

Environmental Impact Assessment Report (EIAR) – Volume 2

Chapter 6 - Biodiversity

**Proposed ORE Capable Terminal on a 250m
Wharf Extension & Ancillary Operational
Support Infrastructure**

Port of Waterford Company

Port of Waterford, Belview, Co. Kilkenny



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APPENDICES CHAPTER 6

Appendix 6-1: Bat Report

Appendix 6-2: Waterbird Report

Appendix 6-3: Benthic Report

Appendix 6-4: Biodiversity Enhancement Plan

6 BIODIVERSITY

6.1 Introduction

This chapter of the report has been prepared by the MOR Environmental Ecology Team. This chapter provides a description and assessment of the potential, likely and significant effects of the Proposed Development on ecology.

A detailed ecological appraisal has been carried out by fully qualified and experienced MOR Environmental Ecologists in line with '*Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*' (2018 and revisions) [1]. This chapter details the methods and results of a desk study and field surveys undertaken to establish the baseline ecological status of the Site and its immediate surroundings and to assess the potential effects of the Proposed Development.

As part of this assessment, a Benthic Ecology Report has been prepared and input from these reports has been included as part of this EIAR. The Benthic Ecology Report was prepared by Aquafact International Services Ltd. (APEM Group) ('Aquafact'). These reports have been submitted as part of these applications and should be read in conjunction with this report. Furthermore, as part of this assessment, MOR Environmental Ecologist worked with Dr. Martin O'Farrell to undertake a review of fisheries information and data to inform the impact assessment for this application.

In addition, an assessment of potential effects on European Designated sites was also undertaken and is presented in the Stage 2: Appropriate Assessment - Natura Impact Statement ('NIS'), which forms part of the planning application. This chapter should be read in conjunction with the NIS.

6.2 Methodology

6.2.1 Relevant Guidance

The following standards and guidance documents were utilised to characterise the baseline conditions of the Site, the assessment of potential effects on biodiversity and the appropriate mitigation measures required:

- Chartered Institute of Ecology and Environmental Management ('CIEEM'), *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (2018 and revisions) [2];
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 1 [3];
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 2 [4]
- Guidance on Environmental Considerations for Offshore Wind Farm Development [5]
- Draft Kilkenny Biodiversity Action Plan 2025-2030 [6];
- Kilkenny City and County Development Plan ('KCCDP') 2021-2027 [7];
- Waterford City and County Development Plan ('WCCDP') 2022-2028 [8];
- *Fossitt's Guide to Habitats in Ireland* [9];
- Heritage Council's '*Best Practice Guidance for Habitat Survey & Mapping*' [10];
- DoEHLG, '*Bat Mitigation Guidelines for Ireland*' [11]

- Bat Conservation Trust ('BCT'), *'Bat Surveys for Professional Ecologists Good Practice Guidelines'* [12] [13].
- Scottish Natural Heritage ('SNH'), *'Technical Advice Note #2: Otter Surveys'* [14];
- DoAHG, *'National Otter Survey of Ireland 2010 / 12'* [15];
- NatureScot, *'Standing Advice for Planning Consultations – Otters'* [16];
- CIRIA, C532 – *Control of Water Pollution from Construction, Guidance for Consultants and Contractors* [17];
- CIRIA, C811- *Environmental Good Practice on Site* (5th edition) [18];
- NRA, now Transport Infrastructure Ireland ('TII'), *'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes'* [19];
- NRA *'Guidance for the Treatment of Otters Prior to the Construction of National Road Schemes'* [20];
- NRA *'Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes'* [21];
- NRA *'Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads'* [22];
- IFI, *'Requirements for the Protection of Fisheries Habitat during Construction and Development'* [23];
- Department of Arts, Heritage and the Gaeltacht ('DAHG'), *'Guidance to Manage the Risk to Marine Mammal from Man-made Sound Sources in Irish Waters'* [24]
- Department of Housing, Local Government and Heritage ('DHLGH') "National Marine Planning Framework" [25].
- Irish Whale and Dolphin Group ('IWDG'), *'Policy on the Effects of Noise Pollution on Cetaceans'* [26];
- IWDG, *'Commercial Fisheries Policy Document'* [27]; and,
- IWDG, *'Atlas of the distribution and relative abundance of marine mammals in Irish offshore waters 2005 – 2011'* [28].

6.2.2 Consultation with Stakeholders

All relevant biodiversity points obtained during the EIA Consultation process were considered as part of this assessment. Specifically, IFI in their submission made in March 2023 raised specific concerns about protected species in the Lower Suir Estuary and the River Barrow and River Nore (refer to Appendix 1-1). In addition, a consultation meeting was held with the IFI on the 1st February 2023 to discuss the ongoing Port of Waterford projects, including the Navigational Maintenance Dredging 2026-2033 application and the Proposed Development.

Furthermore, a consultation meeting was held with the NPWS on 10th May 2023, and during this meeting the NPWS concluded that the project should proceed under Article 6(3) and the NPWS stated that they were satisfied with the comprehensive scope of survey work that has been completed, or ongoing, and with the proposed biodiversity enhancement measures outlined (Refer to Appendix 1-3).

6.2.3 Desk-based Study

The desk study focused on identifying European Designated sites within a 15km radius of the Site, nationally designated sites within a 5km radius of the Site and records of legally protected and notable species within 2km of the Site.

The area from which biological data was collected was based on an assessment of the ecological zone of influence of the Site (i.e., the area that could be affected by the scheme within which there is the potential for significant ecological effects).

The following literature information sources were checked for ecological information:

- Review of aerial maps of the Site and surrounding area;
- The Kilkenny County Council Planning Portal to obtain details about existing / proposed developments in the vicinity of the Site [29];
- The Waterford City and County Council Planning Portal to obtain details about existing / proposed developments in the vicinity of the Site [30];
- The Wexford County Council Planning Portal to obtain details about existing / proposed developments in the vicinity of the Site [31];
- The NPWS website was consulted with regard to the most up-to-date details on conservation objectives for the European Designated sites relevant to this assessment [32];
- The National Biodiversity Data Centre ('NBDC') website was consulted with regard to species distributions [33];
- The EPA Maps website was consulted to obtain details about watercourses in the vicinity of the Site [34];
- BirdWatch Ireland – The Irish Wetland Bird Survey ('I-WeBS') data, which is coordinated by BirdWatch Ireland and under contract to the NPWS, was reviewed with regard to wintering waterbird population within the vicinity of the Site [35];
- IFI Water Framework Directive ('WFD') Fish website was consulted to obtain details about fish monitoring undertaken throughout Ireland [36];
- Review of the Fish Report prepared by Dr. Martin O'Farrell of Aztec Management Consultants in support of the Port of Waterford Maintenance Dredging Programme (Dumping at Sea EPA Reg. No.: S0012-05) [37];
- The IWDG records of historical sightings within the vicinity of the Waterford Estuary from 2013 to 2022 [38];
- The IWDG sightings portal to obtain information about recent sightings in the vicinity of the Waterford Estuary from June 2022 to July 2025 [39]; and,
- Review of Delft Hydraulics [40] and ABP Marine Environmental Research Ltd. ('ABPmer') modelled reports (2017 & 2023) [41, 42] for the Waterford Estuary that assesses the ongoing estuary processes, trends and physical characteristics and assess the physical effects, if any, of ongoing port operations, including maintenance dredging and disposal.

6.2.3.1 Fisheries Studies

Dr. Martin O'Farrell of Aztec Management Consultants prepared a Fish Report in support of the Port of Waterford Maintenance Dredging Programme (Dumping at Sea EPA Reg. No.: S0012-05) [37].

As part of this assessment, MOR Environmental Ecologist worked with Dr. Martin O’Farrell to undertake a review of fisheries information and data to inform the impact assessment for this application.

6.2.3.2 I-WeBS Data Request

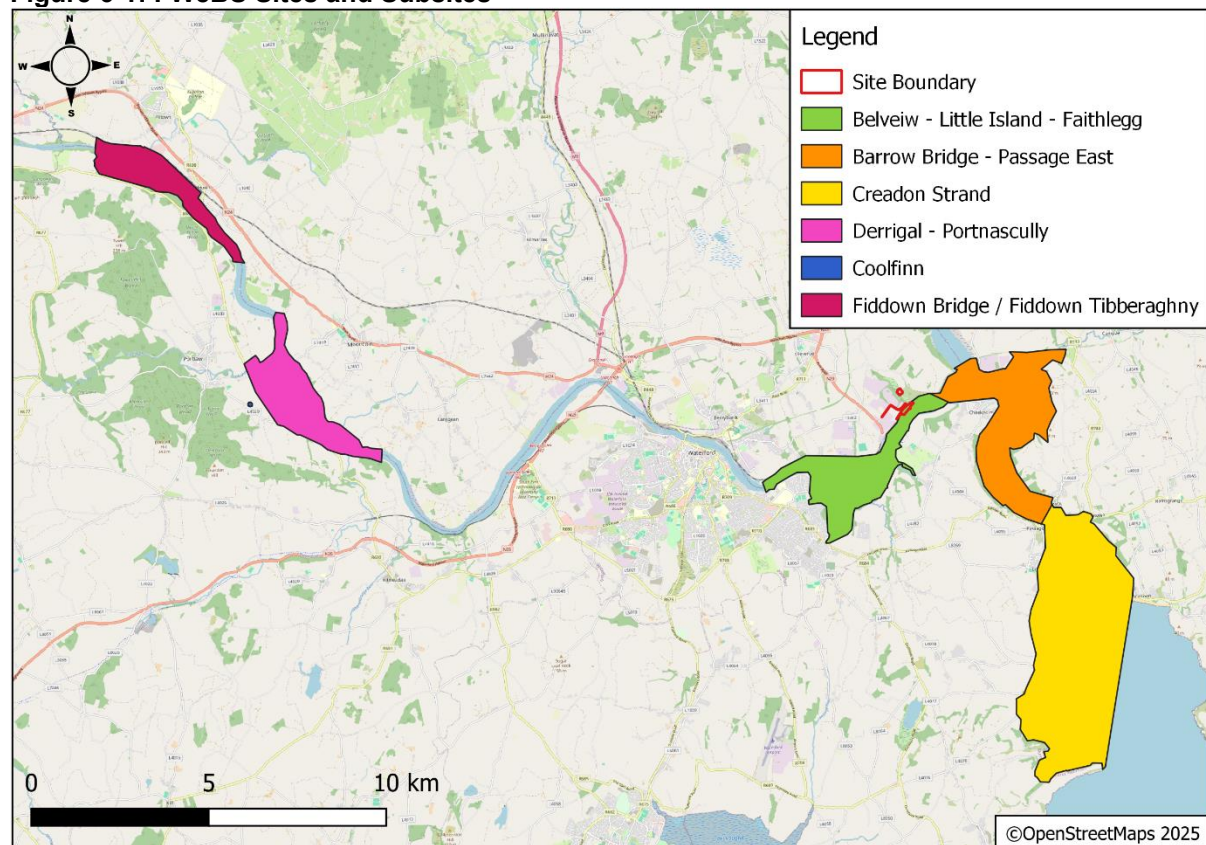
As mentioned above, I-WeBS data was reviewed in order to understand the potential assemblages of wintering bird populations that tend to occur within the vicinity of the Site.

As part of this review, a data request was submitted to the I-WeBS, which is coordinated by BirdWatch Ireland and under contract to the NPWS, on the 24th June 2025. The data request was made for all available data from the nearest sites to the Site, as listed in Table 6-1 below. See Figure 6-1 for the location of the subsites in relation to the Site.

Table 6-1: I-WeBS Subsites

Site Name	Site Code	Subsite Name	Subsite Code
River Suir Lower	0M301	Belview – Little Island – Faithlegg	0M390
		Coolfinn	0M360
		Derrigal – Portnascully	0M361
		Fiddown – Tibberaghny	0M398
Waterford Harbour	0M403	Barrow Bridge – Passage East	0M496
		Creadan Strand	0M498

Figure 6-1: I-WeBS Sites and Subsites



6.2.4 MOR Environmental Field-based Studies

6.2.4.1 Habitat Survey

An initial Site assessment was undertaken on 15th February 2021 by two suitably qualified and experienced MOR Environmental Ecologists. The survey aimed to identify the extent and quality of habitats present on the Site and to identify any potential ecological receptors.

During this assessment, a habitat survey was undertaken at the Site using the Heritage Councils – ‘*A Guide to Habitats in Ireland*’ [9] and was conducted in line with the Heritage Council’s ‘*Best Practice Guidance for Habitat Survey & Mapping*’ [10]. This is the standard habitat classification system used in Ireland and includes both a desk-based and field-based assessment. The surveys were also undertaken utilising the Irish Ramsar Wetlands Committee’s ‘*Irish Wetland Types- an identification guide and field survey manual*’ [43]. In addition, the surveys also aimed to identify any habitats corresponding to Annex I of the Habitats Directive using the *Interpretation Manual of European Union Habitats* [44].

Updated surveys were completed on:

- 31st July 2024;
- 25th March 2025; and,
- 28th July 2025.

These surveys were undertaken by a team of suitably qualified and experienced MOR Environmental Ecologists to confirm that the extent and quality of habitats present onsite, and the potential ecological receptors on-site had not changed from the previous assessments.

The surveys also assessed for the presence of notable / protected flora species in accordance with the following:

- Flora (Protection) Order 2022 (S.I. No. 235/2022); and,
- Ireland Red List No. 10: Vascular Plants [45].

The assessment was extended to also identify the potential for these habitats to support other features of nature conservation importance, such as species afforded legal protection under either Irish or European legislation.

6.2.4.2 Protected / Notable Species Survey

Following the initial Site assessment, it was deemed necessary for MOR Environmental Ecologists to undertake the following specialist surveys:

- Bat Surveys;
- Badger Survey;
- Otter Surveys;
- Marine Mammal Sighting Monitoring;
- Wetland Breeding & Wintering Bird Surveys;
- Invasive Species; and,
- Other Species.

The methodologies used to establish the presence / potential presence of faunal species are summarised below. These relate to those species / biological taxa that the desk study and habitat types present indicated could occur on the Site.

Bat Surveys

Bat Survey Guidance Documents

The 2021-2023 bat assessments and surveys utilised the methodology outlined in ‘*Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed)*’ [12], which was the most up-to-date guidance at the time. The 2021-2023 bat assessments and surveys utilised the methodology outlined in ‘*Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd ed)*’ [12], which was the most up-to-date guidance at the time. However, in October 2023, a new edition of this guidance was released, ‘*Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th ed.)*’ [46].

Therefore, the further supplementary bat walkover undertaken in July 2024 assessed the Site using the methodology outlined in the ‘*Bat Surveys for Professional Ecologists: Good Practice Guidelines – 4th Edition*’ [46].

It should be noted that the guidance on activity surveys did not significantly differ between the 3rd and 4th guidance editions. Additionally, as the 4th edition of the Bat Conservation Trust states that night vision aids should be used during emergence surveys, it is not considered that undertaking the bat surveys in 2023 and following the most up-to-date guidance at the time presents a limitation to the surveys undertaken. This conclusion is based on the fact that no bat roosts were found at the Gorteens Old Mill Building (see Section 6.4.2.2 below) and there were no features suitable for roosting bats within Belview Port.

Daytime Bat Walkover Survey, Preliminary Roost Assessment and Ground Level Tree Assessment

The Gorteens Old Mill Building (ca. 20m to the north of the wharf extension) was assessed during a ground-based daytime bat walkover survey (‘DBW’) on 30th March 2021 to assess the building for features suitable for roosting bats. Updated assessments were also undertaken on 29th November 2022 and 10th July 2024.

During these walkovers, Belview Quay was also assessed for the potential to support bat foraging and commuting habitats. Potential bat habitats and flight paths were considered in relation to the wider landscape to determine connectivity for local bat populations through the examination of aerial mapping.

Please see Appendix 6-1 – Bat Report for full details.

Emergence / Re-Entry and Nighttime Bat Walkover (‘NBW’) Surveys

Following the initial DBW survey, tree inspection and external building inspections, it was deemed that further assessment would be required for bats. This conclusion was based on the suitability of the nearby Gorteens Old Mill Building and the habitats within the vicinity of this building for roosting bats, and the habitats within the vicinity of the Belview Port for foraging and commuting bats.

All surveys were undertaken by MOR Environmental Ecologists and followed predetermined vantage points and transects. The following bat surveys were undertaken:

- Gorteens Old Mill Building Surveys:
 - Two dusk emergence vantage point (‘VP’) surveys were undertaken by three MOR Environmental Ecologists on 31st May and 29th June 2023; and,
 - One dawn re-entry VP survey was undertaken by three MOR Environmental Ecologists on 27th July 2023.
- Existing Belview Port Surveys:

- Two dusk NBW transect surveys were undertaken by three MOR Environmental Ecologists on 31st May and 29th June 2023; and,
- One dawn NBW transect survey was undertaken by three MOR Environmental Ecologists on 27th July 2023.

Please see Appendix 6-1 – Bat Report for full details of the methodologies followed during the bat surveys undertaken on-site.

Static Bat Monitoring

Two passive bat detectors, Wildlife Acoustics Song Meter 4 ('SM4s'), were deployed within pre-determined locations to track bat activity for a period of static monitoring in July / August 2023:

- One SM4 was deployed within Belview Port (SM4-1, from 16th August – 29th August 2023); and,
- One SM4 was deployed near the Gorteens Old Mill Building (SM4-2, from 12th July – 25th July 2023).

Bat activity was recorded on these SM4s and stored within the SM4s for analysis at a later date.

Please see Appendix 6-1 – Bat Report for further details.

2024 Updated Bat Suitability Confirmation Assessment

An updated daytime bat suitability confirmation assessment was conducted by three MOR Environmental Ecologists on 10th July 2024 to confirm that the habitats on-site and within the vicinity of the Site had not changed from the previous survey period. It was noted that the habitats remained in the same condition as during the 2023 survey season. Therefore, no additional surveys were deemed necessary.

Badger

The survey aimed to identify and examine areas where badgers (*Meles meles*) might occur by noting any evidence of badger activity. This included:

- Mammal paths;
- Badger hairs caught in sett entrances / fences / vegetation;
- Paw prints;
- Evidence of foraging (usually in the form of 'snuffle holes');
- Badger Scat (isolated badger droppings);
- Latrines (shallow pits/holes occurring together comprised of exposed badger droppings); and,
- Badger setts.

The field survey of the Site was conducted in line with the following relevant guidance for badger:

- Scottish Badgers, '*Surveying for Badgers: Good Practice Guidelines*,' [47];
- The Mammal Society, '*Surveying Badgers*,' [48]; and,
- NRA, now TII, '*Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*,' [19].

Otter

During the initial survey on 15th February 2021, MOR Environmental Ecologists assessed the Port and surrounding areas for potential suitability to support otter. In addition, during this survey, the ecologists assessed the proposed areas for safe access.

Otter surveys have been carried out at the Site on a predominantly monthly basis, since 15th February 2021 to March 2025. These surveys have been carried out by two suitably qualified and experienced MOR Environmental Ecologists.

The survey included a full bankside surveys, boat surveys and targeted camera trap surveys, aimed to identify and examine areas where otter might occur by noting any evidence of otter observed. Evidence of otter searched for included:

- Holts (features log piles, caves and cavities);
- Slides (flattened areas of mud or vegetation);
- Couches (resting areas where the grasses or bank substrates have been flattened);
- Paw prints;
- Evidence of foraging (usually in the form of feeding remains such as fish scales and shellfish);
- Spraints (faeces containing food remains); and,
- Anal jellies & smears (gelatinous secretions that are typically brown in colour with the characteristic otter odour).

In line with best practice, a 200 m buffer zone was applied during the surveys where holts or potential breeding sites were identified. This approach follows NatureScot's '*Standing Advice for Planning Consultations – Otters*' [16], which specifies that where otters are known or suspected to be breeding, an exclusion zone of at least 200m should be established. The application of this buffer is consistent with recognised guidance and ensures that survey activity does not result in disturbance to otters.

The surveys were undertaken primarily along the Kilkenny shoreline of the Lower Suir Estuary in three locations:

- The accessible shoreline within the Site boundary;
- The accessible shoreline to the north of the Site boundary; and,
- The accessible shoreline to the south of the Site boundary between the Belview Port and the O'Briens Quay.

The areas that could be safely accessed for the otter surveys are illustrated in Figure 6-2.

The field survey of the Site was conducted in line with the following relevant guidance for otter:

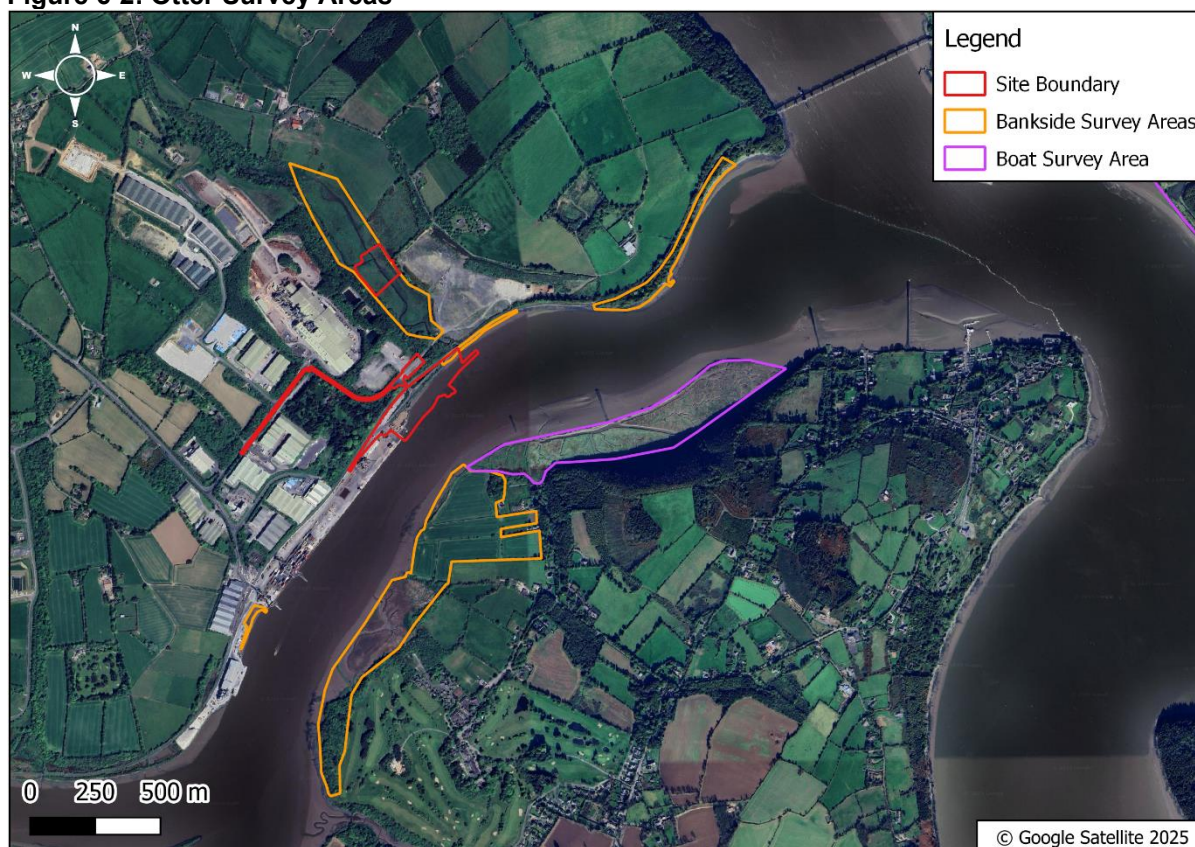
- SNH, 'Technical Advice Note #2: Otter Surveys' [14];
- DoAHG, 'National Otter Survey of Ireland 2010 / 12' [15]; and,
- NRA, now TII, 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes [19],'
- NatureScot, '*Standing Advice for Planning Consultations – Otters*' [16].

Sightings of otter observed during bird surveys undertaken within the Port of Waterford area were also recorded.

In addition, on 27th January 2021, 27th April 2021, 10th June 2021, 27th January 2022, 17th June 2022, 3rd April 2025 and 9th April 2025, two MOR Environmental Ecologists undertook boat surveys around the Belview Port and the wider Waterford Estuary to assess areas inaccessible by land.

Furthermore, on 14th March 2022 and 1st of February 2023, MOR Environmental Ecologists undertook bankside surveys along the shoreline of Faithlegg to survey for otter activity and potential holt locations.

Figure 6-2: Otter Survey Areas



Surveys were timed to coincide with the spring tides, where possible, with suitable weather and daylight constraints.

Given the tidal nature of this section of the Lower Suir Estuary, bankside surveys were carried out during low tide to assess all potentially suitable areas. Boat surveys were carried out at high tide to gain access to areas inaccessible during low tide.

The dates that these surveys were undertaken are listed in Table 6-2 below.

Table 6-2: Otter Survey Dates

Date	Survey Type
15/02/2021	Bankside Survey
26/03/2021	Bankside Survey
27/04/2021	Boat Survey
26/05/2021	Bankside Survey
10/06/2021	Boat Survey
27/07/2021	Bankside Survey
24/08/2021	Bankside Survey

Date	Survey Type
21/09/2021	Bankside Survey
21/10/2021	Bankside Survey
19/11/2021	Bankside Survey
17/12/2021	Bankside Survey
18/01/2022	Bankside Survey
27/01/2022	Boat Survey
22/02/2022	Bankside Survey
14/03/2022	Bankside Survey
29/04/2022	Bankside Survey
24/05/2022	Bankside Survey
25/05/2022	Bankside Survey
17/06/2022	Boat Survey
15/07/2022	Bankside Survey
25/08/2022	Bankside Survey
26/08/2022	Bankside Survey
26/09/2022	Bankside Survey
27/09/2022	Bankside Survey
10/10/2022	Bankside Survey
22/11/2022	Bankside Survey
06/12/2022	Bankside Survey
19/01/2023	Bankside Survey
31/03/2023	Bankside Survey
19/04/2023	Bankside Survey
26/05/2023	Bankside Survey
26/06/2023	Bankside Survey
20/07/2023	Bankside Survey
28/09/2023	Bankside Survey
09/11/2023	Bankside Survey
11/01/2024	Bankside Survey
29/03/2024	Bankside Survey
26/04/2024	Bankside Survey
28/05/2024	Bankside Survey
28/06/2024	Bankside Survey
31/07/2024	Bankside Survey
23/08/2024	Bankside Survey
27/09/2024	Bankside Survey
17/10/2024	Bankside Survey
26/11/2024	Bankside Survey
16/12/2024	Bankside Survey
15/01/2025	Bankside Survey
23/01/2025	Bankside Survey
18/02/2025	Bankside Survey
26/03/2025	Bankside Survey
03/04/2025	Boat Survey

Date	Survey Type
09/04/2025	Boat Survey

Camera Trap Surveys

During the 2021 and 2022 otter surveys, camera trap surveys were undertaken to identify areas of regular use by otter. The camera trap surveys were undertaken using a Browning Strike Force HD Pro X Trail Cameras.

The camera traps were programmed to take three consecutive shots at each detection with a 1-second delay between each photo. The dates during which the camera traps were operating are listed in Table 6-3 below.

Table 6-3: Camera Trap Start and End Dates

Start Date	End Date
14/05/2021	26/05/2021
27/07/2021	13/08/2021
21/09/2021	21/10/2021
20/10/2021	10/11/2021
16/12/2021	10/01/2022
14/03/2022	28/03/2022
15/07/2022	28/07/2022
26/08/2022	30/08/2022

Marine Mammal Sightings

MOR Environmental Ecologists have also taken note of any sightings of marine mammals during all of the surveys. These land-based sightings were primarily recorded during the wetland bird vantage point surveys.

MOR Environmental Ecologists also undertook boat surveys within the Waterford Estuary to assess the Lower Suir Estuary and Waterford Estuary, including surveying for marine mammals on the 27th January 2021, 27th April 2021, 10th June 2021, 27th January 2022, 17th June 2022, 3rd April 2025 and 9th April 2025.

In addition, during the 2022 Trailer Suction Hopper Dredging ('TSHD') campaign, two suitably qualified and experienced MOR Environmental Ecologists undertook two surveys from the dredger to survey for marine mammals within the estuary on the 15th May 2022 and the 4th November 2022.

Wetland Bird Surveys

Site Scoping

An initial Site visit was conducted at the Port of Waterford on 15th February 2021, by two MOR Environmental Ecologists. A further scoping survey was undertaken on 19th March 2021 by two MOR Environmental Ecologists and Dr. Tom Gittings, an expert ornithologist, to determine a suitable vantage point ('VP') location and survey methodology. The VP location was selected on the basis that the VP has as clear and undisturbed a view of the Site and surrounding area as possible.

Waterbird Vantage Point Surveys

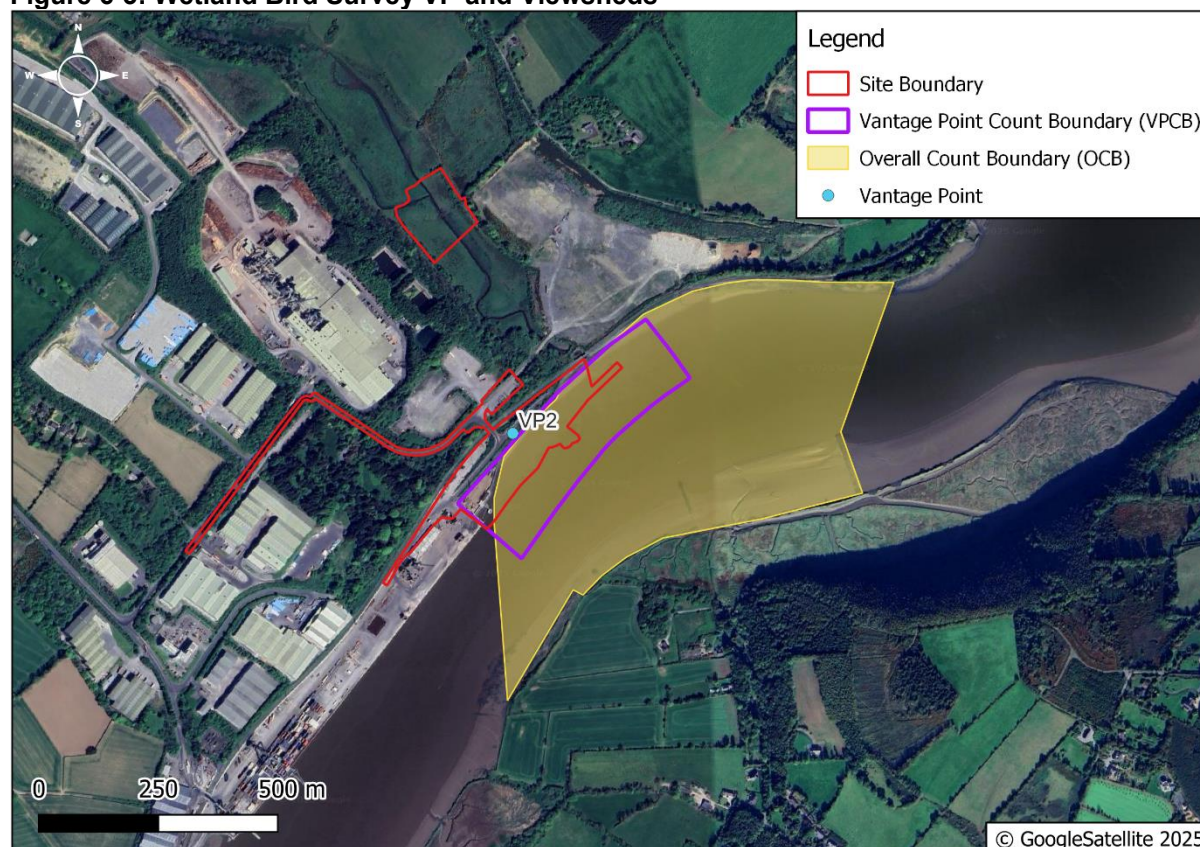
Waterbird vantage point surveys were undertaken at the Site in order to determine whether or not the Site is utilised by breeding or wintering waterbird species.

Wetland bird surveys were undertaken during 2021, 2022, 2023 and 2024 summer wetland seasons and 2021/2022, 2022/2023, 2023/2024 and 2024/2025 winter wetland seasons.

Summer surveys were conducted from April to September, and the winter surveys took place from October to March.

The surveyors undertook counts within predetermined viewsheds called the vantage point count boundary ('VPCB') and within the overall count boundary ('OCB'); see Figure 6-3. The counts within the VPCB were undertaken every 15 minutes and the OCB counts were undertaken every hour and at high / low tide, following completion of the VPCB count.

Figure 6-3: Wetland Bird Survey VP and Viewsheds



The surveys were undertaken using an amended methodology based on the Irish Wetland Bird Survey ('I-WeBS') Methodology [49]. This methodology employs a well-established technique of counting the numbers of waterbirds at wetland sites using the so-called 'look-see' method, whereby the observer surveys the whole of a predefined area [50].

Please see Appendix 6-2 – Waterbird Survey Report for further information.

Invasive Species

The Site was visually assessed for the presence of any noxious / invasive species that are regulated under the European Union (Invasive Alien Species) Regulations 2024 (S.I. No. 374/2024) [51] such as Japanese knotweed (*Reynoutria japonica*) and Himalayan balsam (*Impatiens glandulifera*).

The Site was also assessed for the presence of non-regulated invasive species that have the potential to impact local biodiversity.

Other Species

In addition, an assessment was carried out of the potential for the Site to support any other species considered to be of value for biodiversity, including those that were identified as occurring locally by the desktop study.

6.2.4.3 Biodiversity Enhancement Area

An initial site assessment of the proposed Biodiversity Enhancement Area was undertaken by two suitably qualified and experienced MOR Environmental Ecologists on 27th January 2021. Updated surveys were completed on 17th August 2023 and 10th July 2024 to assess the area and determine if there had been any changes in the on-site habitats. These surveys aimed to identify the extent and quality of habitats present on the Site.

These surveys were undertaken at the Site using the Heritage Councils – ‘*A Guide to Habitats in Ireland*’ [9] and was conducted in line with the Heritage Council’s ‘*Best Practice Guidance for Habitat Survey & Mapping*’ [10]. The surveys were also undertaken utilising the Irish Ramsar Wetlands Committee’s ‘*Irish Wetland Types- an identification guide and field survey manual*’ [43].

6.2.4.4 Survey Limitations

The surveys were scheduled to be undertaken during suitable weather conditions, i.e., no rain, little to no wind, bright conditions, etc. However, during the winter months, it was not possible to ensure dry weather windows and as such, light drizzles to slight rain were experienced during some of the surveys. However, given the large dataset gathered as part of these assessments, it is not considered that this survey limitation will have affected the survey results.

6.2.5 External Specialist Surveys

6.2.5.1 Benthic Survey

A specialist subtidal benthic survey was carried out by AQUAFACT International Services Ltd. (‘Aquafact’) on 1st June 2021 from the Keltoi Warrior vessel. During this survey, four subtidal samples were taken within the Site boundary (see Figure 6-4). The station coordinates and depths of these samples are shown in Table 6-4.

Three grab samples were taken for faunal analysis, and one sample was collected for sediment grain size and organic carbon analysis. Upon retrieval of the grab, a description of the sediment type was noted in the sample data sheet. Notes were also made on colour, texture, smell and presence of animals. The grab sampler was cleaned between stations to prevent cross-contamination.

Aquafact have an in-house standard operational procedure for benthic intertidal sampling, and these procedures were followed during the sampling. Additionally, the National Marine Biological Analytical Quality Control Scheme (‘NMBAQC’) report “*Guidelines for processing marine macrobenthic invertebrate samples: a processing requirements protocols*” [52] were adhered to. Please see Appendix 6-3 for full details.

Figure 6-4: Grab Sample Locations**Table 6-4: Coordinates and Depths at the Grab Stations**

Grab Station	Latitude	Longitude	Depth (m)
B1	52.2695155	-7.0272737	15
B2	52.2701497	-7.0269006	8
B3	52.2706634	-7.0261855	7
B4	52.271342	-7.0252424	4

6.2.6 Assessment Methodology

The starting point for the assessment was to undertake a scoping exercise for those ecological receptors that would require further consideration as part of the assessment. This involved differentiating the biodiversity receptors (i.e., designated sites, habitats and species populations) that could be significantly affected by the Proposed Development.

The approach that was used for determining which receptors have the potential to be significantly affected by the Proposed Development involved using baseline data collected through the desk study and field surveys for the Site. Based on professional judgement data from the following radii was collected: 2km away for protected species, 15km for European Designated sites and 5km away from Natural Heritage Areas. The desk and field-based data was used to determine:

- Which, if any, of the species or habitat that have been recorded are legally protected or controlled (see Box 1); and,

- Which, if any, sites, areas of habitat and species that have been recorded are of importance for biodiversity conservation.

The next stage of the assessment was to determine whether the identified receptors are of sufficient biodiversity value that an effect upon them would be of potential significance in terms of this EIAR. In this regard:

- Biodiversity conservation value relates to the quality and / or size of sites or habitats, or the size of species' populations; and,
- Potential significance means that the effect could be of sufficient concern or, for positive effects, of such substantial benefit that it could be material to influencing the decision on planning.

Receptors that have been identified as having sufficient value and for which an effect upon them could be of potential significance have been taken forward for further consideration. Legally protected species were also considered further (refer to Box 1 below). This involved:

- Identifying, for each receptor, any significant effects that are likely to be caused by the Proposed Development, which has the potential to lead to a significant effect and / or to contravene relevant legislation;
- Determining the area within which the likely effects would cause a potentially significant effects on the identified receptor and / or could contravene relevant legislation (ecological zone of influence); and,
- If the receptor occurs or is likely to occur within the zone of influence and concluding that the receptor could be significantly affected and / or the relevant legislation contravened, the receptor would be subject to further assessment.

6.2.7 Evaluation of the Conservation Importance of the Site

In terms of biodiversity conservation value, identified receptors have been valued using the NRA Scheme [53], using the following scale:

- International Importance;
- National Importance;
- County Importance (or vice-county in the case of plant or insect species);
- Local Importance (Higher Value); and,
- Local Importance (Lower Value).

6.3 Policy Context

6.3.1 Legislation / Policy Context

Within Ireland, a number of sites of international or national importance to nature conservation, as well as many species of animal and plants are afforded some degree of legal protection, for details see Box 1 below.

Box 1 Designated Wildlife Sites and Protected and Otherwise Notable Habitats and Species

The NPWS notifies sites in Ireland that are of international or national importance for nature conservation (although some sites that are of national importance for certain species have not been so designated).

Internationally important sites may also be designated as:

- Special Areas of Conservation ('SACs') and Candidate Special Areas of Conservation ('cSACs'): the legal requirements relating to the designation and management of SACs in Ireland are set out in the European Communities (Birds and Natural Habitats) Regulations 2011-2021 (S.I. No. 477/2011);

Box 1 Designated Wildlife Sites and Protected and Otherwise Notable Habitats and Species

- Special Protection Areas ('SPAs') and candidate Special Protected Areas ('cSPAs'): strictly protected sites classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (2009/147/EC), also known as the Birds Directive; and,
- Ramsar sites: wetlands of international importance designated under the Ramsar Convention, to which Ireland is a signatory.

Other statutory site designations relating to nature conservation are:

- Natural Heritage Areas ('NHAs'): these represent examples of some of the most important natural and semi-natural terrestrial and coastal habitats in the country and are afforded protection under the Wildlife (Amendment) Act 2000. NHAs are legally protected from damage and receive protection from the date they are formally proposed for designation; and,
- Proposed Natural Heritage Areas ('pNHAs'): these sites are not afforded the same protection as NHAs. These sites are proposed by the NPWS but are not statutorily proposed or designated. Prior to statutory designation these are subject to a very limited legal protection. They are, however, sites of significance for wildlife and habitats and are important for the purposes of this Biodiversity Chapter.

Legally Protected Species

Many species of animal and plant receive some degree of legal protection. For the purposes of this study, legal protection refers to:

- Species included in the Wildlife (Amendment) Act 2000, excluding species that are only protected in relation to their sale, reflecting the fact that the site disposal will not include any proposals relating to the sale of species; and,
- Species afforded protection under the Flora (Protection) Order 2022 (S.I.No.235/2022).

Other Notable Habitat / Species Categories

- Biodiversity Action Plan ('BAP') species: those targeted in local or national BAPs as being of particular conservation concern (priority species);
- Red and Amber List birds: those listed as being of high or medium conservation concern as listed by Birdwatch Ireland on the Birds of Conservation Concern in Ireland ('BoCCI') 2020-2026 [54]; and,
- Other Irish Red Data Book species and Nationally / Regionally / Locally notable species where appropriate.

6.3.2 National Planning Context

A study of biodiversity-related planning policy at the national and local level has been undertaken for the Site and locality to highlight any potential conflicts with the relevant legislation and guidance documents as outlined in Box 1.

6.3.2.1 Project Ireland 2040 National Planning Framework

Project Ireland 2040 was launched by the Government in February 2018 [55] and incorporates two policy documents - the National Planning Framework ('NPF') and the National Development Plan ('NDP').

Following a decision of the Government in June 2023, the preparation of a revised NPF [56] commenced to take account of changes that have occurred since it was published (in 2018) and to build on the existing framework. Public consultation took place from 10th July 2024 to 12th September 2024, following which the Government agreed to progress and publish a draft schedule of amendments to the First Revision to the NPF in November 2024. On 8th April 2025, the Government approved the revised NPF following the conclusion of environmental assessments which included a Strategic Environmental Assessment ('SEA'), NIS and Appropriate Assessment Determination and a Strategic Flood Risk Assessment ('SFRA'). Both houses of the Oireachtas, the Seanad and the Dáil, approved this document as of 30th April 2025. The revised NPF is a direct replacement of the NPF and, therefore, is detailed further below.

First Revision to National Planning Framework (April 2025)

Objectives under the ‘Strategic Planning for Biodiversity’ section of the revised NPF [37], include the following:

National Policy Objective 84:

‘In line with the National Biodiversity Action Plan and European Union Nature Restoration Law, and best available scientific information, regional and local planning authorities shall support the preparation and implementation of the National Restoration Plan.’

National Policy Objective 85:

‘In line with the National Biodiversity Action Plan; the conservation, enhancement, mitigation and restoration of biodiversity is to be supported by:

- *Integrating policies and objectives for the protection and restoration of biodiversity, including the principles of the mitigation hierarchy of - avoid, minimise, restore and offset - of potential biodiversity impacts, in statutory land-use plan.*
- *Retention of existing habitats which are currently important for maintaining biodiversity (at local/regional/national/international levels), in the first instance, is preferable to replacement/restoration of habitats, in the interests of ensuring continuity of habitat provision and reduction of associated risks and costs.’*

National Policy Objective 86:

‘In line with the objectives of the National Biodiversity Action Plan, planning authorities should seek to address no net loss of biodiversity within their plan making functions.’

National Policy Objective 87:

‘Enhance the conservation status and improve the management of protected areas and protected species by:

- *Implementing relevant EU Directives to protect Ireland’s environment and wildlife;*
- *Integrating policies and objectives for the protection and restoration of biodiversity in statutory development plans;*
- *Developing and utilising licensing and consent systems to facilitate sustainable activities within Natura 2000 sites; and,*
- *Continued research, survey programmes and monitoring of habitats and species.’*

The National Development Plan 2021-2030

The NDP [57] also lists the following items as strategic investment priorities in relation to National Heritage and biodiversity:

- *Implementation of the current and future National Biodiversity Action Plan, delivery of National Parks and Wildlife Service Farm Plans and LIFE projects, enhanced wildlife crime investigation capacity and identification and delivery conservation measures at designated sites as identified in the Prioritised Action Framework for Ireland (2021-2027).’*
- *‘Investment in nature and biodiversity, to improve the quality of natural habitats and support native plants and animals, including those under threat, and to bolster broader societal wellness and sustainability goals.’*
- *‘Future-proofing obligations under the Biodiversity Strategy 2030, including potential national designations and the preparation and delivery of a National Restoration Plan.’*

6.3.2.2 Ireland's 4th National Biodiversity Action Plan 2023-2030

The 4th National Biodiversity Action Plan ('NBAP') 2023-2030 sets out a number of strategic objectives that lay out a clear framework for Ireland's approach to biodiversity and demonstrates Ireland's commitment to protect our biodiversity and also halt decline [58].

'This National Biodiversity Action Plan 2023-2030 builds upon the achievements of the previous Plan. It will continue to implement actions within the framework of five strategic objectives, while addressing new and emerging issues.' The five objectives are as follows:

- *Objective 1: Adopt a Whole of Government, Whole of Society Approach to Biodiversity;*
- *Objective 2: Meet Urgent Conservation and Restoration Needs;*
- *Objective 3: Secure Nature's Contribution to People;*
- *Objective 4: Enhance the Evidence Base for Action on Biodiversity; and,*
- *Objective 5: Strengthen Ireland's Contribution to International Biodiversity Initiatives.*

The following Objective Outcomes were considered relevant to the Proposed Development and this report:

Outcome 2A:

'The protection of existing designated areas and protected species is strengthened and conservation and restoration within the existing protected area network are enhanced.'

Outcome 2B

'Biodiversity and ecosystem services in the wider countryside are conserved and restored.'

Outcome 2D

'Biodiversity and ecosystem services in the marine and freshwater environment are conserved and restored.'

Outcome 2H:

'Invasive alien species ('IAS') are controlled and managed on an all-island basis to reduce the harmful impact they have on biodiversity and measures are undertaken to tackle the introduction and spread of new IAS to the environment.'

Outcome 3A

'Ireland's natural heritage and biocultural diversity is recognised, valued, enhanced and promoted in policy and practice.'

Outcome 3B:

'The role of biodiversity in supporting wellbeing, livelihoods, enterprise and employment is recognised and enhanced.'

Outcome 3C:

'Planning and development will facilitate and secure biodiversity's contributions to people.'

6.3.3 Regional Planning Context

6.3.3.1 Regional Spatial and Economic Strategy for the Southern Region

The Regional Spatial and Economic Strategy for the Southern Region ('RSES') [59] recognises the need to conserve and enhance biodiversity through coordinated spatial

planning between the counties within the southern region of Ireland. This strategy came into effect on 31st January 2020.

Under the biodiversity section, Regional Policy Objective 126 states that the Southern Regional Assembly will:

- a) *'Promote biodiversity protection and habitat connectivity both within protected areas and in the landscape through promoting the integration of green infrastructure and ecosystem services, including landscape, heritage, biodiversity and management of invasive and alien species in the preparation of statutory and non-statutory land-use plans. The RSES recognises the role of the National Biodiversity Data Centre through its Citizen Science initiatives;*
- b) *Support local authorities acting together with relevant stakeholders in implementing measures designed to identify, conserve and enhance the biodiversity of the Region; seek and support the implementation of the All-Ireland Pollinator Plan, National Biodiversity Action Plan and National Raised Bog SAC Management Plan;*
- c) *Local Authorities are required to carry out required screening of proposed projects and any draft land-use plan or amendment/ variation to any such plan for any potential ecological impact on areas designated or proposed for inclusion as Natura 2000/ European Sites and shall decide if an Appropriate Assessment is necessary, of the potential impacts of the project or plan on the conservation objectives of any Natura 2000/European Site;*
- d) *Support local authorities to carry out, monitor and review biodiversity plans throughout the Region. Planning authorities should set objectives in their land use plans to implement and monitor the actions as set out in the National and County Biodiversity Plans, as the conservation of biodiversity is an essential component of sustainable development. Local authorities should address the issue of fisheries protection and invasive introduced species and encourage the use of native species for landscape planting in rural areas, in the review of their biodiversity plans;*
- e) *Support local authorities to work with all stakeholders to conserve, manage and where possible enhance the Regions natural heritage including all habitats, species, landscapes and geological heritage of conservation interest and to promote increased understanding and awareness of the natural heritage of the Region.'*

The RSES also contains policies relating to invasive species. Regional Policy Objective 127 states that it is an objective to:

- a) *'Support coordination between the Region's local authorities in terms of their measures to survey invasive species in their counties and coordinate regional responses;*
- b) *Encourage greater awareness of potential threats caused by invasive species and how they are spread;*
- c) *Carefully consider and implement the management of invasive species where there is a corridor, such as hydrological connections to European Sites in order to prevent the spread of invasive to sensitive sites.'*

6.3.4 Local Planning Context

6.3.4.1 Kilkenny City County Development Plan 2021-2027

The KCCDP 2021-2027 [7] contains a number of policies and objectives that relate directly to the protection of biodiversity and natural heritage in the context of proposed developments. The policies and objectives of the KCCDP with regards to the natural environment that are relevant to the Proposed Development are as follows [7]:

Objective 1A:

‘To implement the provisions of Articles 6(3) and 6(4) of the EU Habitats Directive and ensure that any plan or project within the functional area of the Planning Authority is subject to appropriate assessment in accordance with the Guidance Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009/1 or any subsequent version, and is assessed in accordance with Article 6 of the Habitats Directive in order to avoid adverse impacts on the integrity and conservation’

Section 9.1:

‘The Council will support the implementation of the National Heritage Plan and National Biodiversity Action Plan. The Council will prepare and implement, in partnership with the Kilkenny Heritage Forum and all relevant stakeholders, a County Heritage Plan and County Biodiversity Action Plan. The Council will also support the implementation of key legislation and national and local policies, programmes and plans which identify, protect and promote Kilkenny’s heritage.

It is the aim of the Council to develop and support programmes which encourage active participation in identifying, recording, protecting, communicating and enjoying Kilkenny’s heritage.’

Section 9.2.1. Protected habitats and species designated for nature conservation

Section 9.2.1.1. European Sites (Natura 2000)

‘The EU Habitats Directive (92/43/EEC) and EU Birds Directive (2009/147/EC) provide for the conservation and protection of breeding and resting sites for rare and threatened species, and rare habitat types in a European context considered to be most in need of conservation. Such sites form part of an EU network of ecologically important and protected sites known as Natura 2000 sites and comprise:

- 1. **Special Areas of Conservation (‘SACs’)** – these sites are selected for the conservation and protection of plant and animal species (other than birds) and habitats listed in Annex I and Annex II of the EU Habitats Directive (92/43/EEC) respectively; and,*
- 2. **Special Protection Areas (‘SPAs’)** – these sites are selected for the conservation and protection of birds and their habitats designated under the EU Birds Directive 2009 (2009/147/EC) (first adopted in 1979) and transposed into Irish law by the Conservation of Wild Birds Regulations (SI 291 of 1985). There are 8 Natura 2000 sites within the County.’*

Natural Heritage Area (Section 9.2.1.2)

‘Natural Heritage Areas (‘NHAs’) and proposed Natural Heritage Areas (‘pNHAs’) are designated under the Wildlife (Amendment) Act 2000 and encompass nationally important semi-natural and natural habitats, landforms and geomorphological features. There are 34 Natural Heritage Areas in the county.’

Statutory Nature Reserve (Section 9.2.1.3)

‘A Nature Reserve is an area of importance to wildlife which is protected under Ministerial order. Most are owned by the State. There are 4 Statutory Nature Reserves in the county.’

Wildfowl Sanctuary (Section 9.2.1.4)

‘Wildfowl Sanctuaries are areas that have been excluded from the ‘Open Season Order’ so that game birds can rest and feed undisturbed. Shooting of game birds is not allowed in these sanctuaries.’

Protected Plant and Animal Species (Section 9.2.1.5)

‘Certain plant, animal and bird species are protected by law. These includes plant species listed in the Flora (Protection) Order 2015 (S.I. No. 356 of 2015) (or other such Orders) and animals and birds listed in the Wildlife Act, 1976 and subsequent statutory instruments, those listed in Annex IV of the Habitats Directive (92/43/EEC), and those listed in Annex I of the Birds Directive.

The Planning Authority will consult with the National Parks and Wildlife Service (a) in respect of any proposed development where there is a possibility that such development may have an impact on a protected area of international or national importance, and (b) take account of any licensing requirements, when undertaking, or approving development which is likely to affect plant, animal or bird species protected by national or European legislation.

The Council will protect and, where possible, enhance the natural heritage sites designated under EU legislation and national legislation (Habitats Directive, Birds Directive, European Communities (Birds Chapter 9 Heritage, Culture and the Arts Kilkenny City and County Development Plan Volume 1 128 and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan. The Council will also protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999).’

Development Management Requirements (Sections 9.2.1.1-9.2.1.5):

‘Ensure that an ecological impact assessment is carried out, by suitably qualified professional(s), for any proposed development likely to have a significant impact on rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.’

Objective 9A:

‘Continue to identify and map habitats and green infrastructure of county importance, and raise awareness and understanding of the county’s natural heritage and biodiversity identifying green corridors and measures to connect them.’

Development Managements Requirements:

- *‘To ensure that development proposals, where relevant, improve the ecological coherence of the Natura 2000 network and encourage the retention and management of landscape features that are of major importance for wild fauna and flora as per Article 10 of the Habitats Directive.’*

- *'To protect and where possible enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites.'*
- *'To ensure that appropriate mitigation and/or compensation measures to conserve biodiversity, landscape character and green infrastructure networks are required in developments where habitats are at risk or lost as part of a development.'*

'Objective 9B:

'To identify and map green infrastructure assets and sites of local biodiversity value over the lifetime of the Plan.'

Development Managements Requirements:

'Require all developments in the early pre-planning stage of the planning process to identify, protect and enhance ecological features and habitats, and making provision for local biodiversity (e.g. through protection of existing breeding sites, and provision of appropriate new infrastructure such as swift, bat and barn owl boxes, bat roost sites, green roofs, etc.) and provide links to the wider Green Infrastructure network as an essential part of the design process.'

Woodlands, Trees and Hedgerows (Section 9.2.5)

'The Council will promote the planting of native tree and shrub species, by committing to using native species (of local provenance wherever possible) in its landscaping work and on County Council property and maximise the opportunity to enhance biodiversity within the City & County during the life time of the plan'.

Development Managements Requirements:

- *'To protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character of the county, and to ensure that proper provision is made for their protection and management, when undertaking, approving or authorising development.'*
- *'To ensure that when undertaking, approving or authorising development that sufficient information is provided to enable an assessment of impacts on woodlands, trees, and hedgerows.'*
- *'To have regard to, and seek the conservation of identified trees and woodlands from a) the National Survey of Ancient and Long-Established Woodlands, b) the Tree Register of Ireland (c) sites of significance identified in the Kilkenny Woodlands Survey 1997, (d) the National Survey of Native Woodlands, and (e) Survey of Mature Trees in Kilkenny City and Environs, in the assessment of planning applications.'*
- *'To retain hedgerows, and other distinctive boundary treatment such as stone walls, when undertaking, authorising or approving development; where the loss of the existing boundary is unavoidable as part of development, to ensure that a new hedgerow is planted using native species, and species of local provenance to replace the existing hedgerow and/or that the wall is re-built using local stone and local vernacular design.'*
- *'To discourage the felling of mature trees to facilitate development and, where appropriate make use of Tree Preservation Orders to protect important trees and groups of trees which may be at risk or have an amenity, biodiversity or historic value.'*

- *‘To require the planting of native broadleaved species, and species of local provenance, in new developments as appropriate.’*

Invasive Species (Section 9.2.10):

Development Management Requirements:

- *‘To require relevant development proposals to address the presence or absence of invasive alien species on proposed development sites and (if necessary) require applicants to prepare and submit an Invasive Species Management Plan where such a species exists to comply with the provisions of the European Communities (Birds and Natural Habitats) Regulations 2011-2015.’*
- *‘For proposals connected to surface water systems, risks associated with the spread of crayfish plague shall be considered and applicants should submit a crayfish plague management strategy where appropriate.’*

Native Plant Species (Section 9.2.11):

‘Where possible, the use of native plants and seeds from indigenous seed sources should be used on all developments and landscape projects/treatments. This will help to:

- *contribute to national commitments on the conservation of biological diversity by establishing native habitats and reducing the planting and dispersion of non-native plants.*
- *support a reduction in the threat posed by the importation of pests and diseases carried on non-native (and non-indigenously sourced) plant material.*
- *compensate for loss of habitat.*
- *maintain regional identity, landscape character and diversity.’*

Development Managements Requirements:

- *‘The Council will promote the use of native plants and seeds from indigenous seed sources in all landscape projects.’*

6.3.4.2 Ferrybank – Belview Local Area Plan 2017

The Ferrybank-Belview Local Area Plan (‘FBLAP’) 2017 outlines a strategy for the proper planning and sustainable development of an area of land in south Co. Kilkenny, stretching from Grannagh to Belview and from the Lower Suir Estuary to the line of the Waterford bypass (N25) [60].

The FBLAP was Adopted by KCC on 18th December 2017 and came into effect on 15th January 2018. It was valid for six years following adoption by KCC; however, the FBLAP has not yet been replaced. On the 11th June 2024, KCC published an Issues Paper for the proposed Ferrybank / Belview Local Area Plan 2025-2031 [61]. The consultation period for this Issue Paper was closed on the 12th July 2024. However, on the 18th July 2025, KCC announced that it was now proposed to incorporate the Ferrybank / Belview settlement plants into Variation No. 6 of the KCCDP 2021-2027 [62]. This consultation is open until 19th September 2025. This draft variation does not outline specific objectives or policies for the Ferrybridge / Belview area.

Therefore, at the time of writing this report, the objectives outlined in the FBLAP (2017) are considered to be the most relevant objectives relating to the Proposed Development. The FBLAP (2017) contains a number of policies and objectives that relate directly to the protection of biodiversity and natural heritage in the context of the Proposed Development.

Objective 1A:

‘To implement the provisions of Articles 6(3) and 6(4) of the EU Habitats Directive.’

Objective 1B:

'To ensure that any plan within the functional area of the Planning Authority is subject to appropriate assessment in accordance with the Guidance Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities, 2009 and is assessed in accordance with Article 6 of the Habitats Directive in order to avoid adverse impacts on the integrity and conservation objectives of the site.'

Development Management Standards (Section 5.6)

5DM3:

'Encourage appropriate screening of future developments in the Belview Industrial area. The following principles will be applied:

- Existing woodlands and hedgerows should be retained and incorporated wherever feasible.*
- The protection and buffering of existing residential developments will be a priority.*
- Landscaping schemes for any development should form an integral part of the overall development proposal. A woodland planting buffer of 15-20 metres will generally be required inside any industrial site boundary unless a suitable alternative mitigation measure is agreed with the Planning Authority. This landscape buffer will be required to be densely planted with a mix of coniferous and deciduous species. In all cases the Council encourages advance planting which it considers would be beneficial to ensure some plant maturation prior to construction.*
- Buildings and other structures shall be located so as to provide optimum screening and noise buffering to surrounding land-uses, particularly to existing residential properties. In cases where structures are to be constructed proximate to existing residential structures, the potential for these structures to impose on the neighbouring residential amenity by virtue of their heights and bulk should be appropriately mitigated in the assessment of all planning applications.'*

5DM4:

'To require that all significant industrial developments in the Belview area must submit a Construction Management Plan prior to commencement of a development.'

Objective 8B:

'To protect and, where possible, enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts). This protection will extend to any additions or alterations to sites that may be arise during the lifetime of this plan.'

Objective 8C:

'To protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999).'

Heritage Development Management Standards (Section 7.4)

7DMA:

'Require the incorporation of natural features where appropriate and to protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or

contribute to landscape character, and to ensure that proper provision is made for their protection and management, when undertaking, approving or authorising development.'

7DMB:

'To ensure that when undertaking, approving or authorising development that sufficient information is provided to enable an assessment of impacts on woodlands, trees and hedgerows.'

7DMC:

'Ensure that an ecological assessment is carried out for any proposed development likely to have a significant impact on rare and threatened species including those species protected by law and their habitats. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment.'

7DMD:

'All lighting within the Plan area will be directional lighting designed specifically in relation to biodiversity.'

6.4 Receiving Environment

6.4.1 Desk-Based Study Results

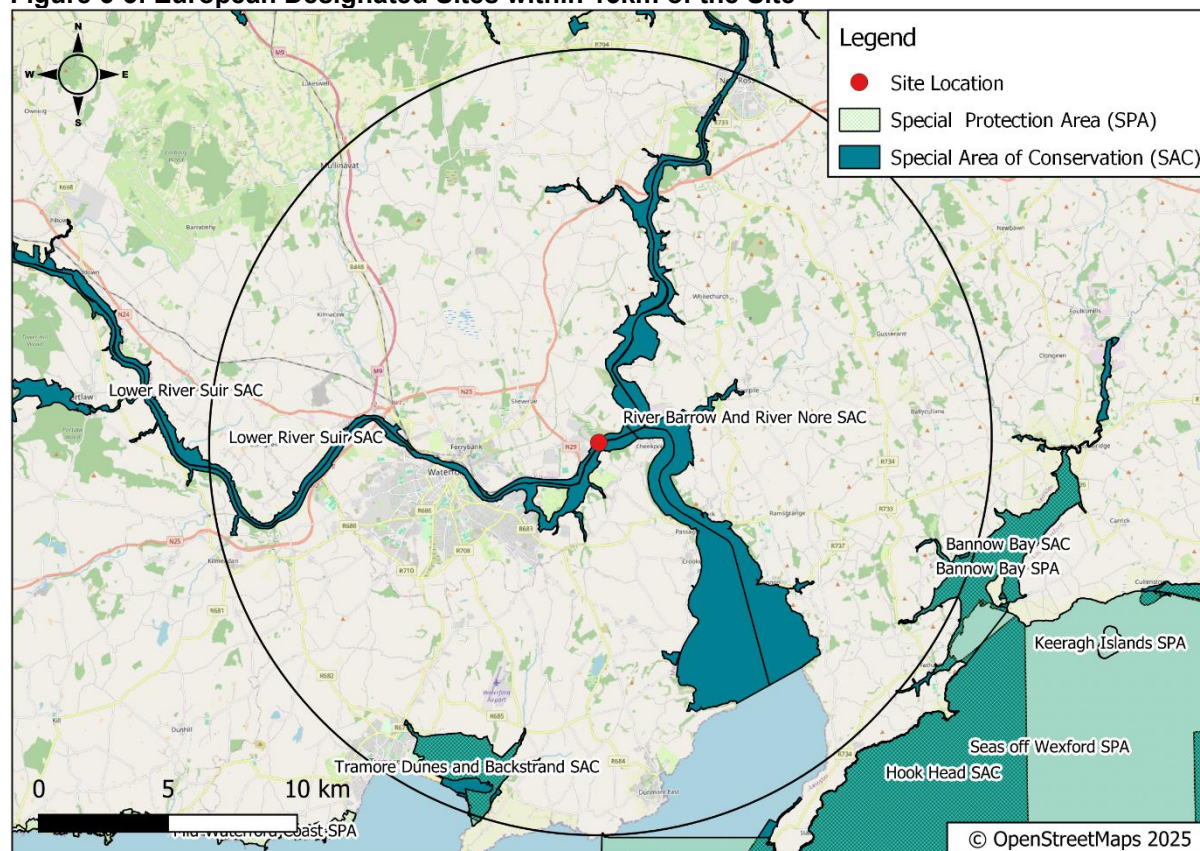
6.4.1.1 Statutory Nature Conservation Sites

In accordance with the European Commission Methodological Guidance [63] a list of European sites that can be potentially affected by the Proposed Development has been compiled. Guidance for Planning Authorities prepared by the Department of Environment, Heritage and Local Government [64] states that defining the likely Zone of Influence for the screening and the approach used will depend on the nature, size, location, and the likely effects of the project. The key variables determining whether or not a particular European Designated site is likely to be negatively affected by a project are:

- The physical distance from the Site to the European Designated site;
- The presence of impact pathways;
- The sensitivities of the ecological receptors; and,
- The potential for in-combination effects.

All SPAs and SACs within 15km have been considered to assess their ecological pathways and functional links. As acknowledged in the OPR guidelines [65], few projects have a Zone of Influence this large; however, the identification of European Designated sites within 15km has become widely accepted as the starting point for the screening process. For this reason, all SPAs and SACs within 15km have been identified for consideration as part of the screening.

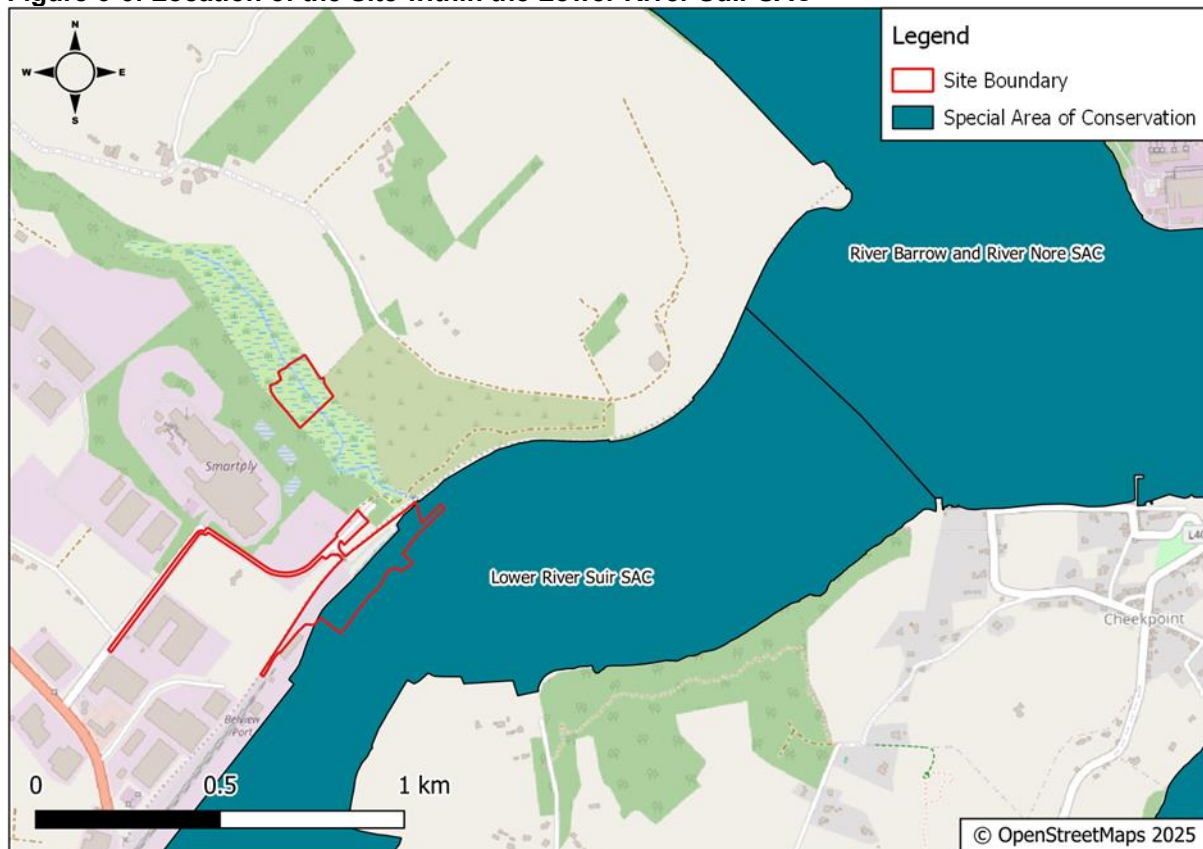
There are seven European Designated sites located within 15km of the Site – these are identified in Figure 6-5 and Table 6-5.

Figure 6-5: European Designated Sites within 15km of the Site**Table 6-5: European Designated Sites with 15km of the Site**

Site Name	Code	Distance (km)	Direction from the Site
Special Areas of Conservation ('SAC')			
Lower River Suir SAC	002137	Within	-
River Barrow and River Nore SAC	002162	ca. 1.1km	NE
Tramore Dunes and Backstrand SAC	000671	ca. 11.2km	SW
Bannow Bay SAC	000697	ca. 12.8km	SE
Special Protection Area ('SPA')			
Tramore Back Strand SPA	004027	ca. 11.2km	SW
Bannow Bay SPA	004033	ca. 13.4km	SE
Seas off Wexford SPA	004237	ca. 14.8km	S

It should be noted that the Site is located within the Lower River Suir SAC and is hydrologically connected to the River Barrow and River Nore SAC via the Lower Suir Estuary.

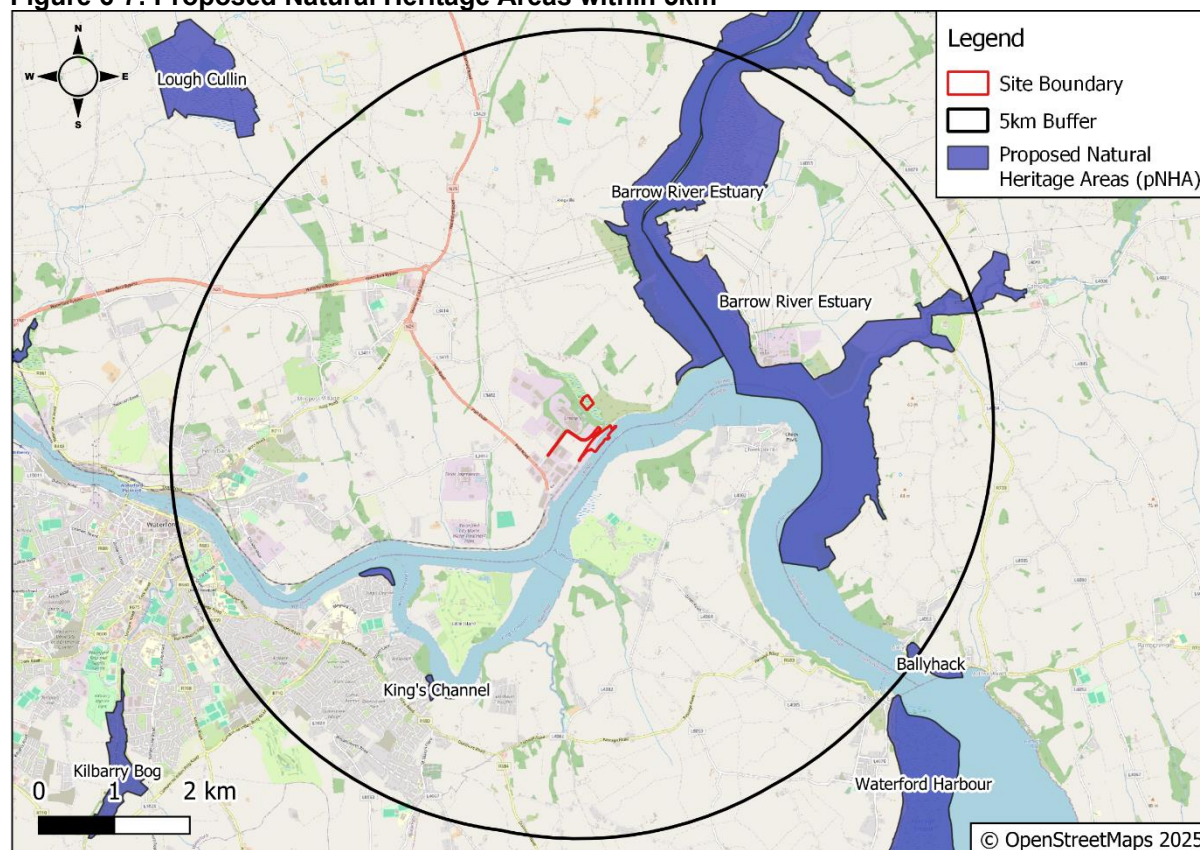
Further consideration to the European Designated sites outlined in Table 6-5 is provided in the Stage 2: Appropriate Assessment ('NIS') that has been submitted as part of the overall planning application.

Figure 6-6: Location of the Site within the Lower River Suir SAC

6.4.1.2 Natural Heritage Areas

The NHAs and pNHAs within a 5km radius of the Site have been considered in line with the KCCDP 2021-2027 *Development Management Requirements – Sections 9.2.1.1 – 9.2.1.5* [7].

No NHAs or pNHAs are located within the Site or adjacent to the Site; however, there are three pNHAs within 5km of the Site, illustrated in Figure 6-7 and described in Table 6-6.

Figure 6-7: Proposed Natural Heritage Areas within 5km**Table 6-6: Proposed Natural Heritage Areas within 5km of the Site**

Site Name	Code	Distance (km) & Direction	Description
Proposed Natural Heritage Areas ('pNHA')			
Barrow River Estuary	000698	ca. 1.0km NE	As per the River Barrow and River Nore SAC.
Kings Channel	001702	ca. 2.6km SW	No description available
Ballyhack	000695	ca. 4.8km SE	No description available

6.4.1.3 Protected Species

Table 6-7 provides a summary of records held by the NBDC for legally protected or otherwise notable species that occur within 2km of the Site at the time of writing this report [33]. The NBDC records were checked on 24th June 2025. The following NBDC 2km grids have been checked: S61S, S61M, S61L, S61R, S61W, S61X, S6814, S6815, S6312, S6313, S6314, S6411, S6511, S6611, S6711, S6812, S6813 [33].

Only species recorded within the past 10 years were included in Table 6-7. The parameter of 10 years was chosen based on habitat adaption and modification; it is considered that any records over 10 years old are not representative of the current distribution of species populations.

Table 6-7: NBDC Notable / Protected Species within 2km of the Site

Common Name	Scientific Name	Date of last record	Designation
Amphibian Species			
Smooth Newt	<i>Lissotriton vulgaris</i>	25/04/2018	Wildlife Acts 1976 / 2000
Bird Species			
Barn Owl	<i>Tyto alba</i>	22/07/2021	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Red List
Barn Swallow	<i>Hirundo rustica</i>	10/05/2022	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Bar-tailed Godwit	<i>Limosa lapponica</i>	30/04/2020	Wildlife Acts 1976 / 2000 EU Birds Directive Annex I Birds of Conservation Concern Red List
Blackbird	<i>Turdus merula</i>	15/05/2022	Wildlife Acts 1976 / 2000
Blackcap	<i>Sylvia atricapilla</i>	15/05/2022	Wildlife Acts 1976 / 2000
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	29/02/2024	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Black-tailed Godwit	<i>Limosa limosa</i>	29/02/2024	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Red List
Blue Tit	<i>Cyanistes caeruleus</i>	30/04/2020	Wildlife Acts 1976 / 2000
Bullfinch	<i>Pyrrhula pyrrhula</i>	30/04/2020	Wildlife Acts 1976 / 2000
Chaffinch	<i>Fringilla coelebs</i>	15/05/2022	Wildlife Acts 1976 / 2000
Chiffchaff	<i>Phylloscopus collybita</i>	15/05/2022	Wildlife Acts 1976 / 2000
Coal Tit	<i>Parus ater</i>	30/04/2020	Wildlife Acts 1976 / 2000
Collared Dove	<i>Streptopelia decaocto</i>	30/04/2020	Wildlife Acts 1976 / 2000
Common Buzzard	<i>Buteo buteo</i>	29/02/2024	Wildlife Acts 1976 / 2000
Common Pheasant	<i>Phasianus colchicus</i>	10/05/2022	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II and III
Common Starling	<i>Sturnus vulgaris</i>	15/05/2022	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Common Snipe	<i>Gallinago gallinago</i>	04/02/2019	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II and III Birds of Conservation Concern Red List

Common Name	Scientific Name	Date of last record	Designation
Common Tern	<i>Sterna Hirundo</i>	30/04/2020	Wildlife Acts 1976 / 2000 EU Birds Directive Annex I Birds of Conservation Concern Amber List
Common Woodpigeon	<i>Columba palumbus</i>	15/05/2022	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II and III
Cormorant	<i>Phalacrocorax carbo</i>	29/02/2024	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Curlew	<i>Numenius arquata</i>	29/02/2024	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II Birds of Conservation Concern Red List
Dunlin	<i>Calidris alpina</i>	29/02/2024	Wildlife Acts 1976 / 2000 EU Birds Directive Annex I Birds of Conservation Concern Red List
Dunnock	<i>Prunella modularis</i>	15/05/2022	Wildlife Acts 1976 / 2000
Goldcrest	<i>Regulus regulus</i>	30/04/2020	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Goldfinch	<i>Carduelis carduelis</i>	07/08/2023	Wildlife Acts 1976 / 2000
Great Spotted Woodpecker	<i>Dendrocopos major</i>	19/12/2022	Wildlife Acts 1976 / 2000
Great Tit	<i>Parus major</i>	30/04/2020	Wildlife Acts 1976 / 2000
Grey Heron	<i>Ardea cinerea</i>	29/02/2024	Wildlife Acts 1976 / 2000
Hen Harrier	<i>Circus cyaneus</i>	18/10/2022	Wildlife Acts 1976 / 2000 EU Birds Directive Annex I Birds of Conservation Concern Amber List
Herring Gull	<i>Larus argentatus</i>	29/02/2024	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Hooded Crow	<i>Corvus cornix</i>	30/04/2020	Wildlife Acts 1976 / 2000
House Sparrow	<i>Passer domesticus</i>	15/05/2022	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Jackdaw	<i>Coloeus monedula</i>	15/05/2022	Wildlife Acts 1976 / 2000
Jay	<i>Garrulus glandarius</i>	03/10/2020	Wildlife Acts 1976 / 2000
Kingfisher	<i>Alcedo atthis</i>	30/04/2020	Wildlife Acts 1976 / 2000

Common Name	Scientific Name	Date of last record	Designation
			EU Birds Directive Annex I Birds of Conservation Concern Amber List
Lapwing	<i>Vanellus vanellus</i>	03/10/2020	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II Birds of Conservation Concern Red List
Little Egret	<i>Egretta garzetta</i>	29/02/2024	Wildlife Acts 1976 / 2000 EU Birds Directive Annex I
Long-tailed Tit	<i>Aegithalos caudatus</i>	30/04/2020	Wildlife Acts 1976 / 2000
Magpie	<i>Pica pica</i>	30/04/2020	Wildlife Acts 1976 / 2000
Mallard	<i>Anas platyrhynchos</i>	30/04/2020	Wildlife Acts 1976 / 2000 EU Birds Directive Annex II and III Birds of Conservation Concern Amber List
Mute Swan	<i>Cygnus olor</i>	30/04/2020	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Oystercatcher	<i>Haematopus ostralegus</i>	29/02/2024	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Red List
Pied Wagtail	<i>Motacilla alba yarrellii</i>	15/05/2022	Wildlife Acts 1976 / 2000
Redshank	<i>Tringa tetanus</i>	29/02/2024	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Red List
Robin	<i>Erithacus rubecula</i>	30/04/2020	Wildlife Acts 1976 / 2000
Shelduck	<i>Tadorna tadorna</i>	29/02/2024	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Song Thrush	<i>Turdus philomelos</i>	30/04/2020	Wildlife Acts 1976 / 2000
Sparrowhawk	<i>Accipiter nisus</i>	07/08/2023	Wildlife Acts 1976 / 2000
Tree Sparrow	<i>Passer montanus</i>	30/04/2020	Wildlife Acts 1976 / 2000 Birds of Conservation Concern Amber List
Whooper Swan	<i>Cygnus cygnus</i>	04/02/2019	Wildlife Acts 1976 / 2000 EU Birds Directive Annex I Birds of Conservation Concern Amber List
Wren	<i>Troglodytes troglodytes</i>	15/05/2022	Wildlife Acts 1976 / 2000
Mammal Species			

Common Name	Scientific Name	Date of last record	Designation
Eurasian Red Squirrel	<i>Sciurus vulgaris</i>	23/02/2016	Wildlife Acts 1976 / 2000
Irish Hare	<i>Lepus timidus subsp.</i>	10/05/2022	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex V
Pine Marten	<i>Martes martes</i>	30/06/2020	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex V
West European Hedgehog	<i>Erinaceus europaeus</i>	12/10/2023	Wildlife Acts 1976 / 2000
Marine Mammals			
Common Dolphin	<i>Delphinus delphis</i>	21/12/2023	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Common Porpoise	<i>Phocoena phocoena</i>	20/04/2023	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV Threatened Species: OSPAR Convention
True Seal	<i>Phocidae</i>	01/01/2025	Wildlife Acts 1976 / 2000
Invasive Species			
American Skunk-cabbage	<i>Lysichiton americanus</i>	13/07/2024	Invasive Species: Medium Impact Invasive Species Regulation S.I. 477 (Ireland) EU Regulation No. 1143/2014
Australian flatworm	<i>Australoplana sanguinea</i>	01/05/2020	Invasive Species: Medium Impact Invasive Species
Butterfly-bush	<i>Buddleja davidii</i>	04/06/2023	Invasive Species: Medium Impact Invasive Species
Chinese Mitten Crab	<i>Eriocheir sinensis</i>	15/01/2025	Invasive Species: High Impact Invasive Species Regulation S.I. 477 (Ireland)
Greater White-toothed Shrew	<i>Crocidura russula</i>	26/03/2020	Invasive Species: Medium Impact Invasive Species
Grey Squirrel	<i>Sciurus carolinensis</i>	24/10/2022	Invasive Species: High Impact Invasive Species Regulation S.I. 477 (Ireland)

Common Name	Scientific Name	Date of last record	Designation
			EU Regulation No. 1143/2014
Himalayan Honeysuckle	<i>Leycesteria formosa</i>	05/02/2022	Invasive Species: Medium Impact Invasive Species
Japanese Knotweed	<i>Reynoutria japonica</i>	07/08/2023	Invasive Species: High Impact Invasive Species Regulation S.I. 477 (Ireland)
New Zealand Pigmyweed	<i>Crassula helmsii</i>	07/09/2016	Invasive Species: High Impact Invasive Species Regulation S.I. 477 (Ireland)
Rabbit	<i>Oryctolagus cuniculus</i>	01/10/2015	Invasive Species: Medium Impact Invasive Species
Red-necked Wallaby	<i>Macropus rufogriseus</i>	09/07/2024	Invasive Species: Medium Impact Invasive Species
Rhododendron ponticum	<i>Rhododendron ponticum</i>	30/04/2020	Invasive Species: High Impact Invasive Species
Sika Deer	<i>Cervus nippon</i>	04/10/2018	Invasive Species: High Impact Invasive Species Regulation S.I. 477 (Ireland)
Spanish Bluebell	<i>Hyacinthoides hispanica</i>	04/04/2022	Regulation S.I. 477 (Ireland)
Sycamore	<i>Acer pseudoplatanus</i>	03/10/2020	Invasive Species: Medium Impact Invasive Species
Three-cornered Garlic	<i>Allium triquetrum</i>	27/04/2023	Invasive Species: Medium Impact Invasive Species Regulation S.I. 477 (Ireland)

6.4.1.4 I-WeBS Data

The Site is not located within or adjacent to any SPA; however, the Site is located within the Lower Suir Estuary. The Lower Suir Estuary forms part of the 'River Suir Lower' I-WeBS site. I-WeBS records were reviewed in order to gain an understanding of the potential assemblage of bird populations that may utilise the areas within the vicinity of the Site. This data included a number of subsites within the River Suir Lower site and the Waterford Harbour site (refer to Table 6-1).

The data received from BirdWatch Ireland covers the period from 2012/2013 winter season to 2023/2024 winter season. A total of 43 species have been recorded during the 12-year period. However, during the 2023/2024 winter season, a total of 26 species were recorded, which included black-headed gull, bar-tailed godwit, black-tailed godwit, common gull, cormorant, curlew, dunlin, great black-backed gull, great crested grebe, great northern diver, greenshank, grey heron, golden plover, herring gull, knot, lesser black-backed gull, light-bellied brent goose, little egret, mallard, oystercatcher, redshank, shag, shelduck, teal, turnstone and wigeon.

It should be noted that no data was received for River Suir Lower sites for the 2023/2024 winter season.

None of the species recorded in the last 10-years were recorded in numbers that would be considered of international importance. However, several species were recorded in numbers that would be considered to be of national importance, including:

- Bar-tailed godwit were recorded at numbers of national importance during the 2013/2014 season in the Waterford Harbour at Passage East - Creadan Head;
- Great crested grebe were recorded at numbers of national importance during the 2013/2014 season in the Waterford Harbour at Passage East - Creadan Head;
- Teal were recorded at numbers of national importance during the 2013/2014 & 2014/2015 seasons in the River Suir at Fiddown – Tibberaghny;
- Little egret were recorded at numbers of national importance at Barrow Bridge – Passage East during the 2023/2024 season;
- Greenshank were recorded at numbers of national importance at Passage East – Creadan Head during the 2023/2024 season;
- Greenshank were recorded at numbers of national importance at Barrow Bridge – Passage East during the 2023/2024 season;
- Sanderling were recorded at numbers of national importance at Passage East – Creadan Head during the 2023/2024 season;
- Ringed plover were recorded at numbers of national importance at Passage East – Creadan Head during the 2023/2024 season; and,
- Black-tailed godwit were recorded at numbers of national importance at Barrow Bridge – Passage East during the 2023/2024 season.

It should be noted that these subsites are not located within the immediate vicinity of the Site; the nearest records to the Site would be from the Passage East area, which is located ca. 3.5km southeast of the Site. Therefore, these populations of bird species are not located within close proximity to the Site. Furthermore, it should be noted that none of these species identified are considered to exclusively occur within this area.

6.4.1.5 IWDG Data

IWDG Data Request 2013-2022

There are at least 27 species of cetaceans known to occur within Irish waters [66], some of which are commonly sighted, whereas others have only been recorded as strandings and were possibly vagrants to Irish waters [67].

It is estimated that between ten and 12 cetacean species can be found in Ireland year-round, while a further six species are considered to be seasonal visitors to Irish waters, and eight species are classified as rare visitors or vagrants to Irish waters [68].

A data request was submitted to the IWDG on 2nd October 2023 for all available records within the study area, which included Waterford Estuary, Lower Suir Estuary, River Barrow and River Nore, and the Celtic Sea from Kilmore Quay to Bunmahon. The information provided by the IWDG included recordings from January 2013 to December 2022. In addition, the IWDG sightings database was also reviewed to obtain the most up-to-date sightings information for the vicinity of Waterford Estuary [39]. The sightings recorded from this database from December 2022 to 22nd July 2025. The sightings recorded are detailed in Table 6-8 below.

A total of 586 sightings, amounting to 6146 individual cetaceans, were recorded. Of these, the common dolphin made up ca. 74% of overall sightings. Three other dolphin species were recorded, bottlenose dolphin, harbour porpoise and Risso's dolphin. Five whale species were also recorded: fin whale, pilot whale, humpback whale, minke whale and sperm whale. A total of 128 sightings could not be identified to a species level.

The majority of these sightings were recorded downstream of the Site, primarily within the Waterford Estuary (see Figure 6-8 below). The majority of the Sites were located from Passage East and further downstream in the Waterford Estuary.

Figure 6-8: IWDG Sightings

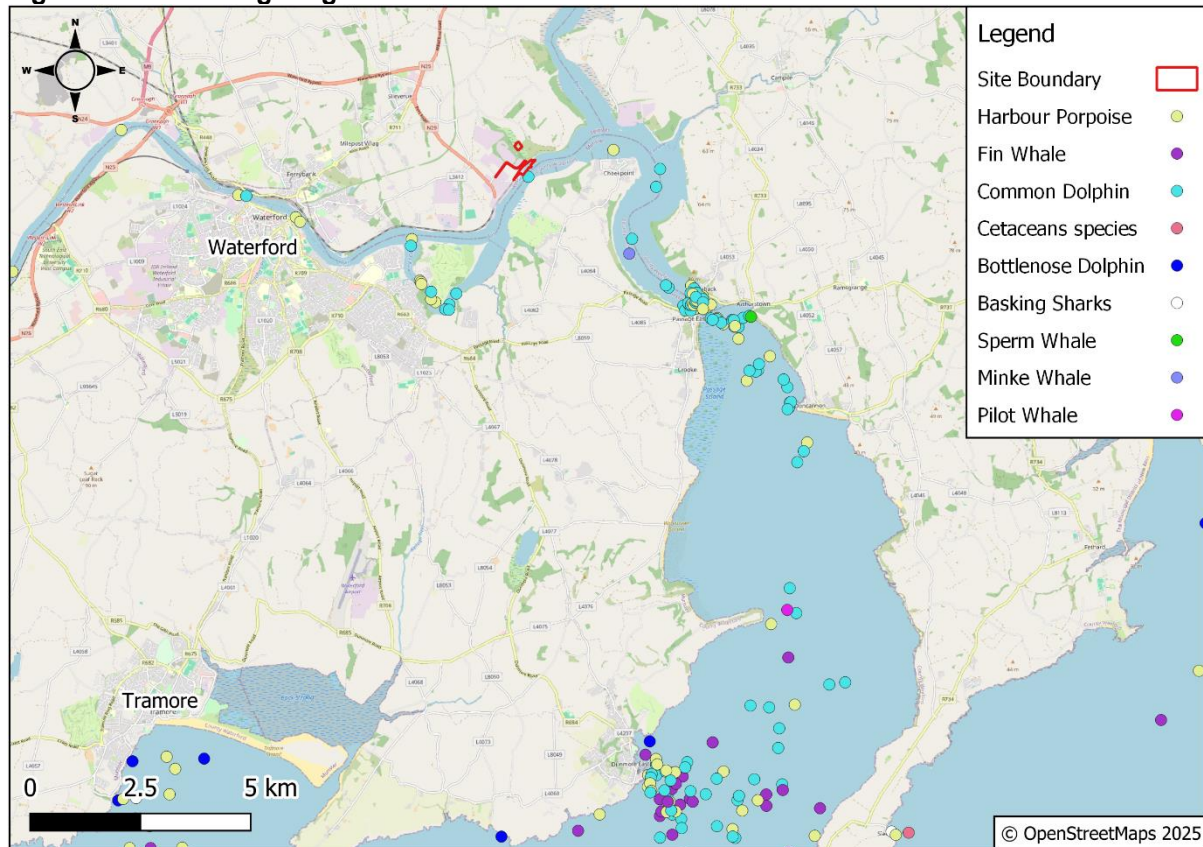


Table 6-8: Species recorded by the IWDG from 2013 to 2025 in the Waterford Estuary

Species	No. of Sightings	No. of Individuals	% of Overall Individuals
Dolphins & Porpoise			
Common dolphin	153	4706	73.96%
Harbour porpoise	110	238	3.74%
Risso's dolphin	22	112	1.76%
Bottlenose dolphin	18	118	1.85%
Whales			
Fin whale	119	329	5.17%
Minke whale	23	44	0.69%
Humpback whale	11	14	0.22%
Sperm Whale	1	1	0.02%
Pilot Whale	1	20	0.31%

Species	No. of Sightings	No. of Individuals	% of Overall Individuals
Non-Annex IV Species			
Basking shark	25	217	3.41%
Individuals not Identified to a Species Level			
Dolphin species	43	304	4.78%
Dolphin species possibly harbour porpoise	20	143	2.25%
Large whale species	38	70	1.10%
Whale species	15	24	0.38%
Cetacean species	10	17	0.27%
Large fin	1	5	0.08%
Medium whale species	1	1	0.02%
Total	611	6363	-

6.4.1.6 Fisheries Studies

As part of this assessment, a desk-based fisheries assessment has been undertaken for the type of fish found in Waterford Estuary, and has been peer-reviewed by Dr Martin O'Farrell of Aztec Management Consultants.

This section provides a summary of the current status of fish in the Waterford Estuary (Barrow-Nore-Suir estuary) and designated fish species in the estuary, based on best scientific knowledge and an assessment of the potential effects of the quay extension.

This desk-based assessment has utilised IFI National WFD surveillance monitoring programme data [69, 70] and the Fish Report prepared by Dr Martin O'Farrell in support of the Port of Waterford Maintenance Dredging Programme (DaS EPA Reg. No.: S0013-05) that includes survey results for fish impingement studies carried out by Dr Martin O'Farrell at Great Island thermal electricity generating station cooling water system ('CWS') during the years 2017, 2018, 2020, 2021, 2022 and 2023 [71, 72, 73, 73, 74, 75].

It should be noted that although the survey methodology used for the IFI WFD surveillance monitoring programme was identical in all survey years (2010, 2013, 2016 and 2019), the estuarine fish metrics used to assess status by way of Estuarine Multi-metric Fish Index ('EMFI') and Ecological Quality Ratio ('EQR') during the 2016 and 2019 surveys were more sophisticated than those used during the earlier surveys. Furthermore, it is clear that the numbers of species recorded using different survey methodologies (WFD – beach seines / fyke nets / trawl; Fish Impingement Studies at Great Island – station cooling water abstraction) differed among sampling methods, with the highest number of species recorded during the fish impingement studies. However, sampling fish for the WFD cannot involve exhaustive and unduly costly survey methodology and it is understandable why some species groups are more or less represented among the species recorded by different sampling methods.

A generalised categorisation of fish in estuaries for part or all of their lives would include:

- Marine - species that spawn at sea;
- Freshwater - species that spawn in fresh water;
- Estuarine-resident - species that complete their life cycle within the estuary; and,

- Diadromous - species that feed at sea and migrate into fresh water to spawn (anadromous¹) or undergo the reverse migration (catadromous²).

The fish species that occur within the Waterford Estuary include primarily estuarine species and diadromous species, with other marine and freshwater opportunistic species occurring in the estuary as well.

For fish species inhabiting the Waterford Estuary for all or part of their lives, there are corresponding preferential ranges of salinity, temperature and oxygen concentrations. Varying turbidity / suspended solids levels are normal for any estuarine regime, and for many species, high turbidity and high suspended solids levels facilitate their avoidance of piscivorous fish and birds.

IFI, the competent authority, carried out survey work within the Southern River Basin District, Barrow, Nore and Suir Estuary, as part of the National WFD surveillance monitoring programme during the years 2016 and 2019 [70, 69]. The overall results of this surveillance monitoring are presented in Table 6-9 below.

Table 6-9: IFI WFD Fish Monitoring Results from the 2016 and 2019 Surveys

Monitoring Year	Total No. of Fish Caught	Total No. of Species	Dominant Species Caught and Relative Abundance (%)	Key Species for Conservation Status and Relative Abundance (%)
2019	3482	31	Flounder – 20.05% Goby (sand & common) – 34.32% Sprat – 29.72%	Brown Trout – 0.37% Smelt – 0.66% Twaite Shad – 0.26% European Eel – 4.77%
2016	9449	29	Flounder – 23.33% Sand Goby – 23.47% Sprat – 15.47%	Brown Trout – 0.69% Smelt – 5.73% Twaite Shad – 0.44% European Eel – 2.32%

In addition to the IFI WFD programme, this assessment also considered the fish impingement studies at Great Island CWS. During these surveys, a total of 48 species of fish have been recorded from 2017-2023.

Therefore, following a review of the above WFD surveillance monitoring reports and the fish impingement studies undertaken at Great Island CWS, a total of 49 different fish species have been recorded in the Waterford Estuary.

A study published in 2013 by Harrison and Kelly lists 70 fish species as representative of reference / undisturbed Irish estuaries [76]. Of the species listed by Harrison and Kelly, a total of 49 species have been recorded in Waterford Harbour during the various fish surveys detailed above.

Of these species, it is well documented that the Waterford Estuary is designated for five fish species under the Lower River Suir SAC and the River Barrow and River Nores SAC:

- Atlantic salmon (*Salmo salar*);
- Sea lamprey (*Petromyzon marinus*);

¹ Anadromous species include the Atlantic salmon (*Salmo salar*) and river lamprey (*Lampetra fluviatilis*).

² Catadromous species include species such as the European eel (*Anguilla anguilla*).

- Brook lamprey (*Lampetra planeri*);
- River lamprey (*Lampetra fluviatilis*); and,
- Twaité shad (*Alosa fallax*).

However, of the species listed above, it should be noted that brook lamprey has not been recorded within the Waterford Estuary, as this species lives its entire lifecycle within freshwater habitat. In addition, European eel is a known species to utilise the Waterford Estuary. A description of each species within the Waterford Estuary is provided below:

Atlantic Salmon

The Atlantic salmon is an anadromous species, spawning in freshwater and migrating to sea, typically after one or more years of life in freshwater (depending on the productivity of the freshwater habitat and the temperature regime of the freshwater habitat, which can both be related to latitude) throughout its geographic range.

Atlantic salmon smolt pass seaward through Waterford Estuary rapidly, and all the available evidence on the duration of passage of Atlantic salmon through estuaries suggests that they pass through the estuary during a period lasting perhaps one to several days. Salmon smolt passing seaward will continue feeding during their seaward migration through the Waterford Estuary.

The duration of passage through the estuary of maturing adult salmon on their return migration to their natal river will depend on the flows emanating from their natal river. During droughts, when there is limited freshwater flow in rivers, returning adults will have prolonged residence within the Waterford Estuary. Whereas during non-drought conditions, returning adult salmon will pass rapidly through Waterford Estuary and enter their natal river when adequate freshwater flows are available to facilitate their entry and upstream migration in their natal river.

Typically, early-running multi-sea-winter ('MSW') fish enter natal rivers during the spring months, while one-sea-winter ('1SW') and MSW summer fish will enter their natal rivers during the summer months. It should be noted that mature adults on their return migration do not feed within the estuary during their migration. Therefore, it can be stated that they have very little dependency on the estuarine environment.

Sea Lamprey

The spawning adult sea lamprey migrate from the sea through the Waterford Estuary and to freshwater spawning habitat during the late spring months and typically spawn in suitable shallow flowing water habitat with stony substrate during the months of May and June. The juveniles (ammocoetes) spend several years in suitable silty substrates before they transform (metamorphose), typically during the autumn months, and make their downstream migration to the sea.

These transformers have been recorded in the Waterford Estuary during the fish impingement studies undertaken by Dr. Martin O'Farrell at Great Island. It is believed that the transformers typically migrate through the estuary quickly and enter the open sea, where they attach to suitable hosts and commence feeding on host blood and other body fluids. There is evidence that sea lamprey are disloyal to their natal river. Accordingly, this species can be considered to have at least regional populations from which adults ascend into suitable spawning rivers, which are not necessarily their natal river to spawn and die.

River Lamprey

The spawning adult river lamprey also migrate from the sea through the Waterford Estuary and to freshwater spawning during the early spring months. This species typically spawn in suitable shallow flowing water habitat with stony substrate during the months of April and May,

after which they die. The juveniles (ammocoetes) spend several years before they transform (metamorphose) and make their downstream migration to the sea, typically during the spring months.

These transformers have also been recorded in the Waterford Estuary during fish impingement studies undertaken by Dr. Martin O'Farrell at Great Island, and adults have been recorded during fish impingement studies carried out during June. However, unlike sea lamprey, river lamprey spend all their adult lives in an estuarine / coastal environment where they attach to suitable hosts and commence feeding on host blood and other body fluids. Accordingly, river lamprey are highly estuary-dependent during their adult lives. There is no evidence that adults return to their natal river to spawn, and it is likely that regional populations exist which spawn in a number of local rivers, which are not necessarily their natal river.

Twaite Shad

In the Waterford Estuary, adult Twaite shad are known to enter the lower reaches of the River Barrow, where they spawn in the vicinity of St Mullins in April and May each year. Spawning activity peaks during May, and eggs will hatch in a short time afterwards. Then, the young shad begin to drift into the estuary proper, where conditions of relatively low salinity are experienced.

While Twaite shad is considered a diadromous species, estuarine residence time for juveniles can be prolonged. There is evidence from the Waterford Estuary that fish in their first and second year of life continue to reside in the estuary. This evidence comes from WFD surveillance monitoring surveys carried out by Inland Fisheries Ireland [70, 69] and from the fish impingement studies carried out at the Great Island thermal electricity generating station cooling water system [73]. The fork-length frequency distribution of Twaite shad washed off the band-screens at Great Island CWS during November 2022 confirms the presence of 0+(<13.5cm), 1+ (15.5-22.4cm) and a small number of older fish (>24.0cm) [74].

European Eel

The juveniles of this catadromous species typically arrive on Irish shores as transparent glass eels during the early winter months. Pigmentation occurs during the following spring months, and some of the survivors ascend into freshwater rivers and lakes, typically during the months of April and May. Older and larger individuals, termed bootlace eels, also migrate upstream from estuaries and the lower reaches of rivers somewhat later in the year, typically during the month of August. Those individuals which ascend into freshwater habitat typically feed and grow for a relatively long period of time, depending on the productivity of the environment and the sex of the individual, before maturing sexually and commencing their downstream migration to the sea and eventually to the western Atlantic Ocean, where spawning occurs. Maturing males never attain total lengths exceeding about 44cm and are typically relatively young (less than about 10 years old) while maturing females typically exceed 44cm in total length and can be much older (perhaps 10-30 years in age). These maturing eels typically migrate downstream from Irish catchments during the autumn months under conditions of elevated river flow and especially during the dark of the moon. These silver eels were formally captured in commercial fisheries as they migrated downstream. Some of the rivers discharging to the Waterford Estuary supported such fisheries in the past.

It is well known that a percentage of eel do not migrate upstream into freshwater habitat but remain in productive estuarine environments throughout their feeding and growing (yellow) life stage. This is the case in the Waterford Estuary, where significant numbers of feeding / yellow eel live throughout their lives before maturing and migrating to sea to spawn. Prior to the termination of commercial fisheries for eel in the Republic of Ireland in 2009, a number of fishermen in Waterford Estuary exploited this resource commercially using a combination of baited baskets and fyke nets. Typically, these estuary fishers used catches from flood or ebb 'sprat weirs' at many locations throughout Waterford Estuary to collect quantities of fish, some

of which were of marketable size but most of which were small and used as bait in the baskets. The results of the WFD surveillance monitoring surveys carried out by the IFI in 2010, 2013 and 2016 also attest to the presence of large numbers of yellow eel in Waterford Estuary [70].

The European eel is particularly abundant in Waterford Estuary and is also particularly sensitive to many environmental stimuli and would be expected to swim rapidly away from an approaching dredging operation.

Ecological Status of Fish in Waterford Estuary

The WFD surveillance monitoring survey work and other research within the Waterford Estuary have identified a wide range of fish species present in Waterford Estuary. These species represent various categories which relate to their level of dependency on the estuarine environment to complete their life cycles.

The WFD surveillance monitoring survey carried out during 2016 and 2019 by the IFI, the competent authority in the Republic of Ireland, concluded that the ecological status of fish in Waterford Estuary was of 'good' status [70, 69]. In addition, the Barrow-Nore-Suir Complex was designated by the IFI as having 'good' status in 2022 [77].

6.4.1.7 Waterford Estuary - Suspended Solid Concentration and Sedimentation

The Waterford Estuary is estuarine waterbody and is subject to naturally occurring tidally generated suspended solid ('SS') concentrations that vary at different locations. Naturally occurring, tidally generated SS concentrations were modelled by Delft Hydraulics [40], which is publicly available on the EPA website:

- Tidally generated SS concentrations range from 50 and 500mg/l at both Belview Point in the Lower Suir Estuary and at Garraunbaun Rock near Ferry Point in the White Horse Reach of the River Barrow;
- Tidally generated SS concentrations at Cheekpoint, the confluence of the River Barrow and the Lower Suir Estuary, were typically less than 150mg/l;
- Tidally generated SS concentrations downstream in the Lower Suir Estuary, between Passage East and Buttermilk Point, exceeded 1,000mg/l; and,
- Tidally generated SS concentrations at Duncannon Bar within the Suir Estuary were above 100mg/l at bed and mid-water on spring tides.

There is strong tidal action in Waterford Estuary, resulting in the mean spring tidal range varying from 3.6m at Dunmore East to 3.9m at New Ross, and the mean neap tidal range varying from 2.2m at Dunmore East to 2.4m at New Ross.

Sedimentation in the upper estuary is dominated by the tides, with greater sedimentation during spring tides, due to the greater amount of energy present. Flood tides (when the tidal current is flowing inland) transport sediment up the estuary in the water column or as bed load. However, the majority of the ebb tides (when the tidal current is flowing seaward) are not strong enough to keep the material in suspension and push the sediment back down the estuary. As a result of this, the sediment accumulates in the areas of lowest velocity. Therefore, in the outer estuary, sedimentation is primarily storm-driven and thus highly variable.

Therefore, the Waterford Estuary is considered to be complex and dynamic in its sedimentation movement, and the sedimentation is considered to be highly variable and unpredictable.

Further details regarding suspended solids within the Lower Suir Estuary and Waterford Estuary are outlined in Chapter 8 (Water).

6.4.2 MOR Environmental Field-Based Study Results

The following section provides details of the field-based assessments that were undertaken for the Site. The distribution of habitats and target notes identifying the location of features of interest are shown in Figure 6-9.

6.4.2.1 Habitats

The following section provides details of the field-based assessment that was undertaken for the Site on 15th February 2021, 31st July 2024, 25th March 2025 and 28th July 2025 and the assessments undertaken for the proposed Biodiversity Enhancement Area on 27th January 2021, 17th August 2023 and 10th July 2024.

A description of the habitats and features of ecological significance is outlined below and illustrated in Figure 6-9.

On-site Habitats

Buildings and Artificial Surfaces (BL3)

The majority of the shoreside habitats within the Site were comprised of artificial surfaces, given the fact that ca. 60% of the Site is located within the existing Belview Port. Furthermore, the entire bank of the estuary along this section of the watercourse has been heavily modified over the years as part of the development of the Port and railway. At present, the Port operates 24 hours a day and functions as a busy industrial hub, with quaysides in constant use for bulk cargo storage, container movements and the handling of goods such as steel, timber, grain and fertilisers. Heavy machinery, cranes and trucks operate daily to load and unload vessels, and large project components, including wind turbine blades, are frequently managed on-site, giving the area a highly active and industrial character.

These areas of artificial surfaces comprise hard standing and bare ground. There was limited vegetation growth within these areas, given the nature of these habitats and recent disturbances at the Site, and vegetation growth was limited primarily to cracks in the pavement / gaps in the concrete slabs within the pedestrian walkways. The species noted onsite primarily consisted of grasses, dandelion (*Taraxacum officinale*), black medick (*Medicago lupulina*), hawksbeard (*Crepis biennis*), spear thistle (*Cirsium vulgare*) and ivy (*Hedera helix*).

Dry Meadows and Grassy Verges (GS2)

This habitat was located between the shore and the Port access roads. Species present within this habitat were false oat grass (*Arrhenatherum elatius*), cock's foot (*Dactylis glomerata*), common bentgrass (*Agrostis capillaris*), Yorkshire fog (*Holcus lanatus*), perennial ryegrass (*Lolium perenne*), seashore sea mayweed (*Tripleurospermum maritimum*), creeping thistle (*Cirsium arvense*), hogweed (*Heracleum sphondylium*), buttercup (*Ranunculus repens*), common ragwort (*Jacobaea vulgaris*), bitter dock (*Rumex obtusifolius*), field mustard (*Rhamphospermum arvense*), fringed willowherb (*Epilobium ciliatum*), narrowleaf hawksbeard (*Crepis tectorum*), hairy willowherb (*Epilobium hirsutum*), ivy, old man's beard (*Clematis vitalba*), forget me not (*Myositis spp.*), wild carrot (*Daucus carota*), grey speedwell (*Veronica polita*), lady's purse (*Capsella bursa-pastoris*) and dandelion. This section gradually transitions into a more scrubby habitat towards the shoreline.

Scrub (WS1)

Areas of scrub were noted throughout the Site. This habitat was comprised predominantly of bramble (*Rubus fruticosus*), gorse (*Ulex europaeus*), stinging nettles (*Urtica dioica*) and ivy, false oat grass, cleavers (*Galium aparine*), butterfly bush (*Buddleja davidii*) and old man's beard. Areas of more mature trees were noted growing in the scrub habitat. These trees included sycamore (*Acer pseudoplatanus*), pedunculate oak (*Quercus robur*), turkey oak (*Quercus cerris*), rowan, pedunculate oak and young willow (*Salix spp.*).

Mixed Broadleaved Woodland (WD1)

This habitat was located on the northern side of the railway line. This habitat was comprised of goat willow (*Salix caprea*), hawthorn (*Crataegus monogyna*), laurel (*Laurus spp.*), Lawson's cypress (*Chamaecyparis lawsoniana*), beech (*Fagus sylvatica*), birch (*Betula spp.*), holly (*Fagus sylvatica*), ash (*Fagus sylvatica*), grey willow (*Fagus sylvatica*), sycamore and butterfly bush. The understory was dominated by ivy and bramble; however, other species located in this section included hedge bindweed (*Calystegia sepium*), stinging nettle, common ragwort (*Jacobaea vulgaris*), butterfly bush, tutsan (*Hypericum androsaemum*), shield fern (*Polystichum setiferum*), hogweed (*Heracleum sphondylium*), creeping thistle (*Cirsium arvense*), gorse and ivy.

Recolonising Bare Ground (ED3)

The area within close proximity to the railway was dominated by this habitat. At the time of the surveys, this habitat was used for storing materials at the Port. As such, given the recent disturbances, limited vegetation growth was noted. The vegetation recorded within this area included common ragwort, butterfly bush, fringed willowherb, cock's foot, false oat grass, bramble, perennial ryegrass and ivy.

Muddy Sand Shores (LS3)

Muddy sand shores were located along the Lower Suir Estuary within the Site boundary. The shore comprises sediment, including sand and mud. This muddy sand shore was slightly sloped towards the Lower Suir Estuary and was considered to be relatively sheltered, but overall remains water-saturated throughout the tidal cycle.

The dominant species identified was bladderwrack (*Fucus vesiculosus*).

Sea Walls, Piers and Jetties (CC1)

A stone wall was identified along the muddy sand shore. This stone wall was almost completely covered with bladderwrack (*Fucus vesiculosus*), and during high tide, this wall was inundated by seawater.

Tidal River (CW2)

This section of the Lower Suir Estuary is classified as a tidal river. As previously mentioned, ca. 1.3ha of the Site is located within the Lower Suir Estuary. In addition, this tidal river is linked with the Annex I habitat 'estuaries.' This habitat is part of a dynamic coastal ecosystem influenced by tidal activity. The benthic habitats within this location have been classified by Aquafact as Joint Nature Conservation Committee ('JNCC') biotope SS.SMu.SMuVS.PoICvol *Polydora ciliate* and *Corophium volutator* in variable salinity infralittoral firm mud or clay (EUNIS Code: A5.321) and are classified as belonging to the benthic community habitat 'muddy estuarine community complex,' full details of the benthic species recorded within this habitat are described in Section 6.4.3 below and in Appendix 6-3. Estuaries are classified as a qualifying Annex I habitat within the River Barrow and River Nore SAC; however, they are not designated under the Lower River Suir SAC.

Biodiversity Enhancement Area Habitats

Improved Agricultural Grassland (GA1) / Wet Grassland (GS4)

The Biodiversity Enhancement Area was predominantly comprised of agricultural grassland utilised for grazing cattle and was heavily poached at the time of the surveys, with areas of pooled stagnant water noted throughout the disturbed ground. There were small areas of wet grassland noted in the area, which were limited in size due to overgrazing and poaching of the ground. While the grassland is not intensively managed, the habitat is strongly influenced by cattle grazing, which has resulted in the grassland being modified by these activities.

Species present within this habitat included perennial rye-grass (*Lolium perenne*), common rush (*Juncus effusus*), common marsh bedstraw (*Galium palustre*), broad-leaved dock (*Rumex obtusifolius*), silverweed (*Potentilla anserina*), water forget-me-not (*Myosotis scorpioides*), dandelion, water mint (*Mentha aquatica*), common ragwort, white clover (*Trifolium repens*), leer's sedge (*Carex leersii*), shortawn foxtail (*Alopecurus aequalis*), yellow flag iris (*Iris pseudacorus*), meadow buttercup (*Ranunculus acris*), clustered dock (*Rumex conglomeratus*), marsh thistle (*Cirsium palustre*), big trefoil (*Lotus pedunculatus*) and reed mannagrass (*Glyceria maxima*).

Reed and Large Sedge Swamps (FS1)

The habitat along the edges of the stream within the proposed Biodiversity Enhancement Area comprised of common reed, common rush pendulous sedge (*Carex pendula*), brookweed (*Samolus valerandi*), common spike-rush (*Eleocharis palustris*), common duckweed (*Lemna minor*), common fleabane (*Pulicaria dysenterica*), spiked sedge (*Carex spicata*), water plantain (*Alisma plantago-aquatica*), soft stem bullrush (*Schoenoplectus tabernaemontani*), bulrush (*Typha latifolia*), reed mannagrass, common marsh bedstraw and water mint.

Drainage Ditch (FW4)

A drainage ditch ran along the western boundary of the proposed Biodiversity Enhancement Area linking the Drumdowney Lower Stream and Luffany River. The drainage ditch was full of water, with a silty bottom, but no visible flow. The drainage ditch connected to a stream after culvert south.

The species within and surrounding the drainage ditch comprised reed mannagrass, common duckweed, water-plantain, water mint, water forget-me-not, stinging nettle, common reed (*Phragmites australis*), bramble, ivy, horsetails (*Equisetum spp.*) and mushrooms (*Fungus spp.*).

Hedgerow / Treeline (WL1 / WL2)

Hedgerows and treelines provided the primary field boundaries of the proposed Biodiversity Enhancement Area and were also present along the access track north of the Port. The quality of the hedgerows varied from well-structured and diverse to patchy and sparse.

The hedgerow / treeline comprised hawthorn, grey willow (*Salix cinerea*), wych elm (*Ulmus glabra*), ash (*Fraxinus excelsior*), pedunculate oak (*Quercus robur*), turkey oak, crab apple (*Malus sylvestris*), sycamore, Butterfly bush and alder (*Alnus glutinosa*).

The understorey of these features contained a variety of common species such as cow parsley (*Anthriscus sylvestris*), gorse, hedge bindweed, stinging nettles, broad-leaved dock, ivy, bramble, thistles, hairy willowherb (*Epilobium hirsutum*), buttercup and water forget-me-not.

Mixed Broadleaved Woodland (WD1)

An area of woodland was located along the left boundary of the Biodiversity Enhancement Area. The habitat was comprised of a dense mix of ash, oak (*Quercus spp.*), hawthorn (*Crataegus monogyna*), willow (*Salix spp.*), beech (*Fagus sylvatica*) and alder. The understorey comprised of bramble, stinging nettle, ivy, thistle (*Cirsium spp.*), hogweed and hairy willowherb.

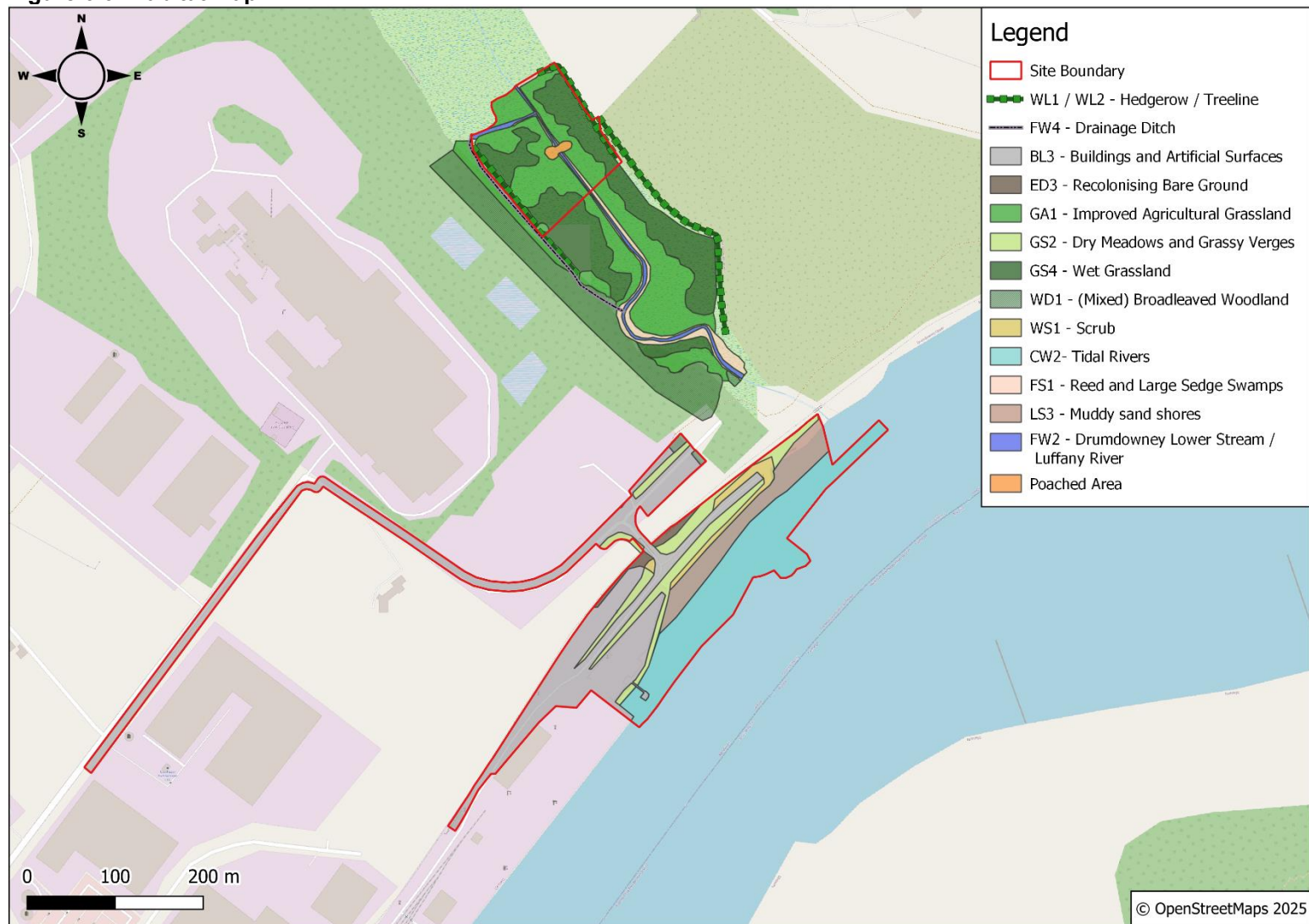
Drumdowney Lower Stream / Luffany River (FW2)

A watercourse identified as the Drumdowney Lower Stream was recorded to the north of the proposed Biodiversity Enhancement Area. The stream exhibited a silty substrate and supported dense emergent and marginal vegetation. Dominant plant species included reed mannagrass, common duckweed, broadleaf water plantain, water mint, true forget-me-not, horsetail, stinging nettle, common reed, bramble and common ivy.

The Drumdowney Lower Stream discharges into the Luffany River, which flows through the centre of the Biodiversity Enhancement Area and subsequently enters the Lower Suir Estuary approximately 160 metres downstream.

In the northern section of the Luffany River, where partial flooding was observed, the riverbed was primarily sandy. Aquatic and riparian vegetation included common duckweed (*Lemna minor*), yellow flag iris, cattails (*Typha* spp.), and soft-stem bulrush (*Schoenoplectus tabernaemontani*).

Figure 6-9: Habitat Map



6.4.2.2 Fauna

Flora

No plant species protected under the Flora Protection Order were recorded onsite during any of the surveys.

Bats

The NBDC held no records of any of the nine resident bat species found in Ireland within a 2km radius of the Site within the past 10 years [33]. As per the NBDC landscape suitability metric, the Site and surrounding area are of very high suitability for bats (Landscape Suitability Metric Score for all bats is in the range of 38 – 58) [33].

During the dusk emergence and dawn activity surveys:

- A total of eight species were recorded, which included common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared bat, Nathusius' pipistrelle and *Myotis* species (Daubenton's bat, Natterer's bat and whiskered bat);
- No bats were observed to be roosting within the Gorteens Old Mill Building. However, low to moderate levels of foraging and commuting bats were recorded around the Gorteens Old Mill Building and the trees surrounding this building;
- No suitable roosting features were identified at the Belview Port. Additionally, low to high levels of foraging and commuting bats were recorded during the activity surveys undertaken within the Belview Port;
- All species recorded at the Belview Port were species commonly adapted to high levels of artificial lighting, including Leisler's bat, common pipistrelle and soprano pipistrelle; and,
- *Myotis* species and brown long-eared bats were recorded more frequently foraging and commuting around the Gorteens Old Mill Building than around the Port, likely due to less lighting and disturbance. However, the majority of bat activity around the Gorteens Old Mill Building was from the same common bat species recorded along the Port, including Leisler's bat, soprano pipistrelle and common pipistrelle.

During the static monitoring surveys, there were higher levels of bat activity recorded within the Belview Port (SM4-1) than at the Gorteens Old Mill Building (SM4-2). Leisler's bat were the most frequently recorded species at SM4-1, followed by common pipistrelle, soprano pipistrelle and brown long-eared bat. Common pipistrelle were the most frequently recorded species at SM4-2, followed by soprano pipistrelle, Leisler's bat, brown long-eared bat, *Myotis* species and Nathusius' pipistrelle. It is considered that higher activity was recorded at the Belview Port compared to the Gorteens Old Mill Building due to the adaptations of common pipistrelle, soprano pipistrelle and Leisler's bat to artificial lighting, and the suitability of the Lower Suir Estuary as foraging habitat for bats.

In summary, the following bat species were recorded onsite during the dusk, dawn and static monitoring surveys:

- Common pipistrelle;
- Soprano pipistrelle;
- Leisler's bat;
- Brown long-eared bat;
- Nathusius' pipistrelle; and,
- *Myotis* species.

Please refer to Appendix 6-1 – Bat Report for full details of the results of the bat surveys.

Badger

The NBDC did not hold any records for badger within 2km of the Site [33]. The Site survey identified badger prints in the mudflats and the biodiversity enhancement area, confirming occasional use of the Site. However, no setts were recorded during the survey. The onsite habitats are not considered suitable for badger given their disturbed nature and setting in an industrial / commercial environment. Nevertheless, as badgers are common and widespread across Ireland, it is considered possible that badgers may commute through the Site.

Otter

During the surveys, areas of regular otter activity were identified, as these areas had the regular presence of otter footprints (see Plate 6-1), spraints (see Plate 6-2), foraging remains, couching areas and live sightings (see Figure 6-10 and Plate 6-3). In addition, camera trap footage has shown otters regularly using these areas (see Plate 6-4).

These areas shown on Figure 6-10 are locations where otter activity has been recorded within the Belview-Faithlegg-Cheekpoint area during the surveys. The full areas have been visually assessed by boat for the presence of otter activity / holts. However, it should be noted that while the entirety of the coastline could not be regularly accessed (i.e., on a monthly basis) given limited access. However, it is assumed that otter utilise the full coastline in this area.

During the extensive otter surveys, no otter holts or couches were identified within the accessible areas. In addition, no otter holts or couches were located within 200m of the Site. This buffer is aligned with NatureScot's '*Standing Advice for Planning Consultations – Otters*' [16], which specifies that where otters are known or suspected to be breeding, an exclusion zone of at least 200 m should be established.

Otter were identified commuting and foraging along the Lower Suir Estuary and along the mudflats located within the Site boundary. Furthermore, otter were observed regularly utilising the open area under the existing Belview Quay as a commuting corridor.

Camera trap footage identified a couching area that otters regularly utilise downstream of the Site along the Kilkenny-side of the Lower Suir Estuary, ca. 780m northeast of the Site. Otter were noted eating fish and engaging in play at this location during the camera trap surveys.

Regular otter sightings were also made during the bird surveys and live sightings of up to two otter at once have been seen within the Lower Suir Estuary. Additionally, in 2022, three otter (two adults and one juvenile) were recorded at the couch area downstream of the Site via camera trap footage.

In addition, anecdotal evidence from people working at the port note that otter sightings are a regular occurrence.

Plate 6-1: Otter Prints



Plate 6-2: Otter Spraint



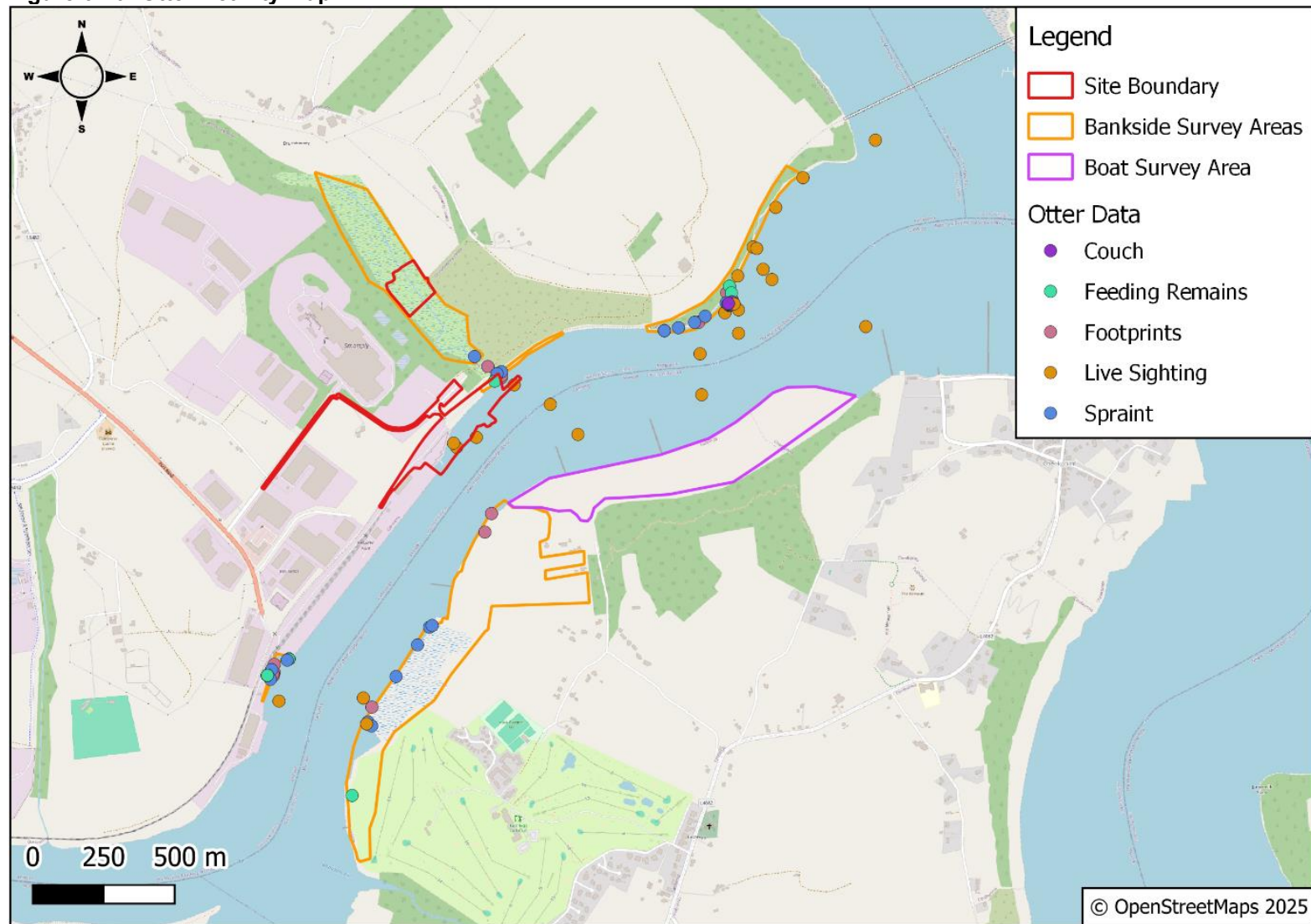
Plate 6-3: Live sighting of Otter



Plate 6-4: Otter identified from camera traps



Figure 6-10: Otter Activity Map



Wetland Birds

During the waterbird surveys, the VPCB surveys recorded a total of 35 waterbird species, and the OCB surveys recorded a total of 38 waterbird species.

Of the species that were recorded:

- Six Green-listed BoCCI non-Annex I species– great black-backed gull, greenshank, grey heron, little grebe, sanderling, and whimbrel ;
- 19 Amber-listed BoCCI, non-Annex I species were recorded – black-headed gull, common gull, common sandpiper, cormorant, gannet, great crested grebe, guillemot, herring gull, lesser black-backed gull, light-bellied brent goose, mallard, mute swan, ruff, shag, shelduck, teal, turnstone, tufted duck, wigeon;
- Eight Red-listed BoCCI, non-Annex I species were recorded – black-tailed godwit, curlew, dunlin, knot, oystercatcher, purple sandpiper, redshank, snipe;
- One Green-listed BoCCI Annex I species was recorded – little egret;
- Three Amber BoCCI Annex I species were recorded –kingfisher, mediterranean gull, and sandwich tern;
- One Red-listed BoCCI Annex I species were recorded – bar-tailed godwit;
- One Non-BoCCI Listed and Annex I species was recorded – spoonbill; and,
- One Non-BoCCI Listed was recorded – juvenile gull.

It should be noted that a total of 22 non-waterbird species were also recorded during the surveys, which included:

- 19 Green-listed BoCCI non-Annex I species - blackbird, blue tit, buzzard, chaffinch, coal tit, feral pigeon, goldfinch, hooded crow, jackdaw, magpie, pheasant, pied wagtail, reed bunting, robin, rock pipit, rook, sparrowhawk, whitethroat, wood pigeon;
- Two Amber-listed BoCCI, non-Annex I species were recorded – barn swallow; wheatear; and,
- One Non-BoCCI Listed and non-Annex I species – carrion crow.

It should be noted that none of the species were recorded in numbers considered to be of national [78] or international importance [79, 80].

During the surveys, birds were recorded utilising the mudflats along the Lower Suir Estuary for foraging and roosting purposes. However, it was noted that the mudflats within the vicinity of the Site were subject to significant tidal movements. At high tide, the mudflats were covered with water, limiting the availability of suitable habitat for foraging wetland bird species. As such, no potentially suitable breeding habitat was noted within the Site boundary as the mudflats within the area are covered by water at high tide. However, it was noted that the mudflats along the Waterford-side of the Lower Suir Estuary were larger and had available mudflats remaining at high tide. Furthermore, higher numbers of birds were regularly observed roosting and foraging along this area. In addition, the marsh habitat within the Cheekpoint area, ca. 430m southeast of the Site, was noted as being an area of high activity for many bird species, particularly mallard, curlew, teal, and gull species.

During the surveys, it was noted that waterbird species, mute swan in particular, regularly utilise the area under the existing open quay to commute through the Belview Port.

The surveys also recorded birds foraging and roosting on the Lower Suir Estuary, primarily in the centre of the river. In addition, birds were regularly noted flying over the area, commuting up and downstream of the Lower Suir Estuary.

Furthermore, during the surveys, ship and boat movements along the Lower Suir Estuary were regularly observed and there was no discernible disturbance response exhibited by bird species within the area. When boats moved within the vicinity of a bird, the birds were noted moving away before very quickly returning to roosting / foraging behaviours.

Please see Appendix 6-2 – Bird Report for full details.

Marine Mammals

Between November 2022 and March 2025, MOR Environmental Ecologists recorded a total of 52 sightings of marine mammals commuting through the Lower Suir Estuary within the vicinity of Belview Port, which amounted to a total of 63 individual marine mammals; see Table 6-10.

Of the species recorded, common seal and grey seal comprised ca. 82.5% of all individuals accounted for during this period. The other species that were recorded during this period included common dolphin and harbour porpoise, as described in Table 6-10.

Please note that none of the seals recorded were observed ‘hauling out’ along the mudflats within the Site. In addition, the cetaceans observed were recorded moving at pace through the Lower Suir Estuary and did not linger within the vicinity of the Site.

Table 6-10: Species recorded during MOR Environmental Marine Mammal Sightings November 2021 – March 2025

Species	No. of Sightings	No. of Individuals	Percentage of Overall Individuals (%)
Dolphins & Porpoise			
Common Dolphin	2	8	12.7%
Harbour Porpoise	2	3	4.8%
Phocids			
Common Seal	26	30	47.6%
Grey Seal	22	22	34.9%
Total	52	63	-

Invasive Species

No high-impact invasive species or plant species listed on the Third Schedule of the 2011 European Communities (Birds and Natural Habitats) Regulations (i.e., species of which it is an offence to disperse, spread or otherwise cause to grow in any place) were identified within the Site.

Other Species

Within the existing Belview Port and the Biodiversity Enhancement Area, fox and deer footprints were recorded. MOR Environmental Ecologists did not see deer on-site during the surveys; therefore, the species of deer on-site could not be identified. However, the NBDC holds records for Sitka deer within 2km of the Site [33]. In addition, within the Biodiversity Enhancement Area, a small mammal hole was noted along the eastern boundary of the area. Droppings and hairs were located at the entrance of the hole indicate that it was used by rabbit.

Furthermore, the NBDC holds records for other protected species within 2km of the Site, including Eurasian red squirrel, Irish hare, pine martin and west European hedgehog [33].

However, none of these species were recorded onsite and no evidence of these species was recorded within the immediate vicinity of the Site.

6.4.3 External Specialist Study Results

6.4.3.1 Benthic Assessment - Aquafact

Waterford Estuary is a Designated Shellfish Area under S.I. No.55 of 2009 (Quality of Shellfish Waters). The estuary is also a Sea-Fisheries Protection Authority ('SFPA') classified Bivalve Mollusc Production Area, which is a designated location where bivalves) including mussels, surf clams and oysters.

The analysis of the grab samples taken by Aquafact included granulometry and the percentage organic carbon assessments and faunal analysis to determine the JNCC biotopes.

The granulometry and the percentage of organic carbon indicated that the sediment within the study area is comprised of slightly gravelly muddy sands and muddy sands.

The faunal analysis of the samples identified a total of 51 taxa ascribed to six phyla and comprising 1,528 individuals.

Further analysis of the faunal samples revealed three statistically significant groupings (Group A, Group B and Group C):

- Group A – Sample Q3;
- Group B – Samples Q4; and,
- Group C – Samples W1-W5, B1-B4, Q1 and Q2.

Using the JNCC biotopes, Aquafact were able to confirm that the above-mentioned groups could be classified into JNCC biotope SS.SMu.SMuVS.PoICvol *Polydora ciliate* and *Corophium volutator* in variable salinity infralittoral firm mud or clay (EUNIS Code: A5.321).

Furthermore, these stations were classified as belonging to the benthic community habitat 'muddy estuarine community complex,' which commonly occurs within the River Barrow and River Nore SAC [81]. This community complex is present intertidally and subtidally from Cheekpoint and Great Island northward to New Ross. The substrate of this community complex is predominantly of fine material, and the distinguishing species for this group are the bivalve *Scrobicularia plana* and *Macoma balthica*, the amphipod *Corophium volutator*, the polychaete *Streblospio shrubsolii* and the oligochaetes *Tubificoides pseudogaster* and *Tubificoides benedii*. These species are indicative of a variable salinity community.

It should be noted that the habitat type 'muddy estuarine community complex' is a community type that comprises part of the Annex I habitat 'estuaries' and 'muddy estuarine community complex' also makes up part of the Annex I habitat 'mudflats and sandflats not covered by seawater at low tide' [81]. However, these Annex I habitats are not designated for the Lower River Suir SAC, in which the Site is located.

Please refer to the Benthic Ecology Report prepared by Aquafact International Services Ltd (APEM Group) for further details in Appendix 6-3.

6.5 Characteristics & Potential Effects of the Proposed Development

6.5.1 Sensitive Design

Specialist ecological input was a key element of the design to ensure that the layout of the Proposed Development would be sensitive to valued ecological features that occur or may occur within the Site and the surrounding landscape.

In order to minimise the adverse effects of the Proposed Development on biodiversity and, where possible, enhance the ecological value of the Site, a range of environmental measures

have been incorporated into the project at the design stage. The key measures relevant to biodiversity for this project have been detailed below:

Open Quay Design

As outlined in Section 4.4.3 above, the Proposed Development was designed to have an 'open' design in which the fendering will not be fully enclosed at each end and water will be able to pass through this section. This design will be in line with the existing Belview Port and extended wharf, which will ensure that species such as otter, birds and fish can continue to commute under the existing wharf.

Lighting Strategy

Nocturnal mammals are averse to excess lighting. Subsequently, effects could occur as a result of an inappropriate lighting strategy. A sensitive lighting strategy will be implemented across the entirety of the Proposed Development to minimise light spillage from the Site. The lighting plan considers both internal and external sources. This approach will ensure that the lighting installed within the Site will be sensitive for local wildlife while still providing necessary lighting for Site operations.

The lighting strategy for the Operational Phase of the Proposed Development has been designed to minimise potential effects on nocturnal species in line with the BCT Guidelines on '*Bats and Artificial Lighting in the UK*' [82]. The lighting strategy, which has been designed as part of the Proposed Development involves avoiding excessive lighting and use of 2700Kelvin light temperature bulbs, as this reduces the blue light component for bats [82]. Additionally, all lighting will be downward-facing and only directed where needed. There will be no light spillage outside of the Site boundary, so bat species within the wider area will not be impacted by on-site lighting.

An External Lighting Design Report has been prepared and submitted as part of the overall planning application.

Biodiversity Enhancement Area

As part of the Proposed Development, an area of ca. 1.8ha in size will be enhanced and protected as a Biodiversity Enhancement Area. This area is currently comprised primarily of an agricultural and wet grassland mosaic that is used for grazing cattle. Therefore, measures will be implemented to provide suitable habitats for otter, wetland bird species and other local biodiversity. Further details are provided in Section 6.7 below and Appendix 6-4.

6.5.2 Identification of Potentially Significant Effects on Identified Receptors

Based on the methodology that is set out in Section 6.1, Table 6-11 sets out the findings of the evaluation of important and legally protected receptors. Each receptor was assessed, and a scoping justification for each receptor was provided for the Construction and Operational Phases.

Table 6-11: Scoping Results and Justifications for Habitats and Species within the Site and Receiving Environment

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
Protected Sites				
European Designated Sites	European Communities (Natural Habitats Regulation 1997 as amended)	International Importance	<p>A NIS has been prepared and will be submitted as part of the planning application. The NIS concluded that the Proposed Development would not cause any significant adverse effects on any European designated sites or any of their designated features of interest provided the mitigation measures incorporated within the NIS are adhered to. The progression to Stage 3 of the Appropriate Assessment process (i.e. Assessment of Alternatives Solutions) was not considered necessary. During the consultation, the NPWS also concluded that the application could proceed under Article 6(3).</p> <p>Please refer to the NIS for full details of this assessment.</p>	Refer to the NIS submitted as part of the overall application for full details.
Nationally Designated Sites	Wildlife Act 2000 (as amended)	National Importance	<p>Nationally designated sites within 5km of the Site were investigated as per the Kilkenny County Development Plan (Sections 9.2.1.1 to 9.2.1.5) [7] There are no NHAs within 5km of the Site; however, there are three pNHAs within 5km of the Site – The River Barrow Estuary pNHA, Kings Channel pNHA and Lough Cullin pNHA.</p> <p>It was not predicted that the Proposed Development will have any effects on these pNHAs based on the lack of effects pathways and the intervening lands between the Site and these pNHAs.</p>	Natural Heritage Areas have been screened out from further consideration.
Habitats				
Tidal River (CW2)	<p>Wildlife Act 2000 (as amended)</p> <p>European Union (Water Framework Directive) Regulations 2003 (S.I. No. 722/2003)</p> <p>EU Habitats Directive Annex I</p>	Local Importance (Higher Value)	<p>The Site is partially located within the tidal Lower Suir Estuary. This watercourse is part of a dynamic estuarine system supporting aquatic and riparian biodiversity. The benthic assessments undertaken by Aquafact confirmed that the benthic community habitat within the Site is classified as 'muddy estuarine community complex.' This habitat can support a range of ecological functions, including nursery areas for fish and feeding grounds for birds. Furthermore, this community complex is a community type that makes up part of the Annex I habitat - estuaries. However, the estuarine habitat within the Site does not constitute a qualifying feature of the Lower River Suir SAC.</p> <p>As part of the Proposed Development, a total area of ca. 1.3ha of the Lower Suir Estuary will be reclaimed, which will result in a permanent loss of the benthic habitat within this area. However, it should be noted that although the Proposed Development</p>	Tidal Rivers have been screened in for further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>has been designed to incorporate an 'open quay' design, which will allow for an influx of water to move under the wharf and allow the movement of species within the tidal river and utilise the habitats under the wharf. Furthermore, the loss of this habitat will be offset by the Biodiversity Enhancement Area that will be developed as part of the Proposed Development.</p> <p>Benthic habitats that make up the estuary habitat may also be subjected to potential smothering during the capital dredging and construction works. As part of the capital dredging, ca. 7,000m³ of material will be dredged from the Site. It should be noted that the 'muddy estuarine community complex' sensitivity to extraction (dredging) is described as 'Medium,' as dredging will remove the substrate, resulting in the loss of Polydora tubes and Corophium that burrows up to 5cm deep. This biotope is widespread in the estuary and recolonisation will occur [83]. In addition, during the dredging, potential smothering of benthic habitats within the wider area was considered unlikely to occur. These conclusions were based on the fact that the sedimentation within the Waterford Estuary is considered to be highly variable and unpredictable, and the Belview Area is subject to varying degrees of sedimentation. Furthermore, the sensitivity of 'muddy estuarine community complex' to heavy siltation is described as 'Low' [83]. Therefore, potential impacts due to smothering of sedimentation were considered unlikely. Therefore, no permanent significant loss of this biotope is expected within the Waterford Estuary as a result of the Proposed Development.</p> <p>However, given the fact that in-river works will be undertaken, it was considered that there would be potential for water quality impairment effects to occur in the absence of appropriate mitigation measures. Therefore, this habitat has been screened in for potential water quality impairment impacts. Furthermore, during the Operational Phase of the Proposed Development, surface water will discharge into the Lower Suir Estuary. Therefore, in the absence of appropriate design and mitigation measures, potential water quality impairment effects may occur. Therefore, this habitat has been screened in for potential water quality impairment impacts.</p> <p>A detailed assessment of the species that utilise this habitat is provided below.</p>	
Muddy Sand Shores (LS3)	N/A	Local Importance (Higher Value)	<p>Muddy sand shores are an intertidal habitat that is characterised by a mixture of sand and mud. During the surveys, it was noted that the muddy sand shores along the Kilkenny-side of the Lower Suir Estuary were subject to significant tidal movements. At high tide, it was noted that the mudflats were covered with water. At low tide, the muddy sand shores were exposed as tidal water receded; however, it was noted that this area</p>	Muddy sand shores have been screened in for further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>of shore was narrower on the Kilkenny-side of the watercourse compared to the shore of the Waterford-side. Furthermore, this area of shoreline has been historically altered by human activities, including stone walls associated with the Old Gorteens Mill, built land associated with the adjacent railway and remains of an old fishing weir further down the shoreline.</p> <p>This habitat can support a variety of invertebrates, which are crucial for the food web, including birds and fish. Although this habitat is located adjacent to the active Belview Port, wetland birds and otter were observed foraging and commuting within this habitat, when the shore was exposed by tidal water. However, this habitat is subject to anthropogenic noise emissions from the existing Belview Port. Furthermore, it should be noted that larger muddy sand shores were noted along the Waterford-side of the Lower Suir Estuary and where areas of exposed shores were observed throughout the tidal cycle. It was noted along the Waterford-side, that there was higher foraging activity of wetland bird species in this habitat. Therefore, it was concluded that this muddy sand shores within the Site boundary are not considered to be a site of importance for any species.</p> <p>Overall, as part of the Proposed Development there will be an alteration / loss of ca. 1.3ha and of this area, it has been assessed that there will be permanent loss of ca. 0.6ha of muddy sand shores. The loss of this habitat will result in a loss of potential foraging habitat for otter and wetland bird species. However, this area is not considered significant given the amount of available habitat in the wider area. Regardless, in order to offset the loss of habitat for these species, a Biodiversity Enhancement Area, ca. 1.8ha in size, has been incorporated into the design of the Proposed Development, which will provide suitable foraging and roosting / resting areas for local biodiversity including wetland birds and otter.</p> <p>Given the fact that this habitat was not considered to be a site of importance for any species, and biodiversity enhancement measures will be implemented to provide additional foraging and roosting habitat for species within the area, it was concluded that the loss of this habitat will not result in any significant effects.</p> <p>However, given the fact that in-river works will be undertaken, and this intertidal habitat is partially covered by the water during the tidal cycle, it was considered that there is potential for water quality impairment effects to occur in the absence of appropriate mitigation measures. Furthermore, during the Operational Phase of the Proposed Development, surface water will discharge into the Lower Suir Estuary. Therefore, in</p>	

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			the absence of appropriate design and mitigation measures, potential water quality impairment effects may occur.	
Mixed Broadleaved Woodland (WD1)	Wildlife Act 2000 (as amended)	Local Importance (Higher Value)	An area of broadleaved woodland is noted surrounding the ORE Operator 2 building located on the northern side of the Rosslare-Limerick railway. Given that this woodland is located within close proximity to the Site, it was considered that, in the absence of suitable mitigation measures, potential effects could occur to this habitat during the demolition and construction phase. Therefore, further consideration will be given to this habitat to ensure no effects occur that could result in impacts to this habitat.	Mixed Broadleaved Woodland has been screened in for further consideration.
Buildings and Artificial Surfaces (BL3)	N/A	Local Importance (Lower Value)	A large portion of the Site is located within the existing Belview Port, which is comprised of artificial surfaces and is subject to ongoing port-related activities. A portion of this habitat will be demolished as part of the Proposed Development; however, this habitat does not provide any ecological value to any species. Therefore, it was considered that any alteration / loss of this habitat will not result in any significant effects. Therefore, this receptor has been scoped out from further consideration.	Buildings and Artificial Surfaces have been screened out from further consideration.
Dry Meadows and Grassy Verges (GS2)	N/A	Local Importance (Lower Value)	<p>This habitat is located within the Site on the embankments towards the Lower Suir Estuary. This habitat will be removed as part of the demolition works for the Proposed Development. This habitat will be replaced with the reclaimed / infilled area. However, these dry meadows and grassy verge habitat was considered to be of limited ecological value given the fact that this habitat is located on a steep embankment within the existing Belview Port and is located adjacent to ongoing port-related activities.</p> <p>Please note that all vegetation removal will need to consider protected species, such as nesting birds. All clearance works will be scheduled to take place outside the nesting bird season (typically considered to be between 1st March to 31st August – weather dependent). However, further consideration will be given to birds below.</p> <p>Therefore, the effect of the Proposed Development on dry meadows and grassy verges will not be significant and this receptor has been scoped out from further consideration.</p>	Dry Meadows and Grassy Verges have been screened out from further consideration.
Scrub (WS1)	Wildlife Act 2000 (as amended)	Local Importance (Lower Value)	This habitat is also located on the embankments around the current road towards the downstream exit of the Belview Port. This habitat is considered to be of limited ecological value given the fact that it is dominated by brambles, which has outcompeted most other plant species. This habitat will also be removed as part of the demolition	Scrub has been screened out from further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			works and site clearance works required to facilitate the Proposed Development. Please note that all vegetation removal will need to consider protected species, such as nesting birds. Overall, given the limited ecological value of this habitat, it was considered that the effect of the Proposed Development on this habitat will not be significant, and this receptor has been scoped out from further consideration.	
Recolonising Bare Ground (ED3)	N/A	Local Importance (Lower Value)	An area of recolonising bare ground was noted within the Site, adjacent to the railway tracks. This area is subject to regular disturbance and therefore had limited botanical diversity. This habitat does not provide any ecological value to any species. Therefore, it was considered that any alteration / loss of this habitat will not result in any significant effects. Therefore, this receptor has been scoped out from further consideration.	Recolonising Bare Ground has been screened out from further consideration.
Sea Walls, Piers and Jetties (CC1)	N/A	Local importance (Lower Value)	An old sea wall is located within the Site. This wall was covered with bladderwrack and was inundated by seawater at high tide. No notable plant species were identified growing within or on top of this habitat. Therefore, it was considered that any loss or disturbance to this habitat will not result in any negative effects to biodiversity. Therefore, sea walls, piers and jetties have been scoped out from further consideration.	Sea Walls, Piers and Jetties have been screened out from further consideration.
Biodiversity Enhancement Area Habitats				
Improved Agricultural Grassland (GA1) / Wet Grassland (GS4)	N/A	Local Importance (Lower Value)	This habitat was recorded within low-lying areas of the proposed Biodiversity Enhancement Area. It is characterised by poorly drained soils and a vegetation community adapted to seasonal or permanent moisture. At the time of the surveys, this habitat was heavily grazed by cattle and was subject to severe poaching from cattle movements. Compacted earth with stagnant water pools were noted throughout this habitat and resulted in areas of limited plant growth. It was noted that in areas that appeared to be subject to regular cattle activity, the wet grassland species were limited, and the habitat was dominated by improved agricultural grassland species. Small sections of this habitat will be removed in order to establish pond complexes; however, it was not considered that this will result in any negative effects on this habitat. Furthermore, as part of the Proposed Development, cattle will be removed from this area, and this habitat will be allowed to naturally regenerate into a wet grassland mix.	Improved Agricultural Grassland has been screened out from further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			Therefore, the effect of the Proposed Development on this habitat will be positive, and this receptor has been scoped out from further consideration.	
Reed and Large Sedge Swamps (FS1)	N/A	Local Importance (Higher Value)	This wetland habitat was recorded along the edge of a watercourse within the proposed Biodiversity Enhancement Area. The habitat will be retained and managed for biodiversity and water quality benefits as part of the enhancement strategy. Therefore, the effect of the Proposed Development on this habitat were considered to be positive and this receptor has been scoped out from further consideration.	Mixed Broadleaved Woodland have been screened out for further consideration.
Drainage Ditch (FW4)	N/A	Local Importance (Lower Value)	A drainage ditch was recorded along the western boundary of the proposed Biodiversity Enhancement Area, linking the Drumdowney Lower Stream and Luffany River. These features may function as linear wetland corridors and support a range of aquatic and semi-aquatic organisms. At the time of the surveys, there was evidence of cattle entering into the drainage ditch and eroding the bank of the drainage ditches. Therefore, as part of the Proposed Development, this habitat will be retained, protected from cattle and managed for biodiversity and water quality benefits as part of the enhancement strategy. Therefore, the effect of the Proposed Development on this habitat were considered to be positive, and this receptor has been scoped out from further consideration.	Drainage Ditches have been screened out for further consideration.
Hedgerow / Treelines (WL1/WL2)	Wildlife Act 2000 (as amended)	Local Importance (Higher Value)	The Proposed Development does not include the removal of any hedgerows / treelines within the Biodiversity Enhancement Area. The existing hedgerow / treelines will be bolstered with riparian species. Therefore, the effect of the Proposed Development on this habitat was considered to be positive and this receptor has been scoped out from further consideration.	Hedgerows / Treelines have been screened out from further consideration.
Mixed Broadleaved Woodland (WD1)	Wildlife Act 2000 (as amended)	Local Importance (Higher Value)	A patch of broadleaved woodland is located along the boundary of the proposed Biodiversity Enhancement Area. It comprises a dense canopy, a shrub layer, and ground vegetation, indicating a relatively intact woodland structure. The habitat offers cover, shelter, and foraging potential for a range of terrestrial fauna. The habitat will be retained and managed for biodiversity and water quality benefits as part of the enhancement strategy. Therefore, the effect of the Proposed Development on this habitat was considered to be positive and this receptor has been scoped out from further consideration.	Mixed Broadleaved Woodland have been screened out for further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
Depositing / Lowland Rivers (FW2)	European Union (Water Framework Directive) Regulations 2003 (S.I. No. 722/2003)	Local Importance (Higher Value)	<p>The Drumdowney Lower Stream and the Luffany River are classified as Depositing / Lowland Rivers. These watercourses exhibit silty to sandy substrates with dense emergent and marginal vegetation. These watercourses support aquatic and riparian biodiversity and connect directly to the Lower Suir Estuary, which is hydrologically connected to the Lower River Suir SAC.</p> <p>At the time of the surveys, there was evidence of cattle entering sections of the watercourses. Therefore, as part of the Proposed Development, this habitat will be retained, protected from cattle and managed for biodiversity and water quality benefits as part of the enhancement strategy. Therefore, the effect of the Proposed Development on this habitat was considered to be positive, and this receptor has been scoped out from further consideration.</p>	Depositing/ Lowland Rivers have been screened out for further consideration.
Flora and Fauna				
Flora	Flora (Protection) Order 2022 (S.I. No. 235/2022)	N/A	No plant species protected under the Flora Protection Order were noted on-site. Overall, the effect of the Proposed Development on both habitats and flora was considered unlikely to be significant.	Flora has been screened out from further consideration.
Bats	Wildlife Act 2000 (as amended) EU Habitats Directive Annex IV	Local Importance (Higher Value)	<p>Buildings and habitats with bat roost potential were surveyed. No bat roosts were identified within the Gorteens Old Mill Building. However, bats were identified commuting and foraging over the trees around this building, and over the Lower Suir Estuary within the vicinity of the Belview Port during the activity surveys along the Port. It should be noted that the Gorteens Old Mill Building will not be affected by the Proposed Development, so bats will continue to be able to forage and commute around the habitats within the vicinity of this building.</p> <p>It was concluded that the Site itself was of no value to roosting bats but habitats within the wider area were considered to be of Local Importance (higher value) to foraging and commuting bats. The Proposed Development will result in the loss of some foraging and commuting habitat for bats as the reclamation will extend into the Lower Suir Estuary, where bats were observed foraging and commuting over. However, in order to offset the potential loss of foraging habitat, a Biodiversity Enhancement Area, ca. 1.8ha in size, has been incorporated into the design of the Proposed Development and will provide measures suitable for foraging and roosting bats.</p>	Bats have been screened in for further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>It should also be noted that the bats observed using the habitats within the vicinity of the Port are already adapted to high levels of lighting and noise disturbance, as the Port of Waterford currently operates 12 months a year, 7 days a week on a 24-hour basis. However, given the potential requirement for lighting during the Construction Phase, particularly in the winter months when daylight hours are shorter, appropriate mitigation measures will be required. It should be noted that the lighting required for the operational phase has been developed in line with appropriate bat guidance as outlined in Section 6.5.1 above.</p> <p>Please see Appendix 6-1 (Bat Report) for full assessment details.</p>	
Birds	Wildlife Act 2000 (as amended)	Local Importance (Higher Value)	<p>As mentioned, the mudflats / sandy shores habitat and tidal river habitat located on-site were considered to provide suitable foraging and roosting habitat for waterbird species. However, the mudflats along the Waterford-side of the Lower Suir Estuary were considered to be of higher value for waterbirds compared to the habitats within the vicinity of the Site. During the surveys, the majority of birds identified within the study area were observed foraging within the muddy sand shores and Lower Suir Estuary, particularly along the Waterford-side of the river. No birds were noted nesting within the Site, and no birds were noted as exclusively utilising the habitats within the Site boundary.</p> <p>As part of the Proposed Development, there will be a reclamation of ca. 1.3ha of subtidal and intertidal habitats suitable for foraging for wildfowl, waders and gulls. However, it should be noted that the Proposed Development has been designed to incorporate an 'open quay' design, which will allow for an influx of water to move under the wharf and allow the movement of waterbird species within the tidal river and utilise the habitats under the wharf for commuting and foraging purposes. In addition, a Biodiversity Enhancement Area, ca. 1.8ha in size, has been incorporated into the design of the Proposed Development to provide suitable foraging and roosting / resting areas for local biodiversity, including wetland birds. In addition, no works will take place outside the Site boundary and as such, no direct effects will occur to any intertidal habitats within the wider area.</p> <p>During the Demolition and Construction Phase, the Proposed Development will require demolition works, including the removal of the existing dolphin at the Belview Port. During the surveys, no birds were recorded nesting or breeding on the dolphin; as such,</p>	Birds have been screened in for further consideration.

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>it is considered that the demolition of the dolphin will not result in any loss of breeding habitat.</p> <p>However, during the Construction Phase, in-river works will be required and works utilising concrete will be required adjacent to the Lower Suir Estuary. In addition, during the Operational Phase of the Proposed Development, surface water will discharge into the Lower Suir Estuary, and each of the ORE Operator Facilities will have a 90,000L fuel tank, located within appropriate bunds, located on the new wharf extension. Therefore, impairment of water quality could result in direct impacts to waterbirds as well as a bottom-up trophic cascade wherein the abundance and distribution of prey species or foraging habitat for waterbird species could be altered, conferring a negative impact upon the waterbirds, which are at higher trophic levels, and result in effects to the functioning of the ecosystem processes. Therefore, in the absence of appropriate design and mitigation measures, potential water quality impairment effects may occur, and as such, this species has been screened in for further consideration.</p> <p>Although it was considered that birds within the vicinity of the Site are subject to ongoing port-related activities and are considered to be habituated to anthropogenic noises, the Demolition and Construction Phase has the potential to result in noise / vibration effects on species within the wider area. Potential noise sources will include the demolition works required onsite, the piling works required for the construction of the Proposed Development, the infilling works required for the reclamation works and the construction of the wharf extension and buildings. As such, a detailed noise impact assessment was undertaken as part of this EIAR (Chapter 11). This noise impact assessment concluded waterbird may be disturbed by the works; however, given the abundance of suitable habitat within the wider area, it was considered likely that these birds will move to suitable areas and therefore any noise levels will decrease with distance. Regardless, this species has been screened in due to potential noise effects in the absence of appropriate mitigation measures.</p> <p>During the Operational Phase, it was considered unlikely that bird species will be affected by the Proposed Development due to the fact that birds within the area are habituated to anthropogenic noise emissions. Therefore, given that the ORE Operator facilities are considered likely to result in similar noise levels to the ongoing port-related activities, it was considered that there will be no significant change in the noise levels within the area during the Operational Phase.</p>	

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>In addition, during the Operational Phase, there will be two fixed cranes for each ORE Operator facility and one harbour mobile crane that will be used for port-related activities as part of the Proposed Development. The fixed cranes will have a maximum height of 6m and will be of a comparable height to the existing port infrastructure, which birds are accustomed to avoiding. The harbour mobile crane will have a maximum lifting height of ca. 48m, but will only be in use intermittently and operate with slow and highly visible movement. As such, birds are expected to readily detect and avoid them. Therefore, the potential for collision risk to birds during the Operational Phase is considered negligible.</p> <p>Please see Appendix 6-2 (Bird Report) for full assessment details.</p>	
Fish Species	<p>Habitats Directive Annex II, Annex V</p> <p>Fisheries Acts 1959 to 2006</p>	N/A	<p>A desk-based fisheries assessment for Waterford Estuary was undertaken and peer-reviewed by Dr Martin O'Farrell (Aztec Management Consultants), incorporating data from IFI's National WFD Surveillance Monitoring Programme [36] and fish impingement studies at Great Island (2017–2023) [73] [75] [72] [74]. A total of 49 species have been recorded in the estuary, including estuarine, diadromous, marine and freshwater opportunists.</p> <p>Key conservation species include Atlantic salmon (<i>Salmo salar</i>), Sea lamprey (<i>Petromyzon marinus</i>), River lamprey (<i>Lampetra fluviatilis</i>), Twaite shad (<i>Alosa fallax</i>), and European eel (<i>Anguilla anguilla</i>) — all of which are qualifying interests of the River Barrow and River Nore SAC. Although Brook lamprey (<i>Lampetra planeri</i>) is also listed, it was not recorded in the estuary.</p> <p>As part of the Proposed Development, there will be a loss of ca. 1.3ha of the Lower Suir Estuary. It was noted that this area is subject to large tidal action, and as such, a portion of this area is exposed at low tide. Furthermore, the muddy benthic habitat is not considered to be suitable spawning habitat for fish species such as Atlantic salmon, Twaite shad, lamprey or eel. As such, it was considered that this habitat was suboptimal for most fish species. Therefore, it was considered that the total loss of suitable habitat for fish species will not be significant, particularly in the context of the wider Waterford Estuary.</p> <p>In addition, the Construction Phase has the potential to result in underwater noise / vibration effects on species within the wider area, particularly during the piling works required for the construction of the Proposed Development and the infilling works required for the reclamation works. As such, a detailed noise impact assessment was</p>	

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>undertaken as part of this EIAR (Chapter 12). This noise impact assessment concluded that fish species could be affected within a 180-200m range from the piling works. Therefore, fish species has been screened in due to potential noise effects in the absence of appropriate mitigation measures. However, it should be noted that once the piling works are finalised, the underwater noise levels will revert to the existing environment, where vessel noise and biological noise are the main sources.</p> <p>However, during the Operational Phase, it is considered unlikely that fish species will be affected by the Proposed Development due to the fact that the ORE Operator facilities were considered likely to result in similar noise levels to the ongoing port-related activities; it was considered that there will be no significant change in the underwater noise levels within the area during the Operational Phase.</p> <p>As discussed above, during the Demolition, Construction and Operational Phases, there would be potential for water quality impairment effects. Effects on water quality could result in direct impacts to fish species. Therefore, in the absence of appropriate design and mitigation measures, potential water quality impairment effects may occur, and as such, this species has been screened in for further consideration.</p>	
Otter	Wildlife Act 2000 (as amended) EU Habitats Directive Annex IV	N/A	<p>During the otter surveys, signs of otter activity were recorded within the Site. No potential holts or couches were recorded within the Site. However, evidence of otter included spraints, prints and live sightings of otter within the Lower Suir Estuary and along the muddy sand shores within the Site. Therefore, it is known that otter utilise some of the onsite habitats and the wider area.</p> <p>As part of the Proposed Development, there will be a loss of ca. 1.3ha of subtidal and intertidal habitats suitable for foraging and commuting otter. However, a Biodiversity Enhancement Area, ca. 1.8ha in size, has been incorporated into the design of the Proposed Development to provide suitable foraging and sheltering / resting areas for local biodiversity, including otter.</p> <p>No works will take place outside the Site boundary, and as such, no direct effects will occur to any habitats within the wider area.</p> <p>However, as discussed above, during the Demolition, Construction and Operational Phases, there would be potential for water quality impairment effects. Effects to water quality impairment could result in direct impacts to otter as well as to the prey species for otter. Therefore, in the absence of appropriate design and mitigation measures,</p>	<p>Otter have been screened in for further consideration.</p>

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>potential water quality impairment effects may occur, and as such, this species has been screened in for further consideration.</p> <p>Although it was considered that otter within the vicinity of the Site are subject to ongoing port-related activities and were considered to be habituated to anthropogenic noises, the Demolition and Construction Phase has the potential to result in noise / vibration effects that could have significant impact on otter, both on the Site and within the wider area. Potential noise sources will include the demolition works required onsite, the piling works required for the construction of the Proposed Development, the infilling works required for the reclamation works and the construction of the wharf extension and buildings. As such, a detailed terrestrial noise impact assessment (Chapter 11) and underwater noise impact assessment (Chapter 12) were undertaken as part of this EIAR. The terrestrial noise impact assessment concluded that the predicted noise levels were less than the levels within the temporary threshold shift ('TTS') or permanent threshold shift ('PTS') set for marine carnivores in air and water [84]. Therefore, it was considered that the disturbance of individuals would not be significant as these are highly mobile species and can move away from the works during the Construction Phase. Regardless, this species has been screened in due to potential noise effects in the absence of appropriate mitigation measures. Furthermore, given the potential for short-term disturbances, prior to the commencement of construction, consultation will be undertaken with the NPWS in relation to a derogation licence for the construction works.</p> <p>During the Operational Phase, it was considered unlikely that otter species will be affected by the Proposed Development due to the fact that otter within the area are habituated to anthropogenic noise emissions. Therefore, given that the ORE Operator facilities are considered likely to result in similar noise levels to the ongoing port-related activities, it was considered that there will be no significant change in the noise levels within the area during the Operational Phase.</p>	
Marine Mammal	Wildlife Act 1976/2000 (as amended) EU Habitats Directive Annex II, IV & V Whale Fisheries Act 1937	N/A	<p>Although basking sharks (<i>Cetorhinus maximus</i>) are not marine mammals (<i>Chondrichthyes</i>), they are protected under the Wildlife Act, CITES, OSPAR, and the Bonn Convention. Sightings in 2025 occurred >21 km downstream of the Site [39]. Due to their preference for coastal plankton-rich waters and the lack of records or suitable habitat in the upper estuary, this species is not considered further in this assessment.</p> <p>Similarly, while larger cetaceans such as fin whale, humpback whale and minke whale are regularly recorded in Irish waters, IWDG records indicate that these species are</p>	

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
	Bern Convention, Bonn Convention, CITES, OSPAR, ICRW		<p>generally confined to offshore or coastal waters and are not known to occur within the upper estuary. Given the shallow nature of the Lower Suir Estuary, the limited prey availability upstream, and the absence of records from the IWDG sightings in this part of the estuary [39], these larger species are considered unlikely to occur within the vicinity of the Site and are therefore excluded from further assessment.</p> <p>However, as mentioned above, the majority of the marine mammals recorded during the surveys were common and grey seals; whereas, common dolphin and harbour porpoise were only observed on two occasions each during the surveys.</p> <p>As part of the Proposed Development, there will be a loss / alteration of ca. 1.3ha of the Lower Suir Estuary. This area is subject to large tidal action, and as such, a portion of this area is exposed at low tide. Therefore, it is considered that the total loss of suitable habitat for marine mammals is not significant, particularly in the context of the wider Waterford Estuary.</p> <p>However, as discussed above, during the Demolition, Construction and Operational Phases, there would be potential for water quality impairment effects. Effects to water quality impairment could result in direct impacts to marine mammals as well as to the prey species for marine mammals. Therefore, in the absence of appropriate design and mitigation measures, potential water quality impairment effects may occur, and as such, this species has been screened in for further consideration.</p> <p>Although it was considered that marine mammals within the vicinity of the Site are subject to ongoing port-related activities and are considered to be habituated to anthropogenic noises, the Demolition and Construction Phase has the potential to result in noise / vibration effects on species within the wider area. Potential noise sources will include the demolition works required onsite, the piling works required for the construction of the Proposed Development, the infilling works required for the reclamation works and the construction of the wharf extension and buildings. As such, a detailed underwater noise impact assessment (Chapter 12) was undertaken as part of this EIAR. This underwater noise impact assessment assessed the potential impacts to marine mammals and concluded that cetacean species could be affected within a 15m range from the works and within 75m of the piling events, the levels may reach the PTS limits for pinnipeds (seals). Therefore, marine mammals have been screened in due to potential noise effects in the absence of appropriate mitigation measures. However, it should be noted that once the piling works will be complete, the underwater</p>	

Potential Biodiversity Receptor	Relevant Legislation	Valuation	Scoping Justification	Scoping Result
			<p>noise levels will revert to the existing environment, where vessel noise and biological noise are the main sources.</p> <p>The Proposed Development will also require capital dredging for a small area of the riverbed. Given the short-term nature of the dredging activities and the highly localised nature of the works, it is considered that there will be no significant effects to marine mammals during this phase of the works. Regardless, appropriate mitigation measures will be implemented to ensure no effects occur.</p> <p>During the operational phase, it was considered unlikely that marine mammal species will be affected by the Proposed Development due to the fact that marine mammals within the area are habituated to anthropogenic noise emissions. Therefore, given that the Proposed Development will likely result in similar noise levels to the ongoing port-related activities, it was considered that there will be no significant change in the noise levels within the area during the Operational Phase.</p>	
Other Fauna	N/A	Local Importance (Lower Value)	It was considered that the demolition and construction works have the potential to result in potential effects to the local biodiversity through potential terrestrial noise emissions, underwater noise emissions, water quality impairment and possible dust generated during the demolition and construction works in the absence of appropriate mitigation measures. Therefore, given the evidence of other fauna species, such as red fox and sika deer, in the wider area, this receptor has been brought forward for further consideration.	Other Fauna have been screened in for further consideration.
Invasive Species	N/A	N/A	No regulated, high-impact invasive species were noted onsite or within the surrounding area. However, as a precautionary approach, this receptor has been screened in to ensure that no invasive species will be introduced to the Site during the demolition or construction phases of the Proposed Development.	Invasive Species have been screened in from further consideration

6.5.3 Summary of Potential Effects

Following a detailed assessment, the following species and habitats were identified as significant receptors and were brought forward for further consideration, see Section 6.6.1 and 6.6.2 below:

- Mixed Broadleaved Woodland (WD1);
- Muddy Sand Shores (LS3);
- Tidal Rivers (CW2);
- Bats;
- Birds;
- Fish;
- Otter;
- Marine Mammals;
- Other Fauna; and,
- Invasive Species.

As per the scoping justification outlined in Table 6-11, further consideration was required for each of the receptors listed above in order to develop appropriate mitigation to protect these receptors and avoid effects arising from the Proposed Development. Refer to Section 6.6 below for further details.

In addition to the receptors listed above, general mitigation / best practice measures have been included for the Proposed Development.

6.6 Mitigation Measures

The following mitigation measures will be incorporated and adhered to during the Construction and Operational Phases of the Proposed Development to ensure that the works will not result in contravention of wildlife legislation.

6.6.1 Construction Phase

A detailed CEMP will be prepared by the appointed main contractor and will be submitted to the Planning Authority in advance of works commencing at the Site. The following guidance will be referred to and will be followed during the construction phase of the project to prevent water pollution and effects on flora and fauna that may occur within the area:

- CIRIA, C532 – *Control of Water Pollution from Construction, Guidance for Consultants and Contractors* [17];
- CIRIA, C811- *Environmental Good Practice on Site* (5th edition) [18];
- NRA, now TII, 'Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes' [19];
- NRA 'Guidance for the Treatment of Otters Prior to the Construction of National Road Schemes' [20];
- NRA 'Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes' [21];
- NRA 'Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' [22];

- IFI, 'Requirements for the Protection of Fisheries Habitat during Construction and Development' [23];
- Department of Arts, Heritage and the Gaeltacht ('DAHG'), 'Guidance to Manage the Risk to Marine Mammal from Man-made Sound Sources in Irish Waters' [24]; and,
- *Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 1* [3]; and,
- *Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 2* [4].

The contractor will ensure that all personnel working on-site are trained and aware of the measures detailed within the CEMP.

6.6.1.1 General Construction Measures

The Site manager shall ensure that all personnel working on-site will be trained and aware of the mitigation measures detailed within the EIAR:

- An Ecological Clerk of Works ('ECoW') will be appointed for the duration of the project. The ECoW will inspect the Site in advance of works commencing and will undertake Site inspections as well as attend the Site as required during the works, to ensure that all of the works will be completed in line with the CEMP and all wildlife legislation;
- If protected or notable species are encountered during the operations at the Site, the ECoW will be contacted for advice;
- Protected and notable species posters will be erected on the Site notice board and maintained throughout the duration of the works; and,
- In advance of works, all Site personnel will receive a toolbox talk regarding notable and protected species. Everybody working on-site must understand the role and authority of the ECoW.

6.6.1.2 Protection Measures for Water Quality

In order to ensure no impacts occur to any intertidal or aquatic habitats (muddy sand shores, tidal rivers, estuaries) or species that utilise these habitats (birds, fish, otter, marine mammals, other species), mitigation measures will be put in place in order to ensure that construction works and the operations of the Proposed Development will not result in any deterioration to local water quality and subsequently no adverse effects to species and habitats downstream of the Site.

Measures to ensure the protection of water quality will be implemented as outlined in the accompanying NIS and in Chapter 8 (Water).

6.6.1.3 Measures for Prevention of Dust Effects

In order to ensure no impacts occur to any intertidal or aquatic habitats (muddy sand shores, tidal rivers, estuaries) or species that utilise these habitats (birds, fish, otter, marine mammals, other species), mitigation measures will be put in place in order to ensure that construction works and the operations of the Proposed Development will not result in any dust effects.

Measures to ensure the protection of water quality will be implemented as outlined in the accompanying NIS and in Chapter 9 (Air Quality).

6.6.1.4 Protection Measures for Mixed Broadleaved Woodland

The works for ORE Operator 2 Facility, to the north of the railway, will take place adjacent to mixed broadleaved woodland. To ensure that no impacts occur on any nearby trees, care will

be required to protect the sections of trees on-site from indirect disturbance during construction, and care will be required to prevent disturbance to root systems. The standard measure to achieve this is that every effort will be made to minimise works within the outer canopy limit of the trees:

- Trees close to construction areas will be fenced off to prevent accidental disturbance from construction vehicles. These barriers will remain in place for the duration of the works to prevent accidental disturbance and define the limits for construction vehicles and other construction staff;
- Care will be required to prevent disturbance to root systems – a buffer zone of 5m of unexcavated ground will be maintained along the trees;
- During any works close to the buffer zone, should the operatives encounter any root smaller than 35mm diameter, they will be pruned carefully with an appropriate cutting tool such as a saw or secateur and roots larger than this will require consultation with an arboriculture specialist;
- No materials, equipment or machinery will be stored within the root protection area ('RPA'). Storage of materials will be sited as far as possible from the trees;
- No materials or equipment will be stored within the buffer zone;
- Care will be taken when planning Site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with trees;
- Notice boards, wires, etc. will not be attached to any trees. Site offices, materials and contractor parking will all be outside the RPAs of the trees; and,
- In order for hedge protection measures to work effectively, all personnel associated with the operation of machinery will be familiar with the above principles for the protection of trees.

6.6.1.5 Measures for the Prevention of Terrestrial Noise Disturbances

In order to ensure no impacts, occur to any species that may utilise terrestrial habitats (birds, otter, marine mammals, other species) within the vicinity of the Site (fish, otter, marine mammals) mitigation measures to reduce and mitigate against noise disturbance, will be implemented as outlined in the accompanying NIS and in Chapter 11 (Noise and Vibration).

6.6.1.6 Measures for the Prevention of Underwater Noise Disturbances

In order to ensure no significant impacts occur to any species that may utilise underwater habitats (fish, otter, marine mammals) mitigation measures to reduce and mitigate against noise disturbance, will be implemented in line with recommendations made for pile driving by the Department of Arts, Heritage and the Gaeltacht ('DAHG') in the '*Guidance to Manage the Risk to Marine Mammal from Man-made Sound Sources in Irish Waters*' [24].

During the capital dredging works, the Contractor will implement clear 'soft-start' or 'ramp up' procedures, whereby sound energy input to the marine environment will be gradually or incrementally increased from levels unlikely to cause significant behavioural impact on marine mammals, fish or otter to the full output necessary for completion of the activities.

However, during the piling works, a suitably qualified marine mammal observer ('MMO') will be appointed to monitor marine mammals and otter. All relevant events will be logged using standardised data forms prepared by the DAHG.

The following measures will be implemented to mitigate against impacts on species such as marine mammals, birds and fish species utilising the estuaries:

- The MMO will assess an area of 1km radial distance of the pile driving sound source as the 'Monitored Zone';
- Pre-Start Monitoring:
 - Pile driving activities will only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, will be achieved. Where effective visual monitoring, as determined by the MMO, will not be possible, the pile driving will be postponed until effective visual monitoring will be possible;
 - An agreed and clear onsite communication signal will be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break (more information below). Works will only proceed on positive confirmation with the MMO;
 - Pile driving activity will not commence if marine mammals are detected within the Monitored Zone during the pre-start monitoring;
 - The MMO will conduct Pre-Start-Up Monitoring, which will be a constant effort monitoring at least 30 minutes before the sound-producing activities are due to commence. Pile driving shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the Monitored Zone by the MMO; and,
 - The Pre-Start Monitoring will subsequently be followed by an appropriate Ramp-Up Procedure, which will include continued monitoring by the MMO.
- Ramp-Up Procedure ('soft-start'):
 - In commencing a pile driving operation where the output peak sound pressure level (in water) from any source, including equipment testing, exceeds 170 dB re: 1µPa @1m an appropriate Ramp-up Procedure (i.e., "soft-start") will be used. The procedure for use will be informed by the risk assessment undertaken, giving due consideration to the pile specification, the driving mechanism, the receiving substrate, the duration of the activity, the receiving environment and species therein, and other information;
 - Where it is possible, according to the operational parameters of the equipment and materials concerned, the underwater acoustic energy output will commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter will be allowed to gradually build up to the necessary maximum output over a period of 20-40 minutes;
 - This controlled build-up of acoustic energy output will occur in consistent stages to provide a steady and gradual increase over the ramp-up period;
 - Where the above measures will not be possible, alternatives will be examined whereby the underwater output of acoustic energy will be introduced in a consistent, sequential and gradual manner over a period of 20-40 minutes prior to commencement of the full necessary output; and,
 - In all cases where a Ramp-Up Procedure will be employed, the delay between the end of ramp-up and the necessary full output will be minimised to prevent unnecessary high-level sound introduction into the environment.
- Once an appropriate and effective Ramp-Up Procedure commences, there will be no requirement to halt or discontinue the procedure if weather or visibility conditions deteriorate, nor if marine mammals occur within the Monitored Zone; and,

- If there is a break in pile driving sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down or location change) then all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) will be undertaken.

6.6.1.7 Protection Measures for Otter

In addition to the measures outlined in Section 6.6.1.5 above, the following mitigation measures will be put in place in order to ensure that there will be no adverse effects to otter. Therefore, in advance of the works commencing, a pre-commencement otter survey will take place along the accessible areas of the shoreline to ensure no otter holts are located within 150m of the Site.

In addition, given the potential for short-term disturbances, prior to the commencement of construction, consultation will be undertaken with the NPWS in relation to a derogation licence for the construction works.

In order to ensure no significant effects have occurred as a result of the Proposed Development, post-construction monitoring will be undertaken for this species by a suitably qualified ecologist.

6.6.1.8 Protection Measures for Breeding Birds, Waterbirds and Wildfowl

In order to ensure that no disturbances occur to breeding or wintering birds, the following measures will be implemented:

- All vegetation clearance will be undertaken outside of the nesting bird season (1st March to 31st August), as per Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000;
- In the event that vegetation clearance works need to be undertaken within the main breeding season, the following measures will be implemented:
 - Prior to the works commencing, consultation with the NPWS will be undertaken by the ECoW;
 - Prior to the vegetation removal, the ECoW will inspect the Site; and,
 - All vegetation clearance works will be undertaken in a systematic way under the direction of the ECoW.
- In the unlikely event that birds nest within the active working area during the works, all works will stop within the immediate area, and the project ECoW will be consulted.

In order to ensure no significant effects have occurred as a result of the Proposed Development, post-construction monitoring will be undertaken for this species by a suitably qualified ecologist.

6.6.1.9 Protection Measures for Nocturnal Species

Nocturnal species, such as bats and otter, are averse to excessive artificial lighting; subsequently, effects could occur as a result of an inappropriate lighting strategy. Therefore, it is important that any temporary lighting used during the Construction Phase will be sensitive to local wildlife while still providing the necessary lighting for human usage.

The majority of bat species recorded foraging and commuting within the Port of Waterford were species adapted to certain levels of artificial lighting, including common pipistrelle, soprano pipistrelle and Leisler's bat. Furthermore, it is concluded that otter within the locality will be habituated to certain levels of anthropogenic activities and, as such, will be habituated to the existing levels of lighting within the Port. Lighting will be required during the Construction Phase of the Proposed Development.

Where possible, the following measures will be implemented for lighting at the Site during the construction phase:

- Avoidance of excessive lighting;
- Lighting will be aimed only where it is needed;
- Lighting will be turned down / off when not required; and,
- Accessories such as baffles, hoods or louvres will be used to reduce light spill and direct light only where it is needed.

6.6.1.10 Biosecurity Measures for Invasive Species

No high-impact or regulated invasive species were identified onsite. However, in line with the *Development Management Requirements for Invasive Species* in Section 9.2.10 of the KCDP, the following biosecurity considerations will be implemented onsite to ensure that no invasive species are introduced:

- All vehicles, machinery and any other equipment that will be used for the works will be washed and cleaned down prior to being used on the Site to prevent the spread of invasive alien species ('IAS');
- Before machinery or equipment will be unloaded at the Site, equipment will be visually inspected to ensure that all adherent material and debris have been removed;
- Any vehicles and machinery that have not been deemed to be clean will not be permitted entry to the Site;
- All materials to be imported to the Site, including additional planting for the Biodiversity Enhancement Area will be sourced from a reputable supplier, and records of all material / supplies to the Site will be maintained;
- In advance of works, all site personnel will receive an induction regarding invasive species;
- Everybody working onsite must understand the role and authority of the ECoW managing the issue of the non-native species;
- Where risk assessments indicate potential presence of priority IAS (e.g., Asian clam, winter heliotrope), species-specific best practice guidelines developed under EPA Research Report 368 will be applied;
- An early-detection and rapid-response framework will be established, including routine inspections at vessel wash-down areas, staff training in IAS identification, and contingency plans for rapid eradication and post-eradication monitoring; and,
- Biosecurity signage will be displayed at the Site, all personnel will receive induction on invasive species protocols, and suspected sightings will be recorded and reported to the ECoW.

6.6.2 Operational Phase

6.6.2.1 Measures for Nocturnal Species – Lighting Strategy

As mentioned in Section 6.5.1 above, sensitive design is a key input concerning the operational lighting plan for the Proposed Development. The lighting plan submitted as part of the overall planning application was designed in accordance with the Bat Conservation Trust and the Institution of Lighting Professionals [85]. All lighting will be provided from 2700Kelvin light temperature bulbs, as this reduces the blue light component for bats [85]. Potential

impacts on bats from lighting as a result of the Proposed Development have been mitigated through sensitive design.

Additionally, following the installation of the lighting for the Proposed Development, the project ECoW will undertake a further site inspection in order to check the lighting patterns and lux levels along the Site boundaries.

6.7 Ecological Enhancements

As part of the Proposed Development, an area of ca. 1.8ha will be utilised for biodiversity enhancement. The proposed biodiversity enhancement measures will include:

- Installation of stock-proof fencing around the Biodiversity Enhancement Area to exclude cattle but allow the free movement of other species, including otter, badger, deer, etc.;
- The creation of pond complexes within the Biodiversity Enhancement Area with natural regeneration of wetland species;
- Enhancement of existing hedgerows with additional species-rich riparian woodland planting along the eastern and western boundaries;
- Allowing for the natural regeneration of wet grassland habitat and reed and large sedge swamp habitat following the removal of livestock from the area; and,
- The provision of wildlife shelters providing nesting opportunities for protected and locally important species, including sand martin, nest bank, kingfisher nest bank, bat boxes, habitat piles / hibernaculum, deadwood habitat and artificial otter holts.

Full details of the proposed measures are outlined in Appendix 6-4 - Biodiversity Enhancement Master Plan.

6.8 Cumulative and In-Combination Effects

The Site is located within an active port that is surrounded by numerous industrial and port-related facilities, which include:

- SmartPly Europe, which manufactures sustainably-timber construction panels and has various warehouses and facilities in the area, including Store All (SmartPly Distribution), is located ca. 170m northwest of the main operational area;
- Southeast Port Services Limited, a shipping agency and storage provider, is located ca. 180m north of the main operational area;
- Target Fertilisers, a wholesaler of grass and tillage fertilisers, is located ca. 60m northwest of the Site;
- Belview Bulk Storage is located ca. 500m southwest of the Site;
- DFDS Waterford (Container Division), a freight shipping service, is located south of the Site;
- Glanway, an Irish waste processor and producer of alternative fuels, is located ca. 550m south of the Site; and,
- O'Brien Cement is located ca. 600m south of the Site.

These facilities operate in tandem with the current Port of Waterford operations. It is considered that during the Construction and Operational Phase of the Proposed Development, these facilities will continue to operate under normal activity levels. Furthermore, it is considered that during the Construction Phase, the Port will carry out normal operations, which include shipping traffic, maintenance dredging and port-related activities.

A review was undertaken of Kilkenny County Council ePlan [86], Waterford City and County Council ePlan [87], Wexford County Council Planning Applications website [31], the National Planning Application Database [88] and An Coimisiún Pleanála Mapping Search [89] to assess any plans or projects that have the potential to result in in-combination effects with the Proposed Development.

It should be noted that the Port of Waterford have previous planning applications that have been granted within the Site boundary. However, these works have already been undertaken and, as such, are not considered likely to result in any in-combination effects with the Proposed Development.

In addition, maintenance dredging is also carried out at the Port of Waterford. The operation of dredgers on silty material generates underwater noise levels comparable to those from regular shipping traffic. Accordingly, the cumulative effect of maintenance dredging noise is not considered likely to give rise to significant effects to biodiversity in the overall context of the Proposed Development.

Therefore, no current or previously granted plans or projects were identified in the immediate vicinity that were considered to have the potential to have any in-combination with the Proposed Development to result in significant impacts on the integrity of European sites.

Two planning applications that had recently been submitted to Kilkenny County Council were identified during the desk-based review, and implementing a precautionary approach as neither has been consented, these applications were assessed for potential in-combination effects with the Proposed Development:

KCC Planning Ref: 2560391

Drumdowney Solar Farm Ltd. submitted an application to Kilkenny County Council on 27th June 2025 for a solar farm with a 40 year operational lifetime that will cover a total area of ca. 189ha and will include solar panels on ground mounted frames, 27 single storey electrical inverter/transformer stations, five single storey spare parts containers, three Ring Main Units, five weather stations, underground electrical ducting, cabling within the development site, private lands and within the public road network to connect solar farm field parcels and associated ancillary works. This application is currently awaiting a decision from Kilkenny County Council. The development was subject to an Appropriate Assessment ('NIS') and an Ecological Impact Assessment Report ('EclA'). The EclA assessed the likely significant ecological effects arising from the development. This EclA stated, *"No potential for significant cumulative/in-combination effects related to disturbance, displacement morbidity or mortality impacts on fauna species has been identified. Taking the above into consideration, along with the proposed environmental management and controls integrated into the project design and for other projects in the area, no potentially negative cumulative and in-combination ecological effects have been identified."* Therefore, should this development receive planning permission, it is considered highly unlikely that the Proposed Development will result in any in-combination effects on biodiversity with the Proposed Development.

KCC Planning Ref: 2560254

Suir Shipping Limited submitted a planning application to Kilkenny County Council on the 12th May 2025 for an extension of the existing access service road, construct a new clear span bridge structure, ancillary service connections, landscaping and associated site works. This application is currently awaiting a decision for Kilkenny County Council; however, Kilkenny County Council issued a request for further information ('RFI') on the 4th July 2025. The development was subject to an Appropriate Assessment ('NIS'). The NIS assessed likely significant ecological effects arising from the development. This NIS stated, *"Following an examination, analysis and evaluation of the relevant information, including the nature of the predicted impacts from the Proposed Development and all associated works, it has been*

objectively concluded that with the implementation of the proposed mitigation measures, the Proposed Development will not, either alone or in combination with other plans or projects, adversely affect the integrity or conservation status of any of the qualifying interests of the Lower River Suir SAC and River Barrow and River Nore SAC or any other European site in light of best scientific knowledge. Therefore, should this development receive planning permission, it is considered highly unlikely that the Proposed Development will result in any in-combination effects on biodiversity with this project.

It should be noted that any potential cumulative impacts will be minimised as all works will be completed in line with relevant best practice guidelines and legislation alongside the mitigation measures detailed within this EIAR. Potential impacts associated with the deterioration in water quality, terrestrial noise, underwater noise, air and climate have been addressed within Chapters 8, 9, 10, 11 and 12.

Furthermore, it should be noted that the Proposed Developments include biodiversity enhancement measures in order to mitigate the loss of estuarine habitat through the reclamation of 1.3ha.

Overall, the Site is partially located within the existing Belview Port, which is considered to be of low ecological value, and partially within the Lower Suir Estuary, which is considered to be of higher local ecological value given that it is a designated SAC. However, it is noted that this section of the river is located directly adjacent to the existing Belview Port and is subject to ongoing anthropogenic port-related activities. Therefore, the overall value of the Site is considered to be of Local Importance (higher value) according to the NRA Ecological Valuation system [53].

Overall, it is anticipated that with the sensitive design measures, mitigation measures and ecological enhancement measures, the Site will not result in any significant cumulative impacts in relation to significant impacts on flora or fauna and will not cause adverse effects on the integrity of any European designated sites in combination with other plans and projects.

6.9 Interactions with other Environmental Attributes

Biodiversity interacts with the following environmental attributes:

- Chapter 7 (Land, Soil and Geology). Potential impacts on the underlying soils and geology could also impact on water quality and, therefore, the ecological aquatic ecology. The capital dredging and land reclamation works have the potential to produce siltation that could impact ecological conditions. However, given that there will be no significant effect on soils and geology or water quality due to the mitigation measures, there will be no significant effect on biodiversity;
- Chapter 8 (Water). The ecological status of surface waters will not be significantly affected by the in-river works or the surface water discharge during the Operational Phase, and there will not be a significant effect on any European Designated site;
- Chapter 9 (Air Quality). A decrease in air quality due to dust could negatively impact biodiversity within the vicinity of the Site. However, as outlined in Chapter 9, a Dust Risk Assessment was undertaken and concluded that following the implementation of mitigation measures, the effects of the Construction Phase on air quality will be not significant, and the risk of effects reduced to Negligible;
- Chapter 10 (Climate). The increase of Greenhouse gases and change in climate can negatively impact biodiversity, habitats and surroundings. However, the effects of GHG emissions associated with the Proposed Development was determined as not significant;

- Chapter 11 (Terrestrial Noise & Vibration). Fauna are often sensitive to the disturbances caused by acoustics. However, given the close proximity to existing nearby industrial / port-related developments, it is considered likely that fauna within the local area have been habituated to the acoustic environment. From the noise modelling undertaken in Chapter 11, it is anticipated that there will be no significant change to noise levels on any European designated sites or ecological receptors following the implementation of appropriate mitigation measures; and,
- Chapter 12 (Underwater Noise & Vibration). Aquatic fauna are sensitive to the disturbances caused by acoustics. However, following the implementation of appropriate mitigation measures, it is considered that there will be no impacts on any European designated sites or ecological receptors during the construction phase. In addition, given the fact that the Site is located within and adjacent to the existing Belview Port, it is considered likely that fauna within the local area have been habituated to the underwater acoustic environment. From the noise modelling undertaken in Chapter 11, it is anticipated that there will be no significant change to noise levels on any European designated sites or ecological receptors following the implementation of appropriate mitigation measures.

6.10 Indirect Effects

No significant indirect effects on biodiversity associated with the Proposed Development will occur.

6.11 Residual Effects

Based on the findings of a detailed desk-based study of all ecological information available for the Site and the wider area, multiple field surveys undertaken by MOR Environmental Ecologists and specialist subcontractors, it was considered that the Site is currently of a local ecological value (higher value).

Without the implementation and successful establishment of the proposed Biodiversity Enhancement Plan on the Site, the Proposed Development will have a medium-long term negative impact on local biodiversity. Once the proposed mitigation measures, landscaping and sensitive design measures have been established, it was concluded that the Proposed Development will be in accordance with National, Local and Municipal planning policies and objectives. The proposed biodiversity enhancement measures will also result in a net increase in the suitable habitats for birds, otters, bats and other fauna that may occur within the area.

Based on the methodology set out in Section 6.2, the initial assessment of ecological receptors (Table 6-11) screened out the following habitats and species:

- European Designated Sites;
- Nationally Designated Sites;
- Buildings and Artificial Surfaces (BL3);
- Dry Meadows and Grassy Verges (GS2);
- Scrub (WS1);
- Recolonising Bare Ground (ED3);
- Sea Walls, Piers and Jetties (CC1);
- Improved Agricultural Grassland (GA1) / Wet Grassland (GS4);
- Reed and Large Sedge Swamps (FS1);
- Drainage Ditch (FW4);

- Hedgerow / Treelines (WL1/WL2);
- Depositing / Lowland Rivers (FW2); and,
- Protected Flora.

These ecological receptors were screened out from further assessment as the potential effects were considered to be imperceptible; refer to Table 6-11 for further details. The following protected sites, species and habitats, outlined in Table 6-11, were identified as receptors that warranted further consideration to avoid effects:

- Mixed Broadleaved Woodland (WD1);
- Muddy Sand Shores (LS3);
- Tidal Rivers (CW2);
- Estuaries (MW4);
- Bats;
- Birds;
- Fish;
- Otter;
- Marine Mammals;
- Other Fauna; and,
- Invasive Species.

Mitigation has been proposed for each of these ecological receptors alongside enhancement measures for the Site as part of the Biodiversity Management Plan, as outlined in Section 6.6. The results of these measures on these ecological receptors and the resulting residual effects are described below in Table 6-12.

Table 6-12: Valuation of Potential Ecological Receptors

Receptor	Potential Effects	Assessment of Effects Post Mitigation and Enhancement	Residual Effects
Muddy Sand Shores (LS3)	Loss of ~0.6ha foraging habitat for birds and otter; potential water quality impairment during in-river works	As part of the reclaimed area, ca. 0.6ha of muddy sand shore habitat will be permanently lost through reclamation. However, similar muddy sand shore habitats are located within the wider estuary, which were observed to have higher levels of wetland bird and otter activity, particularly along the Waterford-side of the Lower Suir Estuary, will continue to support these foraging species. In addition, biodiversity enhancement measures have been included to offset the loss of habitats and the foraging habitat that this provides through the creation of ca. 1.8ha of new wetland grassland habitat in the Biodiversity Enhancement Area. Following the implementation of the proposed water quality mitigation measures, outlined in Section 6.6.1.2, no significant adverse effects were predicted.	Imperceptible / Slight Negative

Receptor	Potential Effects	Assessment of Effects Post Mitigation and Enhancement	Residual Effects
Tidal Rivers (CW2)	Loss of intertidal/subtidal benthic habitat; risk of water quality impairment during dredging, reclamation, and operational discharge	The reclamation of ca. 1.3ha of estuarine benthic habitat will result in alteration and permanent habitat loss. However, the open quay design will maintain tidal influx and species access beneath the wharf, thereby retaining some habitat functionality. Furthermore, biodiversity enhancement measures have been included to offset the loss of habitats and the foraging habitat that this will provide through the creation of new wetland and riparian habitats in the Biodiversity Enhancement Area. Following the implementation of the proposed water quality mitigation measures, outlined in Section 6.6.1.2, no significant adverse effects were predicted.	Neutral / Imperceptible
Mixed Broadleaved Woodland (WD1)	Disturbance to edge habitat during demolition and construction; potential impacts from dust deposition, noise, vibration and accidental encroachment; risk of root zone disturbance or compaction affecting tree health.	Provided that mitigation measures outlined in Section 6.6.1.3 are implemented, and the woodland is retained and actively managed as part of the Biodiversity Enhancement Area, it was considered that no adverse effects will occur. The long-term management will deliver biodiversity benefits.	Slight Positive
Bats	Loss of commuting / foraging habitat	Given the lighting controls and mitigation measures outlined in Sections 6.6.1.8 and 6.6.2.1 that will be implemented and given the continued availability of suitable commuting/foraging habitat in the wider area, no significant adverse effects were predicted.	Neutral / Imperceptible
Birds	Disturbance during construction; loss of foraging habitat (~1.3ha); water quality impairment risks	A permanent loss of subtidal and intertidal foraging habitat will occur. However, biodiversity enhancement measures have been included to offset the loss of habitats and the foraging habitat that this provides through the creation of c.1.8ha of new habitat in the Biodiversity Enhancement Area. Following the implementation of the mitigation measures outlined in Section 6.6.1.7, no significant adverse effects were predicted.	Neutral / Imperceptible
Otter	Disturbance (noise / vibration) during construction; loss of foraging habitat (~1.3ha); water quality impairment risks	The loss of foraging habitat will be offset through biodiversity enhancement measures, including the creation of c.1.8ha of suitable foraging and resting habitat in the Biodiversity Enhancement Area. Following the implementation of the mitigation measures outlined in Section 6.6.1.5, 6.6.1.6 and 6.6.1.8 no significant adverse effects were predicted	Neutral / Imperceptible
Fish	Underwater noise from piling; water quality impairment during dredging and construction	Taking into account the seasonal timing restrictions, the noise mitigation measures outlined in Section 6.6.1.5, and the dredge management protocols, and given the suboptimal spawning habitat within the affected area, no significant adverse effects were predicted.	Neutral / Imperceptible

Receptor	Potential Effects	Assessment of Effects Post Mitigation and Enhancement	Residual Effects
Marine Mammals	Underwater noise from piling / demolition; water quality impairment	The implementation of underwater noise mitigation measures (soft-start, monitoring, shut-down zones) and water quality protection measures, as outlined in Section 6.6.1.2 and 6.6.1.5, and given the limited use of the upper estuary by large marine mammals, no significant adverse effects were predicted	Neutral / Imperceptible
Other Fauna	Disturbance and entrapment	Following the implementation of the mitigation measures outlined in Section 6.6.1.4, it was considered that potential effects on terrestrial mammals, including badger, pine marten and hedgehog, will not be significant and as such there will be no residual effects.	Neutral / Imperceptible
Invasive Species	Introduction and spread of invasive species.	The implementation of the mitigation outlined in Section 6.6.1. will ensure that no effects will occur to valued ecological receptors as a result of the spread or introduction of invasive species.	Neutral / Imperceptible

While there will be a **slight negative** effect from the loss of muddy sand shores, taking into account the mitigation measures that will be implemented and the enhancement measures and habitats created for the Biodiversity Management Plan, it was considered that the overall effects on ecology from the Proposed Development will be **imperceptible**.

In the longer term, following the successful establishment and management of the Biodiversity Enhancement Area, including the creation of wet grassland, riparian and woodland habitats, the Proposed Development will result in a **slight positive effect** on biodiversity through the provision of additional foraging, roosting and sheltering opportunities for a range of species, thereby offsetting the localised habitat losses within the development footprint.

6.12 Monitoring

An ECoW will be appointed for the entirety of the construction stage and will undertake the necessary monitoring work both preconstruction and during construction as required to ensure the implementation of all of the specified ecological mitigation measures.

In addition, a MMO will be appointed for the duration of the piling works and will undertake the necessary monitoring work during construction as required to ensure the implementation of all of the specified mitigation measures.

Post construction and following the installation of the lighting for the Proposed Development, the project ECoW will undertake a further site inspection in order to check the lighting patterns and lux levels along the Site boundaries, and the findings will be presented to the planning authority.

The project ECoW will also undertake the necessary post-construction monitoring to ensure all of the biodiversity enhancement measures will be successfully implemented.

Post construction monitoring will be undertaken by a suitable, qualified and experienced ecologist in order to ensure no adverse effects will occur to wetland bird species or otter as a result of the Proposed Development.

6.13 Reinstatement

Not applicable.

6.14 Difficulties Encountered in Compiling this Information

Refer to Section 6.2.4.4 for survey limitations. There were no other difficulties encountered in compiling the information.

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