ensure that non-native species and/or dominance of species such as Bracken does not occur within retained scrub habitat. This will ensure that biodiversity is maximised within the proposed development site. Positive, imperceptible, long-term

Habitat	Ecological value (NRA guidelines)	Predicted effects
Dry meadow and grassy verge GS2	Local importance (Lower value)	The majority of this habitat will be retained and enhanced as part of the landscape plan. It is proposed to enhance the southern section of this habitat through natural recolonisation. Natural recolonisation allows existing species, which are generally native and from the surrounding area, to recolonise these areas to create relatively natural areas of habitat. In the long term this is likely to result in a mixture of scrub and subsequently woodland similar to the area of habitat which has developed at the east of the proposed development site. Encroachment of scrub is already occurring on the boundary of this grassland habitats and this will continue in the absence of development. A long-term management plan will ensure that non-native species and/or dominance of species such as Bracken does not occur. This will ensure that biodiversity is maximised within the proposed development site. Positive, slight and long-term at a local level.
Conifer woodland WD3	Local importance (Lower value)	This habitat will be removed. Negative, imperceptible, long-term at a local level.
Spoil and bare ground ED2	Local importance (Lower value)	This habitat will be developed as part of the M28 motorway. Neutral, imperceptible, long-term
Earth bank BL1	Local importance (Lower value)	This habitat will be planted with native hedgerow. Positive, slight, long-term.
Treelines WL2	Local importance (Higher value)	Part of this habitat will be removed to facilitate the proposed development Negative, slight, long-term.
Hedgerow WL1/Scrub WS1	Local importance (Lower value)	This habitat will be retained and enhanced as part of the landscape plan. Positive, imperceptible, long-term

12.5.5 Invasive Species

The third schedule invasive species Japanese Knotweed was previously recorded at the proposed development site. However, this species has been effectively treated at the proposed development site and no signs of active growth were recorded within the proposed development site boundary during the 2024 and 2025 surveys. Monitoring (by the applicant) is ongoing within the proposed development site boundary.

A number of other invasive species were recorded Buddleia, Winter Heliotrope, Cotoneaster, Sycamore, Travellers' Joy, Montbretia and Pheasant Bush are present within the proposed development site. On the basis of their invasive qualities, the ecological value and types of habitats recorded during the walkover survey and their Amber Listing by Invasive Species Ireland, these species are unlikely to result in a significant effect. If not eradicated, however, prior to construction they are likely to further invade adjacent semi-natural habitats and disturbed ground associated with construction activities and cause long-term landscape maintenance issues relative to the proposed development with associated costs.

The impact of the spread of non-native invasive species will be negative, slight and long-term (in the absence of mitigation).

12.5.6 Marine Habitats

Potentially, effects on marine habitats could arise due to the deposition of the shingle above the foreshore on Gobby Beach. This will impact on the physical structure of the upper shore above the high tide line and on any flora/fauna occupying this zone. Some of this material could impact on the intertidal zone if the material moves position during storm surges. Depending on the chemical composition of the deposited material and its similarity to the existing beach material, there could be changes in floral communities. However, it is noted that no rare or uncommon species or habitats have been recorded within the area of the proposed coastal protection works and re-colonisation of this area is expected to proceed quickly. The material to be deposited will be similar to the existing material in this area and thus no changes in flora/fauna communities will occur. Similarly, if any of this material reaches the intertidal zone during storm surges, it will be rapidly re-colonised and will not have a significant effect on marine ecology. Any direct effects on marine ecology arising from the beach nourishment scheme are predicted to be negligible.

Again, potentially, effects could arise from any inadvertent spills of hydrocarbons or other chemicals during construction. High levels of suspended solids in surface water run-off could potentially have localised effects on marine ecology. No habitats of high sensitivity to pollutants or high conservation value occur in close proximity to the proposed development site and the marine environment provides a high level of dilution in relation to possible inadvertent minor spills of hydrocarbons or other chemicals. However, in the absence of mitigation, the construction phase of the proposed development will have an overall slight short-term effect on marine waters (by spillages such as hydrocarbon leaks from construction machinery or by siltation as a result of runoff).

During operation all trucks carrying solid waste will be covered. Aqueous waste will come in tankers. All trucks will have to comply with the road transport legislation and regulations. Other potential sources of pollution that may have an effect on surface water during the operational phase could be oil/fuel leaks from parked cars, trucks and service vehicles. No significant effects on water quality in the marine environment are predicted during operation of the proposed development. Further detail with respect to hydrology and hydrogeology during the operational phase are included in **Section 13.5.3.2** and **Section 13.5.4.2** of this EIS.

Circa 2,036 tonnes per annum of boiler ash and circa 9,271 tonnes per annum of flue gas cleaning residues will be produced in the waste-to-energy plant (operational hours of 8,147 based on 93% plant availability). The boiler ash and flue gas cleaning residues will be in the form of fine particles and will contain heavy metals. In 2017 a salt mine facility in Northern Ireland attained planning consent and an environmental permit to operate as a recovery facility for hazardous residues from waste to energy facilities. This facility will be used for the recovery of the boiler ash and flue gas residues. The preparation process for consigning this material off site will consist of a simple dry-bagging system which will mix the residues, into $1m^3$ FIBC bags. The preparation equipment will be located close to the boiler ash and flue gas residue silos within the main process building. The bags will then be loaded directly onto trailers and transported off site **Chapter 7 *Roads and Traffic*** of this EIS.

At times when this recovery facility may not be available, for example, during a maintenance outage, the flue gas cleaning residues may be exported for final recovery to German salt mines.

The regulation of the transport of the ash would be subject to Trans Frontier Shipment (TFS) licence which is a licence which must be approved by the origin/destination/transit authorities consenting to the movement/transit and acceptance of wastes between EU member states. The regulation governing this is EU Regulation 1013/2006. This licence tracks waste from origin to destination and ensures that each authority is aware of the status of the waste until final recovery when the individual TFS notification annex consigned with each shipment is signed off as having been received and treated by the receiver. This completed licence is then circulated back to us as the producer as well as all relevant authorities.

It is noted that the accident risk during shipping is low. Van Den Bosch is the preferred international logistic services provider which transports such residues for Indaver. They note that in the 51 years of their history no container has ever fallen overboard and no ship has sank with their containers on board. The addition of water leads to the residues solidifying. Thus, in event of a shipping accident and if the transport container were to lose integrity, the residues would solidify on contact with water and solidified residues will be salvaged from the sea bed. Given the extremely low risk of an accident, the low risk of leakage from the transport containers, the fact that the residues will solidify on contact with water, the effects on marine or terrestrial ecology from the disposal of this material are expected to be negligible.

Wastewater will be directed to an Uisce Éireann sewer. Any process effluent will be recycled for use in the process and will not be discharged off site. Storm water will be monitored and discharged off site only if monitoring determines that it is uncontaminated. In the unlikely event of a fire, the fire-fighting water will be captured in the storm water drainage system and will be collected in the holding tank, where it can be stored for disposal. The outlet valve from the holding tank will close if there is a fire alarm. If the holding tank has insufficient capacity, the water will overflow to the attenuation tank, in which it can be retained pending testing and disposal. Detailed information on potential effects from accidents is provided in the HAZID report (**Appendix 6.1** of this EIS).

The potential effects on air quality from emissions are specifically addressed in **Chapter 8** ***Air Quality*** of this EIS, which concluded that, based on the results of air dispersion modelling of process emissions, the air quality effect of the proposed facility will not be significant. Therefore, any impact from the bioaccumulation of potentially toxic compounds in macro-invertebrate and fish populations is predicted to be negligible.

Based on the above information, effects on the marine environment during operation are predicted to be negligible.

12.5.7 Bats

Bat surveys recorded limited usage of the site of the proposed development by Common and Soprano Pipistrelle, Leisler's Bat and Brown Long-eared bat. The main bat activity was confined to the external boundaries and scrub/immature woodland habitat at the east of the proposed development site. No potential roosting sites were identified within the proposed development site. There is considerable light spillage at the northern edge and north-eastern areas of the proposed development site from existing development in the area.

The native hedgerow along the southern boundary will be retained. The earth bank along the northern boundary will be enhanced with native planting. The loss of denser scrub and immature woodland and treeline at the east of the proposed development site will remove bat foraging areas. However, linear features on the boundary of the proposed development site will be retained and/or enhanced to provide commuting routes within the wider landscape. Natural recolonisation will be allowed at the west of the proposed development site, in areas which currently have lower value semi-natural grassland. This will provide alternative areas of dense scrub/immature woodland as the area matures. In the medium-long term, this will provide alternative foraging habitat for bats within the proposed development site. The impact on bats will be localised and is unlikely to significantly impact on overall bat populations as there will be no loss of critical resources for bats.

Overall, the impact of the proposed development on bats is predicted to be negative, slight and long-term at a local level.

12.5.8 Badgers

The proposed development will not impact directly on the active sett within the proposed development site. This is located outside the works area. While it is noted that Badgers are largely nocturnal and commuting routes are unlikely to be disturbed by construction activity, construction works may create barriers to movement for Badgers onsite in the absence of mitigation.

The habitats within the proposed development site are of low value for Badgers, which preferentially forage on managed agricultural grassland and/or mature woodland habitats (Smal 1995). The proposed development will not result in the loss of significant habitat features such as wet grassland, shoreline or broad-leaved woodland which may be of critical value on a seasonal basis.

Overall, the proposed development will have a negative, moderate and long-term impact at a local level on Badgers in the absence of mitigation.

12.5.9 Otters

Surveys carried out by DixonBrosnan in 2024 and 2025 did not record the presence of otter within a radius of 150m from the study area, although some sprainting activity was recorded 300m north of the proposed development site. No holts were recorded.

It is noted that the upper shore of Gobby Beach, which adjoins the proposed development site, is extensively used by the general public, and that usage is highest in proximity to the car park that is located immediately adjacent to the proposed development site. These circumstances, particularly where dogs are also present, is likely reduce usage of the area by otter.

During construction works there will be increased noise and activity associated with the proposed development site works. It is noted that this part of Cork Harbour is already subject to high levels of disturbance from traffic and human activity and otters readily habituate in these circumstances. The deposition of material on the upper shore during the beach nourishment process will be short in duration and will occur during daylight hours. Any impact on Otter during the construction phase will be negligible.

No significant effects on water quality in the marine environment or significant effects on prey availability for Otters have been identified. The effects on air quality from emissions are specifically addressed in **Chapter 8** ***Air Quality*** of this EIS which concluded that based on the results of air dispersion modelling of process emissions, the air quality effect of the proposed facility will not be significant. Therefore, no effect on Otter via air emissions or subsequently via bioaccumulation of potentially toxic compounds is predicted to occur.

Overall, the effect of the proposed development on Otters is predicted to be negative, imperceptible and long-term at a local level.

12.5.10 Other Mammals

No other protected mammal species were recorded within the proposed development site, although it is noted that high levels of Rabbit activity and Fox were recorded. While there were no confirmed field signs (or trail camera recordings) of Hedgehog, Irish Stoat or Pygmy Shrew, these species are largely nocturnal, and field signs are less frequently observed than for other mammals. Given the mix of habitats onsite they are very likely to be present.

The habitats to be affected are common, however heavy scrub cover is likely to be locally valuable for small mammal species, particularly in the urban edge setting of Ringaskiddy. However, there is no evidence to indicate that the proposed development areas are of particular value for these species in the context of the surrounding countryside. Construction works could potentially impact on mammal habitat and commuting routes within the proposed development site. Natural recolonisation will be allowed at the west of the proposed development site, in areas which currently have lower value semi-natural grassland. This will provide alternative areas of dense scrub/immature woodland as the area matures. In the medium-long term, this will provide alternative foraging habitat for other mammals within the proposed development site.

Effects on these species during construction due to loss of habitat, habitat fragmentation and increased noise and disturbance are predicted to be negative, slight and short-medium term at a local geographic level. As the areas of the west of the site mature, this will be reduced to neutral and imperceptible in the long-term.

12.5.11 Seals

Harbour Seal and Grey Seal are listed on Annex II of the Habitats Directive, and both are known to occur within Cork Harbour. Harbour Seals have previously been recorded from within the channel which adjoins the proposed development site and small haul out sites have been recorded at Haulbowline Island and at the slipway at the National Maritime College. Although there is nothing to indicate that the particular area in the immediate vicinity the study area is of particular value for seals, it is within the feeding range for local Harbour Seal populations that forage within this general area. Given that the haul out locations are at least 0.5km from the proposed development area and that seals are mobile and can readily move away from short-term disturbance, any impact on seals will be negligible. The effects on air quality from emissions are specifically addressed in **Chapter 8** ***Air Quality*** of this EIS which concluded that "*based on the results of air dispersion modelling of process emissions, the air quality effect of the proposed facility will not be significant".* Therefore, no effect on seals via air emissions or subsequently via bioaccumulation of potentially toxic compounds is predicted to occur.

Overall, the effect of the proposed development on Seals is predicted to be negative, imperceptible and long-term at a local level.

12.5.12 Cetaceans

A number of cetacean species have been recorded within the overall harbour. Harbour Porpoise is considered the species most likely to occur in the channel offshore from the proposed development site. It is anticipated that no significant vibration will be generated during the construction phase of the proposed development. Piling is likely to be required. It will utilise methods that will minimise the risk of vibration generation and will only be undertaken in daytime. Rock breaking, if required will use methods that will minimise noise and vibration. Rock breaking will be confined to the terrestrial area of the site and will not take place within the coastal/marine areas. Effects on cetaceans during site works are predicted to be negligible.

No significant effects on water quality in the marine environment or significant effects on prey availability for cetaceans have been identified. The effects on air quality from emissions are specifically addressed in **Chapter 8 *Air Quality*** of this EIS which concluded that "*based on the results of air dispersion modelling of process emissions, the air quality impact of the proposed facility will not be significant".* Therefore, no effects on cetaceans via air emissions or subsequently via bioaccumulation of potentially toxic compounds is predicted to occur.

Overall, the effect of the proposed development on Cetaceans is predicted to be negative, imperceptible and long-term at a local level.

12.5.13 Reptiles and Amphibians

No habitats suitable for amphibians or reptiles was recorded and no effects on these species are predicted to occur.

12.5.14 Terrestrial Birds

The terrestrial bird species recorded during bird surveys are typical of the types of habitats noted on the proposed development site and are generally common. While no rare or uncommon species or species of high conservation value were recorded, the mosaic of semi-natural grassland, scrub and immature woodland is likely to provide locally valuable habitat for terrestrial breeding birds. There will be a loss of semi-natural habitats within the proposed development area during construction works (scrub, scrub/immature woodland and semi-natural grassland) and the loss of scrub in particular will have a localised effect on nesting and feeding resources for these species. However, scrub habitat is often an ephemeral habitat within the wider agricultural/industrial landscape and the scrub on the proposed development site has largely developed because sections of the proposed development site have not been utilised. Small areas of this type of scrub are commonly lost or recreated within the wider landscape. Natural recolonisation will be allowed at the west of the proposed development site, as outlined in the updated Landscape Design Report (BSM 2025) in areas which currently have lower value semi-natural grassland. This will provide alternative areas of dense scrub/immature woodland as the area matures. In the medium-long term, this will provide alternative nesting and foraging habitat for breeding birds within the proposed development site.

Some disturbance/displacement of terrestrial birds may occur during construction due to increased noise and disturbance. However, this will be short in duration. The effect is therefore predicted to be short-term and slight. During the operational phase, the levels of activity will stabilise and birds in the surrounding landscape will be expected to habituate to the volume of activity proposed. The effect on birds in habitats adjoining the proposed development site is therefore predicted to be negative, imperceptible and long-term during operation.

Overall, the effect of the proposed development on breeding birds is predicted to be negative and moderate in the short-medium term, reducing to negative, slight in the long-term at a local level.

12.5.15 Coastal (and Estuarine) Birds (Construction)

The Cork Harbour Special Protection Area (Site code 004030) is located approximately 405m to the south of the proposed development area (at its closest point). The closest Natural Heritage Area/proposed Natural Heritage Area is the Lough Beg pNHA (Site code 001066), which is located 0.3km to the south and which is also designated on the basis of its bird populations.

The schedule for the construction and commissioning of the proposed development is approximately 31 months and therefore there will be works taking place during the peak season for wintering birds which runs from October to March inclusive.

Deliveries of shingle and the placement of shingle for the coastal protection works will take place over a period of three weeks and will be undertaken outside of the main bird wintering season.

Bird surveys were carried out to determine the degree to which the shoreline/marine habitats in proximity to the proposed development site are utilised by birds and in particular important populations of overwintering waders and waterfowl. A total of 27 bird species were recorded during the winter bird surveys carried out in 2024/2025. Bird species listed in Annex I of the Birds Directive are considered a conservation priority and three such species were recorded. (Dunlin, Little Egret and Great Northern Diver). Eight red listed species were recorded namely Curlew, Dunlin, Kestrel, Meadow pipit, Oystercatcher, Redshank, Redwing and Snipe. A total of ten species listed as qualifying interests for the Cork Harbour SPA were recorded, namely, Black-headed Gull, Common Gull, Cormorant, Lesser black-backed Gull, Curlew, Dunlin, Oystercatcher, Redshank, Grey Heron and Great-crested Grebe.

As a number of bird species were recorded feeding along the shoreline in proximity to the proposed development or overflying the coastal waters the east of the proposed development site, there is the potential for more localised effects on birds, including species listed as qualifying interests for the Cork Harbour SPA where they occur outside the SPA site boundaries. Terrestrial foraging Curlew were regularly recorded in the fields to the south of the proposed development site. However, there is nothing to indicate that this area is a significant high-tide roost or foraging area for wading birds and waterfowl. The overgrown habitats within the proposed development site are of no value for these species.

Effects on birds in close proximity to the proposed development site could potentially arise during construction when levels of noise will increase. There will be increased activity during works, although only activities in close proximity to the shoreline or at height will be visible to birds along the shoreline. For the period of the coastal protection works there will be obvious disturbance along the shoreline.

It is noted that the area of shoreline adjoining the proposed development is subject to high levels of disturbance and that, to a degree, any birds which utilise this area will have habituated to high levels of daytime disturbance. During construction on land the effect on birds is predicted to be short-term and slight. The coastal protection works will take place outside the main wintering season and will not impact directly on intertidal habitats; thus, the effect will be negative, short-term and slight to moderate.

No nests for birds, such as Ringed Plover, were recorded on the upper shore adjoining the proposed development site boundary. A breeding population of Common Tern is known to occur near the entrance to the Port of Cork approximately 750m west of the proposed development area. Given the distance of this colony from the proposed development area, any effects on this species due to increased noise and disturbance during construction or operation is predicted to be imperceptible.

An important winter roost of Cormorants is known to occur in trees at Monkstown Creek which is located approximately 1km from the proposed development site. Given the distance of this colony from the proposed development area, any effects on this species due to increased noise and disturbance during construction or operation is predicted to be imperceptible.

Overall, the effects on the proposed development on coastal birds is predicted to be negative, slight and short-term during construction works and negative, imperceptible and long-term during operation.

12.5.16 Coastal (and Estuarine) Birds (Operation)

During the operational phase, noise, disturbance and traffic levels will increase in the context of an area where there are already moderate levels of background noise and traffic. Any effects on birds from disturbance due to increased traffic and noise are predicted to be negative, slight and long-term.

The effects on air quality from emissions are specifically addressed in **Chapter 8** ***Air Quality*** of this EIS which concluded that based on the results of air dispersion modelling of process emissions, "*the air quality effect of the proposed development will not be significant"*. A literature review, which forms **Appendix 3** of the NIS which accompanies this updated EIS, looked at the potential for bioaccumulation in piscivorous birds. Based on the information provided in these assessments including the insignificant levels of potentially toxic substances in emissions and the low background levels in marine sediments any direct effects on birds and mammals via direct emissions or from bioaccumulation are predicted to be negligible.

A literature review was carried out to assess the potential collision risk to birds created by the stack which will be 75m AOD (70m in height above finished ground level on site). This literature review forms **Appendix 4** of the NIS which accompanies this updated EIS. The review notes that, information on the potential collision risk created by such stacks is scarce, however, there is evidence to suggest that towers lower than 60m pose a lower risk to migrating birds. The review notes that a recent radar study was commissioned by the Cork Lower Harbour Energy Group in order to identify nocturnal bird movement and interconnectivity within the Cork Harbour SPA (Simms *et al.* 2011). This study did not reveal any distinct flight patterns over the proposed development site. The literature review indicates that, while any light source has the potential to attract birds and therefore increase collision risk, flashing lights are involved in significantly fewer collisions than continuous lights. There is also some indication that white lights are less attractive than red lights, although the results to date are inconclusive. While bird vision does differ from human vision on the lower UV end of the spectrum, infra-red light is also invisible to birds. Therefore, the proposal for a combination of white flashing and infra-red lights on the stack, is the most favourable choice and does not pose a significant collision risk to birds.

Based on the above, and the bird surveys carried out in relation to this application for permission, a significant collision risk to birds is considered unlikely.

Local ecological effects could arise due to increased predator activity if species such as rats or gull species were attracted into the area due to the presence of waste. Both species can prey on nests for ground nesting birds such as Common Tern and Ringed Plover. However, it is noted that, during the operational phase of the proposed development, trucks with organic waste will discharge their loads within a sealed building and that there will no storage of waste in outside spaces. Trucks are inspected on arrival to ensure that there is no waste adhering to wheels. A standard pest control programme will be implemented at the proposed development site, which will include the use of standard bait boxes and ongoing monitoring as part of an annual service contract. The stack does not create suitable perches for predatory birds and thus does not increase the predation risk for nesting birds. It is also noted that the closest nesting colony of high conservation value (Common Terns) is located approximately 750m away. Under these circumstances any effect from increased predator density or increased predator activity is predicted to be imperceptible.

In relation to the Cork Harbour Special Protection Area, for the reasons set out in detail in the updated NIS submitted with this updated EIS, there will be no adverse effects on the integrity of that designated European site having regard to its conservation interests.

In relation to the pNHAs, the effect due to increased noise and disturbance during the operational phase is predicted to be neutral, imperceptible and long-term.

12.5.17 Other Species

A survey in 2008 for butterflies and moths did not record any rare or uncommon species. Given that no rare species were detected in 2008 and the common nature of the habitats to be removed, it was not considered necessary to repeat this survey in 2024/2025. There will be a loss of semi-natural habitats within the proposed development area (scrub and semi-natural grassland) which may reduce the habitat available for common invertebrate species. The effects on common terrestrial invertebrates will be negative, slight and long-term at a local level.

12.5.18 Climate Change and Biodiversity

The EU Commission guidance document on integrating climate change and biodiversity into environmental impact assessment (EU Commission, 2013) aims to improve the way in which climate change and biodiversity are integrated into Environmental Impact Assessment. Key principles specified by the document when considering effects include the following:

- Consider climate change at the outset
- Analyse the evolving environmental baseline trends
- Taking an integrated approach
- Seek to avoid biodiversity and climate change effects from the start

- For biodiversity, EIA should focus on ensuring *'no net-loss'*
- Assess alternatives that make a difference in terms of climate change and biodiversity
- Use ecosystem-based approaches and green infrastructure as part of the project design and/or mitigation measures
- Assess climate change and biodiversity synergies and cumulative effects which can be significant

The potential effects from the proposed development on climate have been specifically addressed by **Chapter 9 *Climate*** of this EIS. No significant interactions between the effects on biodiversity resulting from the proposed development and climate change have been identified.

In relation to biodiversity, it is important to adopt an "*ecosystem approach*" which considers all of the different ecological elements and how they interact with each other. The site of the proposed development consists of a mixture of semi-natural habitats with native hedgerow along the southern boundary forming a connective element within the local landscape. Dense hedgerows can connect different ecological elements within a landscape which allows mammals, birds and invertebrates a means of moving through the landscape under cover. In this instance, the hedgerows and treelines are likely to connect the proposed development site to habitats outside the proposed development site. The retention and enhancement of onsite hedgerows and treeline is therefore considered important in maintaining ecological value within the proposed development site.

A review of aerial photography and surveys, carried out on the proposed development site since 2001, indicates that areas which have not been managed for conventional agriculture have gradually changed over time. In particular, scrub has gradually encroached on grassland habitat within the proposed development area in place of semi-natural grassland. Scrub and scrub/immature woodland are now the dominant habitats within the proposed development area. Areas of semi-natural grassland have developed in areas previously farmed for agriculture.

It is proposed therefore to enhance the habitat value of an area of semi-natural grassland in the southwest corner of the proposed development site, which is approximately 3ha in size through natural recolonisation, as described in the updated Landscape Design Report (BSM 2025). Natural recolonisation allows existing species, which are generally native and from the surrounding area, to recolonise these areas to create relatively natural areas of habitat. In the long term this is likely to result in a mixture of scrub and subsequently woodland similar to the area of habitat which has developed at the east of the proposed development site. Encroachment of scrub is already occurring on the boundary of this grassland habitats and this will continue in the absence of development. A long-term management plan will ensure that non-native species and/or dominance of species such as Bracken does not occur. This will ensure that biodiversity is maximised within the proposed development site. Given the high-levels of disturbance from dogs and walkers, this will be more valuable than grassland habitat by providing cover for local fauna.

In line with the "*no net loss*" principle of the EU commission guidance on integrating climate change and biodiversity into EIA, the long-term aim will be the establishment of a species rich scrub/woodland as a replacement for scrub habitat which is being removed. It is noted that the creation of a sustainable diverse scrub/woodland is a long-term process which requires specialist expertise.

Scrub will be retained within the proposed development site to the southwest of the Hammond Lane site. Areas of dense bracken within this area will be treated to reduce the dominance of bracken which tends to suppress ground flora. This will also serve to increase biodiversity within the remaining areas of semi-natural habitat which will be retained within the site boundary.

12.6 Mitigation and Monitoring Measures

The likely success of the proposed mitigation measures is high, either in their current form or as they will be adapted on-site to achieve the desired result. The mitigation measures have been drawn up in line with current best practice and include an avoidance of sensitive habitats at the design stage. It is clear in what the mitigation measures are designed to achieve in lowering or reducing the risk of effect to acceptable levels.

Whilst the proposed methods of mitigation may be amended and supplemented the risk that the mitigation measures will not function effectively in preventing significant ecological effects is low. The following mitigation measures will be implemented:

12.6.1 Construction Phase Mitigation Measures

A construction environmental management plan (CEMP) has been prepared and will be revised prior to construction commencing. Refer to **Appendix 5.1.** The CEMP will include all of the construction mitigation measures, which are set out in this EIS and NIS, and any additional measures which are required by the conditions attached to the decision of An Coimisiún Pleanála, should permission be granted. The principal measures which will be set out in the CEMP are summarised below.

12.6.1.1 Protection of Habitats

- To prevent incidental damage by machinery or by the deposition of spoil during the site clearance stage, any trees /habitats earmarked for retention will be securely fenced early in the construction phase. The fencing will be clearly visible to machine operators.
- To prevent Japanese Knotweed from outside the proposed development site being inadvertently being brought into the site, the contractor will be required to inspect vehicles before using them on site and will pay particular attention to caterpillar tracks and where trucks and dumpers are stowed. The supplier of fill will be required to provide a guarantee that the fill to be imported does not contain knotweed. In addition, the fill will be inspected for signs of knotweed, prior to importation to site. The UK Environmental Agency's publication Managing Japanese knotweed on development sites - The Knotweed Code of Practice (EA 2013), states that inspection of topsoil brought into the site, should be carried out using the guidance in appendix I-IV of the code BS 3882:2007 '*The British Standard Specification for topsoil and requirements for use*'. This Standard was replaced subsequently by BS3882:2015 Specification for Topsoil. The inspection of fill will be carried out according to this Standard.

12.6.1.2 Protection of Water Quality

- A dedicated holding tank for storage of construction foul effluent will be constructed prior to commencement of the main construction activities. The effluent will be regularly disposed of off-site by tanker by a licensed contractor to an approved licensed facility.
- Storm water will be managed carefully during construction. In general, storm water will be infiltrated to ground via silt traps and managed soakaways. The laydown areas will be suitably drained and any areas which will involve the storage of fuel and refuelling will be paved and bunded and hydrocarbon interceptors will be installed to ensure that no spillages will get into the surface water or groundwater.

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off, seawater or groundwater. The Construction Industry Research and Information Association (CIRIA) in the UK has issued a guidance note on the control and management of water pollution from construction sites, *Control of Water Pollution from Construction Sites, guidance for consultants and contractors* (Masters-Williams et al 2001). Additional guidance is provided in the CIRIA technical guidance on *Control of Water Pollution from Linear Construction Projects* (Murnane *et al.* 2006).

Construction mitigation measures are further outlined in **Appendix 5.1.**

Measures, as recommended in the guidance above, that will be implemented to minimise the risk of spills and contamination of soils and waters, include:

- Training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures
- Careful consideration will be given to the location of any fuel storage facilities. These will be designed in accordance with guidelines produced by CIRIA and will be fully bunded
- All vehicles and plant will be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment to deal with spills will be maintained on site

- Where feasible, soil excavation will be completed during dry periods and undertaken with excavators and dump trucks. Topsoil and subsoil will not be mixed together. Specific measures will be implemented, as specified by the Invasive Species Management Plan to ensure that Japanese Knotweed is not spread within the proposed development site or outside the site boundaries
- Ensure that all areas where liquids are stored or cleaning is carried out are in a designated impermeable area that is isolated from the surrounding area, e.g. by a roll-over bund, raised kerb, ramps or stepped access
- Use collection systems to prevent any contaminated drainage entering surface water drains, watercourses or groundwater, or draining onto the land
- Minimise the use of cleaning chemicals
- Use trigger-operated spray guns, with automatic water-supply cut-off
- Use settlement lagoons or suitable absorbent material such as flocculent to remove suspended solids such as mud and silt
- Ensure that all staff are trained and follow vehicle cleaning procedures. Post details of the procedures in the work area for easy reference

12.6.1.3 Air Quality

Construction activities have the potential to generate dust emissions, particularly during the site clearance and excavation stages. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with ambient conditions, including rainfall, wind speed, wind direction and on the distance to potentially sensitive locations. Most of the dust would be deposited close to the potential source and any effects from dust deposition would typically be within a hundred metres or so of the construction area. A dust minimisation plan will be prepared and implemented by the building contractor during the construction phase of the proposed development. The following avoidance, remedial or reductive measures will be implemented as part of the dust minimisation plan:

- During very dry periods when dust generation is likely, construction areas will be sprayed with water
- Exhaust emissions from vehicles operating within the proposed development site, including trucks, excavators, diesel generators or other plant equipment, will be controlled by the contractor through regular servicing of machinery
- Vehicle speeds will be limited in the construction site
- Surrounding roads used by trucks for access to and egress from the proposed development site will be cleaned regularly using an approved mechanical road sweeper. Roads will be cleaned subject to local authority requirements. Site roads will be cleaned on a daily basis
- During construction wheel-wash facilities will be provided with rumble grids to remove excess mud from wheels. These facilities will be located at the exit from the proposed development site and away from sensitive receptors, where possible. Wheel wash run off will be stored in an onsite storage tank and will be disposed of by permitted waste haulage company at a permitted or licensed facility
- Internal haul roads will be paved at the earliest possible opportunity and inspected regularly for cleanliness
- Materials carried on vehicles to site will be enclosed or covered with tarpaulins
- Daily visual inspections will be carried out at locations around the proposed development site boundary as required. These inspections will monitor the effectiveness of dust mitigation measures
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind

12.6.1.4 Waste Management

- Waste generated during the construction phase will be carefully managed according to the accepted waste hierarchy which gives precedence to prevention, minimisation, reuse and recycling over disposal with energy recovery and finally disposal to landfill.
- All waste removed from the site will be collected only by contractors with valid waste collection permits, under the Waste Management (Collection Permit) Regulations 2007 and 2008. All facilities to which waste will be taken will be audited in advance, to ensure that they have appropriate waste licences or permits, under the Waste Management Act 1996 as amended by the Protection of the Environment Act 2003, and the regulations thereunder, allowing them to accept the type of waste that is to be sent there. Hazardous waste generation will be minimised, and such waste will be recovered where feasible, and only disposed of if recovery is not feasible. Hazardous waste will be managed in accordance with the relevant legislation.

12.6.1.5 Mitigation - Invasive Species

Prior to the commencement of construction works an invasive species survey will be undertaken within the proposed development boundary by a competent expert to determine if invasive species listed under Part 1 of the Third Schedule of S.I No. 477 of 2011 have established in the area in the period between pre-planning and post consent.

Amber list species (with the exception of Sycamore) will be managed/removed during construction works in line with best practice and the landscape plan.

12.6.1.6 Badger Mitigation Measures

An active sett was recorded within the proposed development site boundary. Additional surveys will be carried out immediately prior to the commencement of site works, to determine the status of the sett. This will allow a more accurate and up-to-date picture of how badgers are using the site once road construction is completed and when usage of the road commences. Once construction has been completed, there may be a change in the distribution of badgers within the site and the adjoining area. This may include the utilisation of the new artificial sett and underpass.

If Badgers are discovered at that time, the mitigation measures outlined in the NRA publication, *Guidelines for the Treatment of Badgers Prior to the Construction of a National Road Scheme* (NRA, 2005a), should be followed. If necessary, the following measures will be employed for all construction works where Badger issues arise.

- Badger sett tunnel systems can extend up to *c.* 20m from sett entrances. Therefore, no heavy machinery should be used within 30m of badger setts (unless carried out under licence); lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances.
- During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts nor blasting or pile driving within 150m of active setts.
- Following consultation with the NPWS and Badger experts, works closer to any active setts may take place during the breeding season provided appropriate mitigation measures are in place, e.g. sett screening, restricted working hours, etc.
- All affected Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage. Bunting is an option on a temporary basis. Hazard tape is inadequate as it is prone to deterioration and damage by wind or cattle etc.
- All contractors/operators on site should be made fully aware of the procedures pertaining to each sett on site.
- Construction activities within the vicinity of affected setts may commence once these setts have been evacuated and destroyed under licence from the NPWS. Where affected setts do not require destruction, construction works may commence once recommended alternative mitigation measures to address the Badger issues have been complied with.

- Works close to Badger setts or removal of Badgers from a site may only be carried out under the supervision of a qualified expert under licence from the NPWS.

12.6.1.7 Bird Mitigation Measures

The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land, or any such growing in any hedge or ditch from the 1st of March to the 31st of August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. Nonetheless, it is recommended that vegetation be removed outside of the breeding season.

Retention of the native hedgerows and enhancement of existing scrub within the proposed development site will reduce the loss of breeding and nesting habitat for birds. Additional native planting of treelines and hedgerows are proposed. The creation of alternative scrub habitat at the south-west of the site will provide alternative foraging/nesting habitat as this habitat matures. NRA guidelines on the protection of trees and hedges prior to and during construction should be followed (NRA, 2006). Native species will be utilised for new planting at the proposed development site. The landscape plan will in time provide alternative feeding resources for birds.

12.6.1.8 Otter Mitigation Measures

No Otter signs or holts were noted within 150m of the proposed development. However, Otters do occur within the wider landscape and are common within Cork Harbour. A detailed pre-construction survey will confirm the absence of Otter holts within 300m of the proposed development area.

12.6.1.9 Marine Mitigation Measures

Coastal protection works will take place outside the main wintering season for birds (October to March).

It is anticipated that monitoring of the sacrificial material placed on the beach and of the cliff face will take place every year. If such material is to be replaced in the future, an ecological survey will be carried out in advance to ensure that ecological conditions have not changed in the intervening period.

12.6.2 Mitigation - During Operation

12.6.2.1 Landscape Plan

Woodland and scrub and other areas of semi-natural vegetation outside the proposed development area will be retained.

Boundary landscape planting will be of Irish native species that reflect the existing vegetation of the area. These will be derived from local native-origin stocks.

The semi-natural grassland in the south-western side of the site will be managed and allowed to naturally recolonise (under ecological management) to create scrub habitat in the medium term. This is discussed in **Section 12.5.18** and the updated Landscape Design Report (BSM 2025).

12.6.2.2 Biodiversity Enhancement

Bats

The existing trees within the proposed development site lack the structural elements that would make them suitable for roosting bats. Therefore, the provision of bat boxes suitable for the species recorded within the site are recommended. Examples of same are listed below. The boxes have been selected to provide a range of roosting opportunities for different species and colony sizes. They can be sited on existing semi-mature trees, however the pole mounted bat boxes will be used where necessary. The boxes will be installed by the project ecologist considering relevant factors including foraging resources, commuting routes, future landscape development, and lighting and will be regularly checked for usage as part of an ongoing ecological monitoring programme.

Vincent Pro Bat Box
Two Vincent Pro bat boxes will be provided. This box features three vertical chambers of different sizes, providing ideal roosting space for a variety of species. Beneath the crevice entrances is a ladder which provides a rough surface for bats to land. Limited cleaning is required for these boxes as the droppings will fall out of the bottom of the chambers. The front and top of the box are black which helps the box to absorb heat. This bat box can be used by Leisler's, Common Pipistrelle, Soprano Pipistrelle, Brown long-eared, Natterer's and Whiskered Bat.

Bat Box 1FD
Two Bat Box 1FD will be provided. Suitable for Pipistrelle and Nathusius' Pipistrelle Bats as well as Daubenton's Bats and Long-Eared Bats. This is especially in mixed bat zones and for initial settlement attempts. The front panel can be removed for inspection and cleaning.

Swift
The swift is a Red List bird of conservation concern in Ireland because its population has declined by over 40% in the last 15 years. Conservation actions across the country are helping to recover populations. Swifts are faithful to their nest sites. Nest box projects, especially built-in nest boxes, can provide safe long-term homes for new breeding pairs of Swifts.

Commercial Swift nest bricks are made from hollow brick or concrete composite designed to allow access by Swifts and manufactured to modern building regulation standards. They can be integrated into the walls of buildings during the construction phase.

Ten Swift boxes (Triple Entry Swift Box (ACRES) or similar) will be installed under the guidance of the supervising ecologist. These will be installed following the Swift Conservation Ireland Guidelines (2019). These will be placed at least 5m above ground level with an open area of the building i.e., free of overhanging ledges, vegetation, and other obstacles. There will be no directional lighting in the vicinity of this area. Boxes will be positioned in rows to encourage colonial nesting. These will placed on a northern or eastern aspect to prevent overheating.

Swifts look for nest sites at locations with established colonies. Swifts are known to occur in the Ringaskiddy area (Source NBDC), although none were recorded during the site surveys. To increase the chances of attracting Swifts to a new nest location, a recording of a Swift call should be played. Swift calls can be broadcast from a small speaker placed as close as possible to the nest box or brick. New nest box sites where no lures are played are less likely to be successful in attracting nesting Swifts. This will be carried out under licence of the National Parks and Wildlife Service (NPWS).

Other Breeding birds
In order to enhance the site for nesting birds eight nesting bird boxes (a range of bird box types) will be installed at the proposed development site with retained scrub. A range of nest boxes will be used including three 1B Schwegler nest boxes, three 1ZA Schwegler wren roundhouses and two Treecreeper FSC Nest Box

Four Swallow nest cups will be installed to provide alternative nest sites for swallows. These will be installed on the new site buildings under ecological supervision.

Hedgehog Boxes
Four SCHWEGLER Hedgehog Dome (or similar) will be provided. These will be located under the retained hedgerow/scrub habitat. This dome encourages Hedgehogs to settle in -a particular area and provides year-round shelter, including during the winter months. This will be located somewhere protected from wind and rain. Ideally this will be filled with hay (supplied with the dome) but alternatively use dry leaves and straw, as well as cut up newspaper and wood shavings. These will be located adjacent or within suitable habitat but will not be situated near internal or external roads.

Log Piles/Loggeries
Building invertebrate habitats can provide shelter to many beneficial insects and offer a great foraging habitat for birds and other mammals.

Dead wood is one of the most valuable habitats for urban wildlife. The decline of the availability of deadwood is linked to the decline of many woodland birds due to the loss of foraging opportunities provided by this habitat.

Key points

- Install the logs vertically
- Site the loggery in a shaded part of a site
- Do not use concrete to bed the logs in. The beetles require the logs to be in contact with the soil
- Do not use well-rotted logs as they will have little wood left as food

Four log piles will be installed under retained hedgerow and scrub habitats. Log piles are suitable for invertebrates, small mammals and birds and can be easily installed in areas of retained vegetation and/or open spaces. They are stacks of logs piled up and allowed to rot down. Left undisturbed they will support a good range of biodiversity.

Insect Hotels

Three insect hotels will be installed on the edge of the existing semi-natural grassland (south of site). Insect hotels are excellent for attracting a wide range of invertebrate species. Perforations allow for insect access and a chamber with bamboo below for solitary bees. This can be positioned anywhere in the site where pollination is to be encouraged. The nesting tubes are ideal for solitary bees to build their nests in, the vertical slots are designed to encourage butterflies, other refuge holes are perfect for ladybirds and lacewings and the pinecones offer an excellent habitat for a range of other species.

12.7 Residual Effects

12.7.1 Designated Sites

Potential effects on designated Natura 2000 sites (SAC/cSAC/SPA) are specifically addressed in a Report for Screening for Appropriate Assessment (AA) and Natura Impact Statement (NIS) which has been submitted as part of this application. This report concluded the following:

A range of precautionary measures have been incorporated into the design of the proposed development, and other mitigation measures have been developed and proposed, with the purpose of avoiding or minimising impacts on the qualifying interests and conservation objectives of the Cork Harbour SPA, which is located c.405m from the proposed development site. The likely success of these measures was also considered and no particular difficulties in their effective implementation were identified.

The provisions of Article 6 of the 'Habitats' Directive 92/43/EC (2000) defines 'integrity' as the 'coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and / or population of species for which the site is or will be classified'. The draft documents Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (Draft) (EC, 2015) states that the integrity of the site can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated"

Following a comprehensive evaluation of the potential direct, indirect and in-combination impacts on the qualifying interests and conservation objectives for the Cork Harbour SPA, it has been concluded that the proposed development will not have an adverse effect on the integrity of the Cork Harbour SPA.

Similarly, following the implementation of mitigation measures, no adverse effects on NHAs/pNHAs will occur.

12.7.2 Habitats

There will be removal of an area of habitat including scrub/immature woodland and remnants of semi-natural grassland. Hedgerows and areas of semi-natural vegetation outside the proposed works area will be retained and the biodiversity value of grassland in the southwest of the site will be increased by allowing this area to naturally recolonise. Additional native planting will also be carried out along the boundary of the proposed development site. In the long-term, the residual impact on habitats will be neutral and imperceptible.

Mitigation measures, outlined in **Section 12.6** will be implemented and inspected by a suitably qualified and experienced project ecologist to ensure that no adverse effects on marine habitats during construction works.

Operational discharges will be controlled and monitored, in accordance with the provisions of the site's Industrial Emissions licence to ensure that local water quality is protected throughout the operation of the development.

12.7.3 Invasive Species

No residual effects are predicted.

12.7.4 Bats

In the short to medium term there will be a slight effect on bat foraging and commuting habitat at the proposed development site with the removal of two areas of foraging habitat i.e. northern treeline and scrub/immature woodland at the east of the proposed development site. This is likely to have a negative, slight and short to medium term effect on foraging and commuting habitat at the proposed development site.

Natural recolonisation will be allowed at the west of the proposed development site, in areas which currently have lower value semi-natural grassland. This will provide alternative areas of dense scrub/immature woodland as the area matures. In the medium-long term, this will provide alternative foraging habitat for bats within the proposed development site. The effect on bats will be localised and is unlikely to significantly affect overall bat populations as there will no loss of critical resources for bats.

Overall, the residual effect of the proposed development will be neutral, imperceptible and long-term at a local level.

12.7.5 Badger

There will be no direct effects on Badgers as a result of the proposed development. The implementation of mitigation measures will ensure that Badger access to exit points and commuting routes are retained around the proposed development site during the construction and operational phases.

Badgers which currently use the sett adjoining the Hammond Lane Facility, are likely to be habituated to similar levels of disturbance to those predicted to occur during operation of the proposed development. The retention of scrub habitat around the Badger sett is likely to reduce disturbance to Badgers using the sett. The habitats within the proposed development site boundary are of lower value to foraging Badgers and the removal of scrub and long grassland habitat will not significantly reduce available foraging habitat to local Badger populations.

Overall, the residual effect on the Badger group which use the proposed development site is predicted to be negative, slight and long-term at a local level.

12.7.6 Otter

The proposed development site is of low value for Otter. Given the limited Otter use of this area and the lack of direct effects on aquatic habitats, following water quality mitigation the effects during construction are predicted to be neutral, imperceptible and long-term.

12.7.7 Other Mammals

The habitats to be affected are common, however heavy scrub cover is likely to be locally valuable for small mammal species, particularly in the urban edge setting of Ringaskiddy. During the construction phase, disturbance and site clearance works are predicted to have a negative, slight and short-term effect on other mammal species.

Mammals are generally nocturnal in habit and in many circumstances can tolerate high levels of human presence and disturbance. Mammals which use this area are also habituated to comparable levels of disturbance and no significant disturbance effects are predicted to occur to habitats outside the active facility during operation of the proposed development.

The enhancement of grassland habitats such as scrub, treelines and hedgerows will mean that small mammal species such as Hedgehog and Pygmy Shrew are likely to quickly recolonise the area following construction works. As part of the management regime, unmanaged areas of scrub will be allowed to develop, providing significant opportunities for small mammals to colonise these areas.

Overall, the residual effect on other mammals is predicted to be negative, slight and long-term at a local level.

12.7.8 Marine Mammals

No residual effects have been identified.

12.7.9 Reptiles and Amphibians

No residual effects have been identified.

12.7.10 Breeding Birds

In the short to medium term, the loss of common scrub/immature woodland associated with site clearance works and disturbance will have a moderate, negative effect on breeding birds. However, as newly planted and naturally recolonising areas mature within the proposed development site mature, this effect will be reduced to negative and slight.

The landscape plan will provide additional breeding and foraging habitat for red list, amber list species and other common bird species. New habitats within the proposed development site are likely to increase breeding bird diversity at the proposed development site.

Residual effects on breeding birds will be negative, slight and long-term at a local level.

12.7.11 Wintering Birds

The habitats within the proposed development site are of no value for wintering wading birds and waterbirds. During operation, noise levels in adjoining habitats will return to baseline levels and no residual disturbance effects on coastal/shoreline habitats are predicted to occur.

In the short to medium term, the loss of common habitats associated with site clearance works and disturbance will have a slight, negative effect on wintering passerines which use the proposed development site. However, as newly planted and naturally recolonising areas mature within the proposed development site mature, this effect will be reduced. Residual effects on winter birds will be neutral, imperceptible and long-term at a local level.

12.7.12 Other Species

Additional habitats, both natural and artificial, will be created for terrestrial invertebrates. Native planting will provide alternative habitat for terrestrial invertebrates. Biodiversity enhancements including insect hotels, butterfly banks and loggeries will create breeding sites for a range of terrestrial invertebrates.

The effect on terrestrial invertebrates will be neutral, imperceptible and long-term at a local level.

12.8 Cumulative Effects

Cumulative effects on fauna chiefly relate to increased noise and activity levels and the possibility of increased collision risk. Although increases in noise/disturbance could occur arise from several different projects in-combination the effect is likely to be most pronounced during construction. This is a short-term effect which will be localised. Given the nature of the projects proposed and distances between them, significant effects during operation are unlikely.

Given the distance between existing wind turbines within the Cork Harbour area, the Aghada stack and the proposed Indaver stack, the cumulative collision risk or disturbance risk are predicted to be low. The potential cumulative effects which are considered relevant to the proposed development are listed below.

12.8.1 Wind Turbines with Lower Cork Harbour

Currently in the Cork Lower Harbour area there are four existing wind turbines. The closest turbine is located approximately 400m south of the proposed development stack, at the DePuy facility (Loughbeg). The other constructed wind turbines are located at DePuy (Turbine 2 at Loughbeg), Thermo Fisher Scientific (Curraghbinny) and at Janssen (Barnahely) located 1.7km and 2.5km from the proposed development stack respectively. A turbine has recently been granted planning permission at the ESB Power Station at Whitegate (Planning reference 235104).

The built turbines themselves are separated from each other by distances ranging from 1.7km to 2.5km and all the Lower Harbour turbines are in excess of 5km from the ESB Power Station Stack at Whitegate.

Given the distance between the proposed development stack and wind turbines and the ESB Power Station Stack at Whitegate, the limited size of the proposed stack and the limited bird usage of shoreline habitats adjoining the proposed development site, there will be no significant in-combination effects on birds. No additional effect is predicted from the new proposed development stack.

12.8.2 Whitegate Power Station Stack

Approximately 5km east of the proposed development is the Aghada ESB Power Station Stack at Whitegate, with a stack height of 152m. As noted, this site is considered a considerable distance from the proposed development site and no cumulative disturbance effects or collision risk in relation to the proposed development stack have been identified.

12.8.3 The Port of Cork Developments

The EIAR submitted to An Bord Pleanála as part of the application for permission in respect of the Port of Cork development at Ringaskiddy was reviewed during the preparation of this chapter. A development of a new vehicular entrance of the L2545 was also reviewed. In the absence of any predicted effect on marine ecology or bird usage of the area from the proposed development, no potential cumulative effects have been identified.

12.8.4 M28 Cork to Ringaskiddy Motorway Scheme

The motorway scheme is currently at the Advanced Works Stage, involving land acquisition and site clearance. A 1.5 km single carriageway section of the M28 Cork to Ringaskiddy Motorway Project, referred to as the '*Protected Road Scheme'*, is currently under construction. This section extends from Barnahely to the eastern side of Ringaskiddy and intersects the northwestern boundary of the proposed development site. The construction stage of the Protected Scheme is nearing completion at the time of writing this EIS. The remaining elements of the main M28 Cork to Ringaskiddy Motorway Project, which will upgrade the corridor to a dual carriageway standard, are expected to have a construction duration of approximately 36 months. It is envisaged that the M28 motorway scheme would be in place by Q3 2028. However, the most eastern section of the proposed M28 between the proposed Loughbeg Roundabout and Ringaskiddy Roundabout is currently under construction and is expected to be completed in Q4 2025. Given that the protected scheme element of the M28 works will be complete prior to the construction of the proposed development, no cumulative effects due to increased noise and activity have been identified. Whilst there may be localised disturbance/displacement of fauna (including Badgers), the cumulative impact is not predicted to be significant.

12.8.5 Other Projects

Other projects include the Janssen upgrade to biomedicines facility (Planning reference 254704) and the Pfizer Bid.124 lab building (Planning reference 235834). While construction works may cause localised disturbance to fauna, given their location within existing licenced pharmaceutical facilities, no significant cumulative effects have been identified.

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