Alexandra Basin Redevelopment 2

Bringing Dublin Port To 2040

Environmental Impact Assessment Report

# Chapter 7 Biodiversity, Flora & Fauna

Volume 2



CALAFORT ÁTHA CLIATH
DUBLIN PORT

TETRA TECH

# 7 Biodiversity, Flora and Fauna

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## 7.1 Introduction

This Chapter of the EIAR examines the existing Biodiversity, Flora and Fauna conditions within the Project study area and analyses and evaluates the potential effects of the Project on Biodiversity, Flora and Fauna. The assessment is based on the description of the proposed development as set out in **Chapter 5 Project Description**. Where potentially significant environmental effects on Biodiversity, Flora and Fauna features are identified, the assessment identifies mitigation measures that will be implemented to prevent, reduce or offset these potent effects, or enhance potential beneficial effects where possible.

As noted in the EC (2013) *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment*, biological diversity or 'biodiversity' is one of the key terms in conservation, encompassing the richness of life and the diverse patterns it forms. The 1992 UN Convention on Biological Diversity defines biological diversity as '*the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'*.

As all biodiversity comprises an enormous number of species and habitats, ecological assessment is typically divided into specialist subject areas. This chapter has been broken down into the following sub-sections:

**Section 7.2:** Terrestrial Biodiversity and Ornithology

**Section 7.4:** Benthic Biodiversity and Fisheries

**Section 7.5:** Marine Mammals

It should also be noted that, in circumstances where the developer's ecologist has concluded that Stage One Screening for Appropriate Assessment and Stage Two Appropriate Assessment are required to be undertaken by the competent authority, pursuant to Article 6(3) of the Habitats Directive (Directive 92/43/EC) and Irish implementing legislation, a combined Appropriate Assessment Screening Report (AASR) and Natura Impact Statement (NIS), has been prepared on behalf of DPC and submitted to An Coimisiún Pleanála (ACP) with the application for permission, in respect of the likely significant effects of the ABR2 Project on European sites. To the extent relevant and appropriate, this chapter of the EIAR should be read in conjunction with the AASR/(NIS (under separate cover) and relevant supplementary documentation. Additional appendices and technical reports are cited in the text where relevant.

## 7.2 Assessment Methodology

This section describes the methodology which has been used in the assessment of biodiversity, which may be impacted by the construction and operation of the Project. The methodology and associated impact assessment had regard to the general guidance for the preparation of an EIAR, as presented in **Chapter 1 Introduction** (including EC (2017) "Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report" and EPA (2022) "Guidelines on the information to be contained in Environmental Impact Assessment Reports".

In addition to the above, sector-specific guidance has been used to inform the assessment. These include:

- EC (2013) “Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment”
- CIEEM (2018, Updated 2024) Guidelines for Ecological Impact Assessment
- NPWS guidance on marine and estuarine ecological receptors
- Inland Fisheries Ireland (IFI) guidance on migratory fish and estuarine fisheries
- The Water Framework Directive (WFD) and associated Surface Water Regulations
- Relevant national and international best practice for assessing dredging and infilling effects in estuarine environments

The assessment builds upon the approach set out in the EIA Scoping Report and incorporates a review of existing baseline data, consideration of the characteristics of the receiving environment, identification of potential impact pathways, the likelihood of significant effects, mitigation measures and residual impacts.

The methodology also incorporated consideration of previous technical assessments undertaken for the ABR Project. Given the evolving design of sediment treatment and management, a precautionary approach has been applied, whereby the assessment considers the maximum spatial extent, intensity and duration of activities across all potential treatment scenarios and locations.

The following steps were undertaken to inform the assessment for Terrestrial Biodiversity and Ornithology (Section 7.3):

- Review of existing datasets provided by the National Biodiversity Data Centre (NBDC) and National Parks and Wildlife Service (NPWS), see **Table 7-1: Summary of Key Desktop Data Sources for Terrestrial Ecology** for further information.
- A Fossitt Habitat Survey was conducted in June 2025, and August 2026. This survey recorded the plant species and habitats present within the site boundary and up to 150m outside the boundary.
- Species specific surveys were conducted including: Extended Otter Survey (June 2025, June 2026 and August 2026), an Extended Badger Survey (June 2025 and August 2026) and Preliminary Ecological Appraisal for Bats (June 2025 and August 2026).
- Establishing an ecological baseline based on existing data sources and survey findings.
- Assessment of the project against key impact pathways (Construction Phase and Operational Phase) including: water pollution, habitat loss, invasive species spread, degradation of nearby designated sites, impacts on otter, badger, bats and birds.
- Assessment of significance of effects
- Outlining the steps required to mitigate any significant negative effects
- Consideration of in-combination effects relating to the ABR2 project and nearby plans and projects.
- Assessment of residual effects following implementation of mitigation measures.

The following steps were undertaken to inform the assessment for Benthic Ecology and Fisheries (Section 7.4):

- Identification and review of relevant benthic ecological and fisheries datasets, including the 2013, 2020 and 2025 benthic surveys, 2026 ROV survey, sediment analysis, and desktop fisheries datasets;
- Classification of benthic habitats and biotopes using EUNIS and JNCC frameworks, supported by sediment particle size and organic carbon data;
- Establishment of the fisheries baseline through review of published literature, statutory datasets, and established migratory pathways for salmon, eel and lamprey within the Liffey Estuary;
- Appraisal of the Project with respect to key impact pathways, including dredging, infilling, turbidity generation, vessel activity, wastewater discharge, underwater noise and changes in estuarine hydrodynamics;
- Evaluation of the sensitivity and ecological value of receptors and the magnitude of potential effects, in accordance with the CIEEM significance assessment framework;
- Assessment of the significance of effects, including identification of those considered significant or not significant;
- Identification of embedded mitigation measures included as part of the Project Description, together with additional mitigation where required;
- Assessment of residual impacts following mitigation, including consideration of uncertainty; and
- Evaluation of potential cumulative effects with other existing or permitted activities within Dublin Port.

The following steps were undertaken to inform the assessment for Marine Mammals (Section 7.5):

- Review of IWDG Consulting's existing baseline information on marine mammal species known to occur within Dublin Bay and the surrounding area;
- Identification of the Project activities with the potential to interact with marine mammals, including underwater noise, vessel movements and physical disturbance;
- Assessment of the sensitivity of marine mammals in the context of the receiving environment;
- Evaluation of the magnitude, duration and significance of potential effects during the construction and operational phases;
- Identification of appropriate mitigation measures to avoid or reduce adverse effects;
- Assessment of residual effects following the implementation of mitigation; and
- Consideration of cumulative and in-combination effects with other relevant plans, programmes and projects.

# 7.3 Terrestrial Biodiversity and Ornithology

## 7.3.1 Scope of the Assessment

This section describes the receiving environment of the ABR2 Project for Terrestrial Biodiversity and Ornithology, the baseline for assessment, and examines, analyses and evaluates the potential impacts of the construction and operation of the ABR2 Project on Terrestrial Biodiversity and Ornithology. The methodology for data collection is presented The. Mitigation measures are also described and assessed. Finally, residual impacts are identified and evaluated.

### 7.3.1.1 Relevant Guidance

Likely significant effects of the proposed ABR2 Project on terrestrial biodiversity features are assessed on the basis of the elements of the Project as set out in **Chapter 5 Project Description**. The information gathered from consultation, scoping and stakeholder feedback; desk studies and a suite of targeted ecological field surveys have been used to prepare the EIAR Chapter. The preparation of the EIAR Chapter was undertaken in accordance with the following guidelines which were used to derive the criteria as set out in **Table 7-3** and **Table 7-4**.

Section 1.3.4 of the European Commission's Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (EC, 2017) provides advice and guidance on integrating biodiversity considerations into EIA generally and marine biodiversity into EIA specifically. It further refers to EC guidance on integrating climate change and biodiversity into EIA and CIEEM guidance for conducting EIAR Chapter (see below).

Section 4 of the European Commission's Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (EC, 2013) provides advice and guidance on integrating climate change and biodiversity into EIA.

Section 3.7.3 of the Environmental Protection Agency's Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA, 2022) notes under Figure 3.4 therein that "where more specific definitions exist within an EIAR Chapter or topic, e.g. biodiversity, these should be used in preference to these generalised definitions".

This section of the EIAR for terrestrial biodiversity has been undertaken following the methodology set out in the Chartered Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (version 1.3, released September 2024 but cited as CIEEM, 2018); and with reference where appropriate to Transport Infrastructure Ireland's Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009); EPA (2022); and BS 42020:2013 Biodiversity: Code of practice for planning and development (BSI, 2013).

CIEEM (2018) guidelines complement EPA (2022) guidelines when describing the nature of effects on biodiversity features:

- Positive or negative: Positive and negative impacts/effects are determined according to whether the change is in accordance with nature conservation objectives and policy, e.g., improves the quality of the environment or reduces the quality of the environment (Quality of Effects, EPA 2022);
- Extent: The spatial or geographical area over which the impact/effect may occur (Extent and Context of Effects, EPA 2022);
- Magnitude: 'Magnitude' refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms (Duration and Frequency of Effects, EPA, 2022);
- Duration: 'Duration' is defined in relation to ecological characteristics as well as human timeframes. Five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species. The duration of an activity may differ from the duration of the resulting effect caused by the activity. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years (Duration and Frequency of Effects, EPA, 2022);
- Frequency and timing: The number of times an activity occurs will influence the resulting effect. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons (Duration and Frequency of Effects, EPA, 2022); and
- Reversibility: An irreversible effect is one from which recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible effects (Duration and Frequency of Effects, EPA, 2022).

This section of the EIAR Chapter is based upon a source-pathway-receptor model analysis, where the source is defined as the individual elements of the ABR2 Project that have the potential to affect identified ecological features. The pathway is defined as the means or route by which a source can affect the ecological features. An ecological receptor is the feature of interest, being a species, habitat or ecologically functioning unit of natural heritage importance. Each element can exist independently; however, an effect is created where there is a linkage between the source, pathway and feature.

EC (2017) advises that assessment of significance should be based on clear and unambiguous criteria. A significant effect is defined in CIEEM (2018) as –:

- *"an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' [...] or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local";*

**Table 7-3:** CIEEM & EPA Biodiversity Effect Guidelines sets out a geographic frame of reference and criteria for valuing ecological features. **Table 7-4:** Magnitudes of Effect Upon Biodiversity Features sets out criteria for

predicting magnitudes of effect. These tables have been prepared with due regard to EC, CIEEM, EPA and NRA guidelines described above.

Significant impacts are those with moderate or major effects which require avoidance, reduction or counterbalancing measures to mitigate or offset their negative effects. In this context, it should be noted that likely significant effects on designated European sites are considered separately in the NIS submitted with the application for permission. Beneficial effects do not require mitigation measures as their effects are positive.

#### 7.3.1.2 Zone of Influence

From a terrestrial biodiversity perspective, the Zone of Influence (ZoI) was defined as the footprint of the Project + 1km radius surrounding the Project boundary, as shown in **Figure 7-1**. There is no possibility of activities associated with the Project negatively influencing terrestrial habitats located more than 1km from the Project boundary. CIEEM (2018, Updated 2024) Guidelines for Ecological Impact Assessment note that using port development as an example, "*more widespread impacts need to be taken into consideration when determining the project's zones of influence, such as dredged channels, which may impact on subtidal species or assemblages*". Given the scale and nature of the proposed ABR2 Project, with dredging and infilling activities being confined to the basins within the Port, and the current baseline environment being an active port, this ZoI is deemed as appropriate.

In addition to the above, it should be noted that a change in terrestrial species behaviour is triggered by noise or visual stimuli. Species occurring within and near the Project boundary can be negatively influenced by activities associated with the Project, but as the distance from the Project increases, the likelihood of terrestrial species being negatively affected decreases.

Noise and visual stimuli more than 1km away from the Project boundary, which significantly affect species behaviour, will not be caused by, or associated with, the Project. At this distance, noise or visual stimuli resulting from activities associated with the Project will be caused by impacts occurring much nearer to the species. On this basis, it is the view of the authors that beyond this distance, no terrestrial biodiversity receptor could be influenced by the Construction Phase or the Operational Phase of the ABR2 Project.

Through the incorporation of the relevant ZoI for the ABR Project, the terrestrial biodiversity study area is illustrated in **Figure 7-1** and **Figure 7-3.**

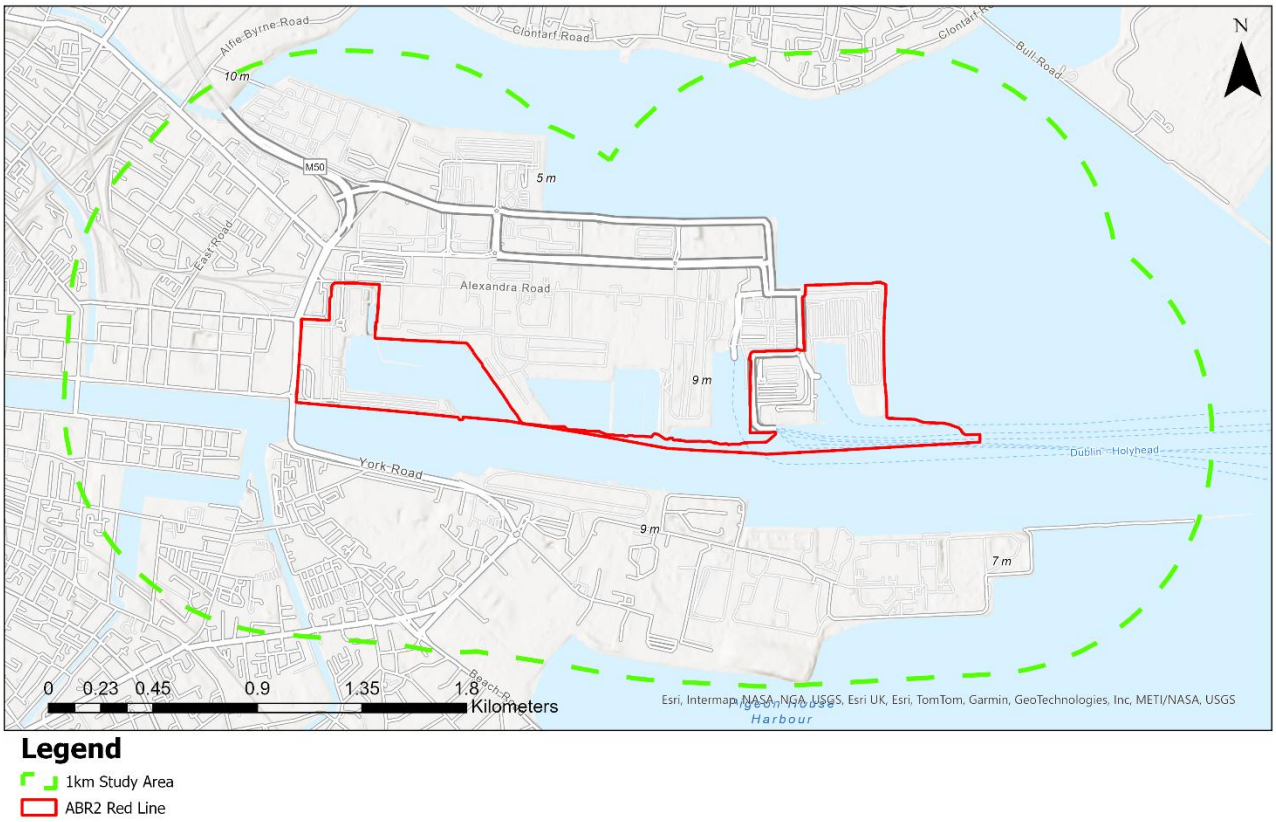



**Figure 7-1: Site Location & Terrestrial Biodiversity Study Area**

### 7.3.1.3 Baseline Surveys

#### 7.3.1.3.1 Fossitt Habitat Survey

The Fossitt Habitat Survey, undertaken on the 5th June 2025, and again on 18th August 2026, assessed and recorded all habitats under the ABR2 Project footprint, with the plant species present recorded to create a species list. The survey was conducted using the best-practice methodology outlined by the Heritage Council (The Heritage Council, 2011).

All habitats were mapped and categorised in accordance with the Heritage Council's Guide to Habitats in Ireland (Fossitt, 2000). A search was undertaken for protected and invasive flora species. Georeferenced aerial photographs were used as an aid to map habitats.

#### 7.3.1.3.2 Extended Badger Survey

As part of the habitat survey effort, an extended badger survey was also carried out on 5th June 2025, and again on 18th August 2026 to establish the presence of badger setts and/or badger foraging areas within the site of the ABR2 Project and within 50m of the study area boundary (NRA, 2006).

The site was surveyed for evidence of badger, including:

- Setts (underground structures displaying signs of current or recent use and occupation or disused holes made by badgers).
- Paths & Trails (networks of paths linking setts with foraging habitat).
- Tracks & Prints (All tracks, trails and paths were followed to locate setts and other field signs).
- Guard Hairs.
- Snuffle Holes & Feeding Scrapes (vegetation or soft soil turned over during foraging).
- Scratching Posts (claw marks on tree trunks, fallen trees, etc.).
- Breach Points (gaps in fences and hedges or crossing points over roads).
- Dung Pits (single faeces deposits placed in a small excavation).
- Latrines (collection of faecal deposits used to mark territorial boundaries).

#### 7.3.1.3.3 Extended Otter Survey

As part of the habitat survey effort, an extended otter survey was carried out on 5th June 2025, 1st May 2026 and 18th August 2026 to establish the presence of otter holts and/or otter foraging areas within the site of the ABR2 Project and within 150m of the ABR2 study area. The 150m extension is in consideration of a potential occurrence of a natal holt, as per CIEEM & Northern Ireland Environment Agency (NIEA) Otters & Development guidance (CIEEM & NIEA, 2011).

In addition to this survey area, the survey also extended further to the north within the Dublin Port Estate, where otter holts are known to occur. A boat-based survey was carried out on the 5th June 2025 and again on 18th August 2026 with the rock armour and sea wall of the port complex inspected for signs of a holt.

The site was surveyed for evidence of otter, including:

- Holts
- Couches
- Spraint sites
- Feeding sites
- Paths
- Slides
- Footprints

In between the time of the ABR2 Project site surveys for otter and the preparation of this section of the EIAR, construction works associated with Port Internal Road Network (Planning Reg. Ref. 3084/16 as amended by Planning Reg. Ref. 3220/21) and the Liffey Tolka Greenway (PL29N.312692) have resulted in the loss of two holt locations previously identified as located on the northern shoreline of the Port Estate, as part of preparatory ground works to accommodate sheet piling and revetment replacement activities permitted under the above

mentioned planning permissions. The works were undertaken as part of the construction of a pedestrian walkway and a cycle lane along East Wall Road and Bond Road from the River Liffey to the Tolka Estuary.

The results of the extended Otter surveys for the ABR2 Project are discussed further in Section 7.3.1.3.3.

#### 7.3.1.3.4 Preliminary Ecological Appraisal for Bats (PEAB)

The Fossitt Habitat Survey was extended to include a Preliminary Ecological Appraisal for Bats (PEAB) within the site of the proposed project.

The aim of the survey was to observe, assess and record the potential suitability of the site to support bat roosting, commuting and/or foraging habitat within the ZoI of the proposed project and to determine the requirement for further bat surveys.

Habitat features were classified as None, Negligible, Low, Moderate or High in accordance with Bat Conservation Trust (BCT) Good Practice Guidelines (Collins 2023).

Ecological Survey for Bats, including a Daytime Bat Walkover (DBW) and Preliminary Roost Assessment (PRA) of Structures was carried out on 5th June 2025 and 18th August 2026 as part of the Fossitt Habitat Survey to inform the EIA scoping report.

#### 7.3.1.3.5 Ecology Survey Limitations

The following limitations apply to all ecology surveys conducted to support the ABR2 Project.

- Health and safety-related constraints introduced limitations for access where areas of rock armour were hazardous or in areas where the intertidal zone was inaccessible. Tidal constraints provided limitations for access during the boat-based survey.
- These inaccessible areas were surveyed from a safe distance (5-10m) and have been included and assessed within this report.

#### 7.3.1.3.6 Desktop Study & Data Sources

Information on the baseline environment was collected through a desktop review of existing studies and datasets. An initial desk-based review of literature and data sources to support this EIAR has identified several sources available to inform the baseline description of the terrestrial biodiversity study area. These are summarised in **Table 7-1**: Summary of Key Desktop Data Sources for Terrestrial Ecology. The baseline data sources identified will remain under review and may be updated in response to feedback from relevant consultees during the EIAR process, or in response to new sources of information becoming available.

The sources used to inform the baseline environment are provided in **Table 7-1**.

**Table 7-1: Summary of Key Desktop Data Sources for Terrestrial Ecology**

| Title | Description | Author/Source |
|---|---|---|
| Designated Site Data | Boundary data for designated sites (SAC, SPA, NHA, pNHA) in Ireland. | National Parks and Wildlife Services (NPWS), https://www.npws.ie/maps-and-data/designated-site-data/download-boundary-data |
| Article 17 Reports (2019) | Assessment reports on the status of EU protected habitats and species in Ireland, Volume 1, 2, and 3. | NPWS, https://www.npws.ie/publications/article-17-reports |
| Article 17 GIS and Metadata | Spatial data for Article 17 assessments, which give the known or best estimate of the distribution of listed habitats and species. | NPWS, https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17/2019 |
| Site Specific Conservation Objectives web application | Web application containing spatial data on the Site-Specific Conservation Objectives for SAC species and habitats, and SPA species. | NPWS, https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=63b6a14f5b164b289ad87048f71532b8 |
| Environmental Protection Agency (EPA) Maps | Online GIS resource showing spatial data including water, land, soils, nature etc. | EPA, https://gis.epa.ie/EPAMaps/default |
| Geological Survey Ireland (GSI) Maps | Online GIS resource showing spatial data including geology, groundwater, physiographic units, geological heritage etc. | GSI, https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228 |
| GeoHive Map Viewer | Online Geospatial Data Hub, used to view various basemaps, including historical mapping and satellite imagery. | Ordnance Survey Ireland, https://webapps.geohive.ie/mapviewer/index.html |
| Map of Irish Wetlands | Online mapping project to provide information on wetland sites throughout Ireland. | Wetland Surveys Ireland and Foss Environmental Consulting http://www.wetlandsurveysireland.com/wetlands/map-of-irish-wetlands |
| Flora Protection Order (FPO) Map Viewer - Bryophytes | Online GIS resource which shows the location of known FPO bryophyte populations. | NPWS, https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e |
| The Environmental Sensitivity Mapping (ESM) Webtool | A decision-support tool for Strategic Environmental Assessment and planning processes in Ireland. It allows users to create area-specific environmental sensitivity maps. | School of Geography, University College Dublin, and All-Island Research Observatory, Maynooth University. https://airomaps.geohive.ie/ESM/ |
| Heritage Maps | Online GIS resource which provides access to national heritage data sets in map form while incorporating additional contextual data from a wide range of online sources. | The Heritage Council https://heritagemaps.ie/WebApps/HeritageMaps/index.html |
| Biodiversity Maps | Data portal and mapping system of the National Biodiversity Data Centre (NBDC). It provides an overview of the state of knowledge on the distribution of Ireland's biodiversity from empirical observations, collected by organisations and individuals, from both the private and public sectors. | NBDC, https://maps.biodiversityireland.ie/ |
| Margaritifera Sensitive Areas Map | Online resource that displays Margaritifera (Freshwater Pearl Mussel) Sensitive areas, based on sub-catchments with present or historical occurrences of Margaritifera. | NPWS https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=2fae3c393baa4b79b7dfb1e3c19f3fab |
| Checklists of protected and threatened species in Ireland | Checklists of the plant and animal species that are afforded legal protection in Ireland, through the Nature Directives (Birds and Habitat Directives), and the Wildlife Acts and | Nelson et al. (2019). |

| Title | Description | Author/Source |
|---|---|---|
| | associated Statutory Instruments (e.g. the Flora (Protection) Order). | |
| NPWS biodiversity data | Sensitive or unpublished data held by NPWS that can be obtained via submission of a data request form. | NPWS |
| Birds of Conservation Concern in Ireland (BoCCI) | BoCCI is an assessment of the conservation status of all regularly occurring birds on the island of Ireland. | Gilbert et al., (2021) |
| BirdWatch Ireland Data including Irish Wetland Bird Survey (I-WeBS) | The I-WeBS is the national monitoring scheme for wintering waterbird populations in the Republic of Ireland. | BirdWatch Ireland, https://birdwatchireland.ie/ |

### 7.3.1.4 Consultation

Following completion of a non-statutory EIA Scoping Report, consultation was undertaken to obtain opinions regarding the Project and its potential to cause significant environmental effects. Specific comments relating to Terrestrial Biodiversity are set out in **Table 7-2**, including where additional information in relation to issues can be found in the EIAR.

**Table 7-2: ABR2 Project EIA Scoping Report Comments relating to Terrestrial Biodiversity**

| Organisation | Comment Response/Issue Raised | Response |
|---|---|---|
| Department of Housing, Local Government and Heritage | Noted concern surrounding Biodiversity, Flora and Fauna terrestrial ecology section on otters not identifying the otter holts located in the extended survey as concluded by previous surveys under the 3FM Project and more recent surveys in 2025 (additional otter surveys undertaken for 3FM) and evidence of otters on south side of the Port adjacent to Alexandra Basin West near Sea Safari Ltd's Offices and the infilling area of berth 52/53. Recommendation that above otter surveys are considered, particularly with potential for in-combination effects. Mitigation should ensure the provision of black guillemot nesting boxes due to the potential for habitat loss for nesting. | The findings of the 3FM Otter Surveys have been incorporated into this EIAR and their results have been used to inform mitigation for otter, as outlined in **Section 7.3.5.1.2** Otter.<br>As outlined in **Sections 7.3.2.7** and **7.3.3.1.5**, Black Guillemot nests may be lost as part of the infilling process at Berths 52/53.<br>The Dublin Port Company Black Guillemot Management Plan 2023-2030 (DPC, 2023, RPS 2024) sets out that six new nest boxes are proposed within the new Berth 53 open pile structure at the eastern end of the Port. These nest box locations are proposed under the MP2 project as part of MP2 Project Foreshore consent. Condition 2(b) and the ports wider biodiversity strategy. |

### 7.3.1.5 Assessment Criteria and Assessment of Significance

Likely significant effects of the ABR2 Project on terrestrial biodiversity features are assessed on the basis of the elements of the Project as set out in **Chapter 5 Project Description**. The information gathered from consultation, scoping and stakeholder feedback; the desk studies and a suite of targeted ecological field surveys

have been used to prepare the EIAR Chapter, which was undertaken in accordance with the following guidelines, which were used to derive the criteria as set out in Table 7-3 and Table 7-4.

**Table 7-3: CIEEM & EPA Biodiversity Effect Guidelines**

| Type of Effect | Description of Effect |
|---|---|
| **Positive or Negative** | Positive and negative impacts/effects are determined according to whether the change is in accordance with nature conservation objectives and policy, e.g., improves the quality of the environment or reduces the quality of the environment (*Quality of Effects*, EPA 2022). |
| **Extent:** | The spatial or geographical area over which the impact/effect may occur (*Extent and Context of Effects*, EPA 2022). |
| **Magnitude** | 'Magnitude' refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms (*Duration and Frequency of Effects*, EPA, 2022). |
| **Duration** | 'Duration' is defined in relation to ecological characteristics as well as human timeframes. Five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species. The duration of an activity may differ from the duration of the resulting effect caused by the activity. Effects may be described as short, medium or long-term and permanent or temporary. Short, medium, long-term and temporary will need to be defined in months/years (*Duration and Frequency of Effects*, EPA, 2022). |
| **Frequency and Timing** | The number of times an activity occurs will influence the resulting effect. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons (*Duration and Frequency of Effects*, EPA, 2022). |
| **Reversibility** | An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible effects (*Duration and Frequency of Effects*, EPA, 2022). |

**Table 7-4** below sets out a geographic frame of reference and criteria for valuing ecological features and has been prepared with due regard to EC, CIEEM, EPA and NRA guidelines described above.

Significant impacts are those with moderate or major effects which require avoidance, reduction or counterbalancing measures to mitigate or offset their negative effects. In this context, it should be noted that likely significant effects on designated European sites are considered separately in the NIS submitted with the application for permission. Beneficial effects do not require mitigation measures as their effects are positive.

**Table 7-4: Magnitudes of Effect Upon Biodiversity Features**

| Magnitude of Significant Effect used in Assessment | Equivalent Magnitude of Significant Effect on EPA (2022) | Criteria |
|---|---|---|
| **Major Negative** | Profound Adverse<br>Very Significant Adverse | • Negative Effect upon the Integrity of a European site<br>• Loss of or permanent damage to any part of a site of international or national importance<br>• Loss of a key component or key feature of a site of regional importance<br>• Decline in favourable conservation status (FCS) or condition (FCC) of a legally protected species at County value<br>• Causing of an offence under European Directives or domestic transposing legislation |
| **Moderate Negative** | Significant Adverse<br>Moderate Adverse | • Temporary impacts to key features of a site of international or national importance, but no permanent damage or loss of FCS/FCC<br>• Permanent impacts to any part of a site of County value<br>• Permanent loss of a key feature of local importance (higher value) where a feature is important for and supports other features of value<br>• Causing of an offence under domestic legislation |
| **Minor Negative** | Slight Adverse | • Temporary impacts to any part of a site of County value<br>• Temporary loss of a feature of local importance (lower or higher value) where a feature is not important for and supports other features of value |
| **Negligible** | Imperceptible | • No impacts above a *de minimis* threshold on identified biodiversity features<br>• Beneficial and negative impacts balance such that the resulting impact has no overall affect upon feature. |
| **Minor Beneficial** | Slight Beneficial | • A small but clear and measurable gain in general wildlife interest, e.g. small-scale new habitats of wildlife value created where none existed before or where the new habitats exceed in area the habitats lost. |
| **Moderate Beneficial** | Significant Beneficial<br>Moderate Beneficial | • Larger new scale habitats (e.g. net gains > 1 ha in area) created, leading to significant measurable gains helping to achieve relevant objectives of a BAP or CDP |
| **Major Beneficial** | Profound Beneficial<br>Very Significant Beneficial | • Major gains in new habitats (net gains > 10 ha) of high significance for biodiversity, helping to achieve relevant objectives of a BAP or CDP and underpinning government policy |

#### 7.3.1.5.1 Significance of Effects

The significance of effects refers to the consequences of an impact. The significance of the effect upon Terrestrial Biodiversity receptors is determined by correlating the magnitude of the impact and the sensitivity of the receptor. A range of magnitudes of significant effects is presented in **Table 7-4**. The final assessment of significance for each effect is based upon expert judgement of the peer-reviewed literature. For the purposes of this assessment, any effects with a significance level of Minor or less have been concluded to be not significant in EIAR terms.

## 7.3.2 Baseline Environment

### 7.3.2.1 Habitats

A map illustrating the site boundary of the ABR2 Project and the habitats present within the boundary, and a 150m extended survey area can be found below in **Figure 7-2.**

#### 7.3.2.1.1 Amenity Grassland (GA2)

A small area of amenity grassland is present adjacent to the Berths 52/53 Ferry Terminal Building. This area possessed the following species makeup: perennial rye grass *Lolium perenne*, creeping buttercup *Ranunculus repens*, white clover *Trifolium repens* and dandelion *Taraxacum officinale*.

#### 7.3.2.1.2 Buildings, Artificial Surfaces, Hardstanding & Fences (BL3)

A majority of the ABR2 Project study area consists of port buildings, structures, and associated hardstanding. There are a few areas capable of supporting vegetation, however, where exposed gravel or substrate is present along the margins of Alexandra Basin West, red valerian (*Centranthus ruber),* butterfly bush (Buddleja) and rosebay willowherb (*Chamaenerion angustifolium*) grow.

#### 7.3.2.1.3 Rock Armour & Sea Wall (CC1)

Berths 52/53 is fringed by rock armour on its western boundary and on the northern and eastern Dublin Bay facing boundaries of the ABR2 Project. Rock Armour is also present to the developments south-west, adjacent to the R131 roadway.

Rock armour supports limited vegetation, with the presence of significant red valerian growth on exposed soil or gravel. Lower lying rock armour may be covered at high tide and possesses a large covering of Bladderwrack (*Fucus vesiculosus*).

Sea Walls bound the eastern boundary of Berths 52/53 and all sides of Alexandra Basin West. The sea walls do not support any vegetation.

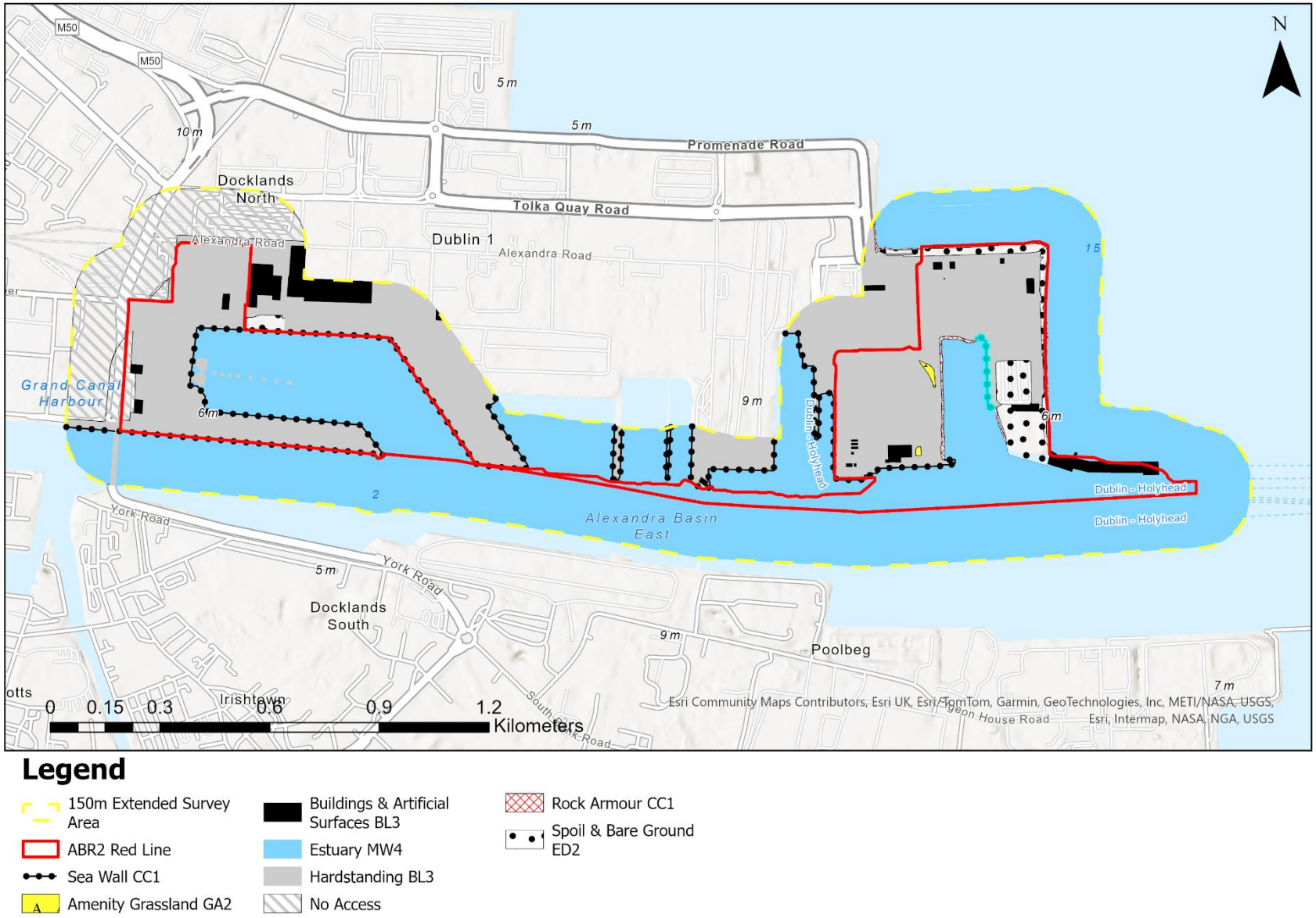



**Figure 7-2: Fossitt Habitat Map**

#### 7.3.2.1.4 Scrub (WS1)

Scrub vegetation has colonised waste ground to the south of Berth 52/53 in the southern port estate.

The following plant species were present in order of abundance: red valerian, rye grass, narrow-leaved ragwort (*Senecio inaequidens)*, brambles, creeping buttercup, poppy, broadleaved dock, common nettle, common plantain, early crocus, and chickweed.

#### 7.3.2.1.5 Spoil & Bare Ground (ED2)

Spoil & Bare Ground is located on land adjacent to Berths 52/53, along with a small area adjacent to Alexandra Basin West, where active construction works are occurring.

A large spoil heap has been created to contain dredged sediment that will be used during the Berths 52/53 Infilling phase of the ABR2 Project.

No vegetation was present in these areas due to the high level of active construction disturbance and covering material on the sediment spoil heap.

### 7.3.2.2 Protected Flora

No species listed on the Floral Protection Order (2015) were recorded within the ABR2 Project study area.

### 7.3.2.3 Invasive Species

A NBDC search of 1km$^2$ grid squares O1834, O1934, O2024 identified 2 records of narrow-leaved ragwort *Senecio inaequidens,* and 4 records of butterfly-bush (*Buddleja davidii)* within or adjacent to the ABR2 Project. These invasive plant species are listed as being *Medium Risk* (Invasives.ie 2013)

No high-impact invasive plant species were found during the above records search or during the 2025 habitat survey (e.g Japanese knotweed, giant rhubarb, himalayan balsam).

One record of Harlequin Ladybird was returned during this records search, a High-Risk invasive species (Invasives.ie, 2013). No evidence of Harlequin Ladybird was found within the area of the ABR2 Project during the 2025 habitat survey or 2026 confirmatory walk-over survey.

Butterfly bush and narrow-leaved ragwort were found during the 2025 habitat survey adjacent to Alexandra Basin West and within scrub areas to the north and east of Berths 52/53.

### 7.3.2.4 Badger

A NBDC search of 1km$^2$ grid squares O1834, O1934, O2024 identified no historic records of badger within or adjacent to the ABR2 project.

The ABR2 Project site primarily consists of open estuary water and hardstanding with the limited areas of scrub and amenity grassland not being suitable for commuting or foraging badger.

No evidence of badger using the site was found, with no latrines, hair, mammal paths, setts or any other evidential features during the 2025 survey or 2026 confirmatory walk-over survey.

#### 7.3.2.5 Otter

The NBDC search of 1km$^2$ grid squares O1834, O1934, O2024 identified one historic record of otter within or adjacent to the ABR2 Project. This single record originates near the mouth of Grand Canal pNHA (0.80km W), a site known to support otters as one of its qualifying features (NPWS, 2000).

During the 2025 survey, the site was assessed for signs or evidence of otter, up to 150m outside the site boundary, where access was safe and granted. This included habitats such as rock armour and sea walls that may be used by otter along the shoreline. No fresh evidence of otter utilising the survey area was found during the survey.

As noted in Section 7.3.1.3.3, the entrances to two potential holts were lost during construction works associated with Port Internal Road Network (Planning Reg. Ref. 3084/16 as amended by Planning Reg. Ref. 3220/21) and the Liffey Tolka Greenway (PL29N.312692) as part of preparatory ground works to accommodate sheet piling and revetment replacement activities permitted under the above-mentioned planning permissions.

DPC subsequently engaged with NPWS and provided two new artificial holts at the location of the two former potential holts in June 2026 in consultation with NPWS. To date, there has been no evidence of otter occupancy, however this is not unusual given the relatively short time since they were constructed. The locations of these two artificial holts are illustrated in Figure 7-5.

#### 7.3.2.6 Bats

The NBDC search of 1km$^2$ grid squares O1834, O1934, O2024 identified no historic records of bats within or adjacent to the ABR2 project.

Bat Suitability Index ranges from 0 (least suitable) to 100 (most suitable) with maximum entropy modelling used to construct an index number using National Bat Database data. The grid squares showed an average suitability rating of 17.44, indicating a low suitability for bats within the working area.

The area surrounding the proposed development shows low suitability for common species such as Pipistrellus pygmaeus (34), Plecotus auritus (26), Pipistrellus pipistrellus (33) and Nyctalus leisleri (29) (see Table 7-5).

**Table 7-5: Bat Suitability Index**

| Bat Species | Suitability Index |
|---|---|
| All Bats | 17.44 |
| Pipistrellus pygmaeus | 34 |
| Plecotus auritus | 26 |
| Pipistrellus pipistrellus | 33 |
| Rhinolophus hipposideros | 0 |
| Nyctalus leisleri | 29 |
| Myotis mystacinus | 11 |
| Myotis daubentonii | 8 |
| Pipistrellus nathusii | 3 |
| Myotis nattereri | 13 |

Results from the PEEB indicate that the ABR2 Project site consists primarily of hardstanding and open estuary water. Some vegetation (scrub and amenity grassland) is present within or directly adjacent to the ABR2 Project boundary and may be used as commuting habitat. The majority of the scrub to the sites north and east has been cleared as part of other port developments (as of August 2026). Remaining foraging and commuting habitat is extremely limited, highly illuminated and almost entirely hardstanding.

Foraging opportunities within 250m of the site consist mainly of the wider Dubin Port Estate, which is of limited value to local bats due to its high level of light pollution, 24/7 noise produced by ongoing port activities and lack of suitable vegetated foraging habitat outside of the small scrub areas outlined above.

The River Liffey and the River Dodder provide a suitable commuting route linking the site to the wider landscape.

All structures and trees present within the boundary of the ABR2 Project had a *negligible* score. These structures consisted of a ferry terminal building and smaller temporary construction buildings and warehouses in the vicinity of Berths 52/53 (see Table 7-6), along with a row of juvenile trees adjacent to Berth 52/53. The locations of these structures and trees are illustrated in Figure 7-3.

**Table 7-6 Roost Assessment of Structures & Trees**

| Identification | Photo | Description | Evidence of Bats | Potential Suitability |
|---|---|---|---|---|
| B1 |  | A corrugated metal warehouse is located adjacent to Alexandra Road Extension.<br><br>This building possessed no obvious features or evidence of bats utilizing the structure.<br><br>The structure is also extensively illuminated by overhead port floodlighting. | None | Negligible |
| B2 |  | A second corrugated metal warehouse is located adjacent to Alexandra Road Extension and also adjacent to B1.<br>This building possessed no obvious features or evidence of bats utilizing the structure.<br>The structure is also extensively illuminated by overhead port floodlighting. | None | Negligible |
| B3 |  | A small concrete building with a flat bituminous roof located adjacent to Alexandra Road Extension.<br>This building possessed no obvious features or evidence of bats utilizing the structure.<br>The structure is also extensively illuminated by overhead port floodlighting. | None | Negligible |
| B4 |  | A second small concrete building of similar construction to B3, with a flat bituminous roof located adjacent to Terminal Road South.<br>This building possessed no obvious features or evidence of bats utilizing the structure. | None | Negligible |

| Identification | Photo | Description | Evidence of Bats | Potential Suitability |
|---|---|---|---|---|
| | | The structure is also extensively illuminated by overhead port floodlighting. | | |
| B5 |  | B5 represents a small complex of temporary buildings.<br><br>These structures possessed no features capable of supporting roosting bats. | None | Negligible |
| B6 | <br> | The ferry terminal building is located adjacent to Terminal Road South.<br>This building is constructed of metal exterior facing, with large sections of glass panels and a curved metal roof.<br>These panels were in good condition and lacked cracks or crevices capable of supporting roosting bats.<br>Several vents on this building were inspected and found to have weather proofed mesh installed, preventing access by bats.<br>This building was also highly illuminated by port floodlighting and street lights.<br>No works are proposed to occur on this structure. | None | Negligible |
| T1 |  | A small row of juvenile lime trees, located adjacent to Berth 52/53.<br>These trees lacked any features capable of supporting roosting bats.<br>They are also illuminated by overhead port floodlighting and street lights.<br>These trees have no suitability for roosting bats. | No | None |




**Figure 7-3 Locations of features identified during the PEEB**

### 7.3.2.7 Birds

Habitats within the site boundary are known to support nesting Black guillemot, Common and Arctic terns. The site also has the potential to support foraging birds from nearby designated sites. Tierney *et al.* (2017) highlight that the Liffey Channel is mainly used by gulls, Black guillemots and Cormorants for feeding and roosting, whilst Alexandra Basin West is used by foraging gulls and Brent geese during the winter, but their presence is likely to be governed by the availability of spilled agricultural produce.

Tern colonies within Dublin Port are monitored annually by Birdwatch Ireland, undertaking a nest census, determining productivity and colour-ringing to assess juvenile recruitment into the breeding population (Boland and Whelan, 2018).

Data on breeding Black guillemots are also gathered annually as part of the existing ABR Project planning conditions.

Data on overwintering birds are available from long-term studies such as Irish Wetland Bird Survey (I-WeBS) and the Dublin Bay Birds Project, the latter of which also included bi-monthly low and rising tide counts of Alexandra Basin between February 2013 and June 2016 (Tierney *et al.* 2017).

Five through-the-tidal-cycle counts (TTTCC) were carried out across the 2025 breeding season from early May to mid-August. Surveyor made seven counts, each hour, starting around low-tide and finishing around high-tide.

No findings of significance were identified, with thirteen species recorded (peak count in brackets) - Arctic tern (30), Black-headed gull (47), Cormorant (12), Common gull (4), Common tern (22), Great-black backed gull (1), Guillemot (1), Grey heron (1), Herring gull (58), Lesser black-backed gull (13), Mallard (3), Shag (2) and Black guillemot (12).

These are all species and peak counts as to what would be predicted given the location of the survey area and time of year.

### 7.3.2.8 Designated Sites

The site of the proposed project is not located within the boundary of any designated sites of international, national or local nature conservation importance. There are, however, a number of designated sites hydrologically linked to the proposed project.

**Table 7-7** below provides descriptive details of designated sites located outside the Project Area but potentially connected to the Project via an identifiable pathway. The boundary of each of the designated sites in relation to the ABR2 Project is illustrated in **Figure 7-4.**

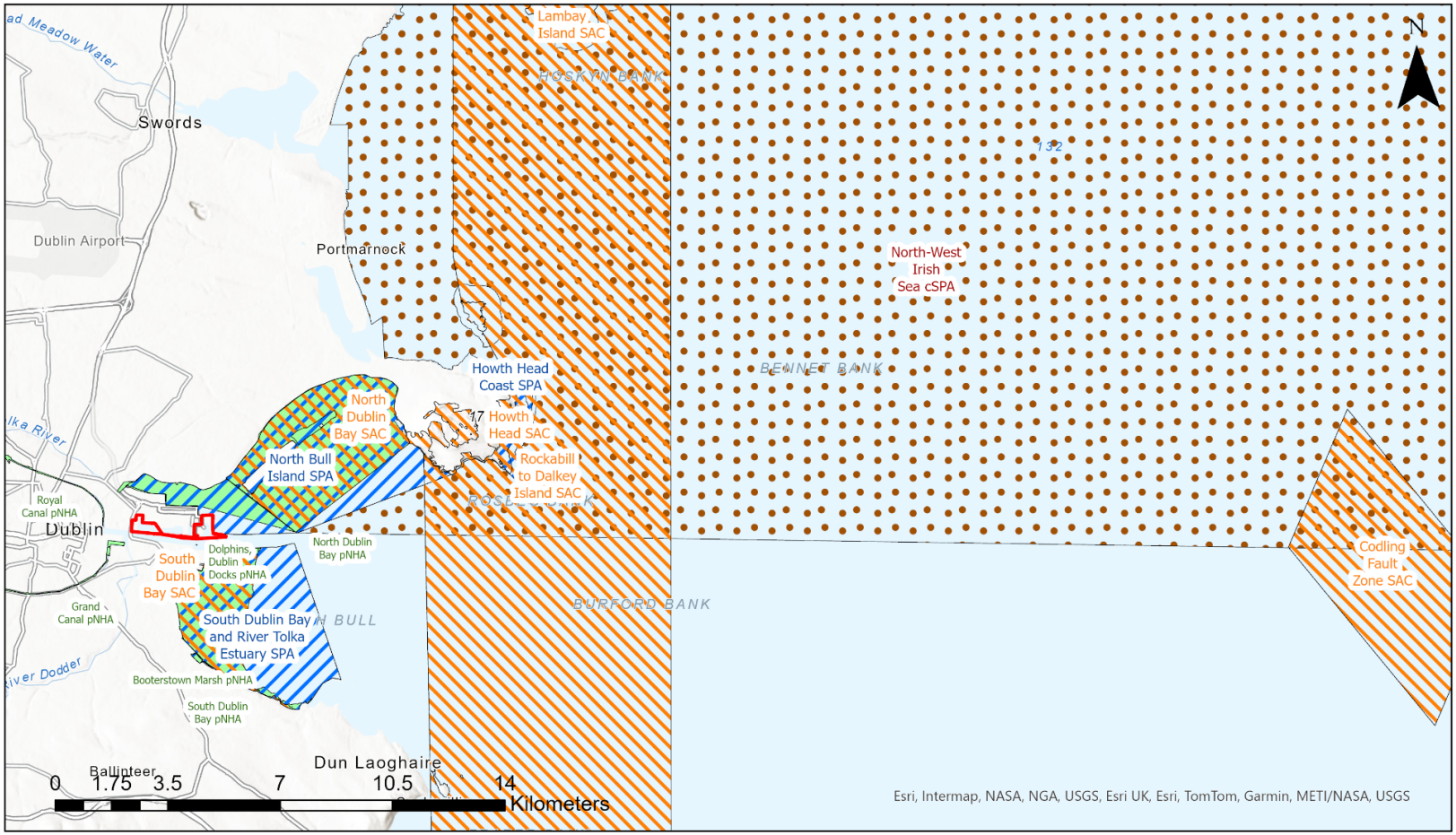



**Figure 7-4: Designated Sites Map**

**Table 7-7: Designated Sites & Features of Natural Heritage Importance**

| Designated Site/Feature | Distance from Site (km) & Connectivity Pathway | Description / Qualifying Interests |
|---|---|---|
| North Dublin Bay SAC | 1.35km N Hydrologically Connected | Mudflats and sandflats not covered by seawater at low tide [1140]<br>Annual vegetation of drift lines [1210]<br>Salicornia and other annuals colonising mud and sand [1310]<br>Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]<br>Mediterranean salt meadows (Juncetalia maritimi) [1410]<br>Embryonic shifting dunes [2110]<br>Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]<br>Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]<br>Humid dune slacks [2190]<br>Petalophyllum ralfsii (Petalwort) [1395] |
| Rockabill to Dalkey Island SAC | 6.58km E Hydrologically Connected | Reefs [1170]<br>Phocoena phocoena (Harbour Porpoise) [1351] |
| South Dublin Bay SAC | 0.55km SE Hydrologically Connected | Mudflats and sandflats not covered by seawater at low tide [1140]<br>Annual vegetation of drift lines [1210]<br>Salicornia and other annuals colonising mud and sand [1310]<br>Embryonic shifting dunes [2110] |
| Howth Head SAC | 7.0km NE Hydrologically Connected | Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]<br>European dry heaths [4030] |
| North Bull Island SPA | 0.0km NE (Adjacent) Hydrologically Connected | Light-bellied Brent Goose (Branta bernicla hrota) [A046]<br>Shelduck (Tadorna tadorna) [A048]<br>Teal (Anas crecca) [A052]<br>Pintail (Anas acuta) [A054]<br>Oystercatcher (Haematopus ostralegus) [A130]<br>Golden Plover (Pluvialis apricaria) [A140]<br>Grey Plover (Pluvialis squatarola) [A141]<br>Knot (Calidris canutus) [A143]<br>Sanderling (Calidris alba) [A144]<br>Dunlin (Calidris alpina) [A149]<br>Black-tailed Godwit (Limosa limosa) [A156]<br>Bar-tailed Godwit (Limosa lapponica) [A157]<br>Curlew (Numenius arquata) [A160]<br>Redshank (Tringa totanus) [A162]<br>Turnstone (Arenaria interpres) [A169]<br>Black-headed Gull (Chroicocephalus ridibundus) [A179]<br>Shoveler (Spatula clypeata) [A857]<br>Wetland and Waterbirds [A999] |
| North-West Irish Sea SPA | 2.6km E Hydrologically Connected | Red-throated Diver (Gavia stellata) [A001]<br>Great Northern Diver (Gavia immer) [A003]<br>Fulmar (Fulmarus glacialis) [A009]<br>Manx Shearwater (Puffinus puffinus) [A013]<br>Cormorant (Phalacrocorax carbo) [A017]<br>Shag (Phalacrocorax aristotelis) [A018]<br>Common Scoter (Melanitta nigra) [A065]<br>Black-headed Gull (Chroicocephalus ridibundus) [A179]<br>Common Gull (Larus canus) [A182]<br>Lesser Black-backed Gull (Larus fuscus) [A183]<br>Herring Gull (Larus argentatus) [A184]<br>Great Black-backed Gull (Larus marinus) [A187]<br>Kittiwake (Rissa tridactyla) [A188] |

| Designated Site/Feature | Distance from Site (km) & Connectivity Pathway | Description / Qualifying Interests |
|---|---|---|
| | | Roseate Tern (Sterna dougallii) [A192]<br>Common Tern (Sterna hirundo) [A193]<br>Arctic Tern (Sterna paradisaea) [A194]<br>Guillemot (Uria aalge) [A199]<br>Razorbill (Alca torda) [A200]<br>Puffin (Fratercula arctica) [A204]<br>Little Gull (Hydrocoloeus minutus) [A862]<br>Little Tern (Sternula albifrons) [A885] |
| South Dublin Bay and River Tolka Estuary SPA | 0.55km SE Hydrologically Connected | Light-bellied Brent Goose (Branta bernicla hrota) [A046]<br>Oystercatcher (Haematopus ostralegus) [A130]<br>Ringed Plover (Charadrius hiaticula) [A137]<br>Grey Plover (Pluvialis squatarola) [A141]<br>Knot (Calidris canutus) [A143]<br>Sanderling (Calidris alba) [A144]<br>Dunlin (Calidris alpina) [A149]<br>Bar-tailed Godwit (Limosa lapponica) [A157]<br>Redshank (Tringa totanus) [A162]<br>Black-headed Gull (Chroicocephalus ridibundus) [A179]<br>Roseate Tern (Sterna dougallii) [A192]<br>Common Tern (Sterna hirundo) [A193]<br>Arctic Tern (Sterna paradisaea) [A194]<br>Wetland and Waterbirds [A999] |
| North Dublin Bay pNHA | 0.26km NE Hydrologically Connected | Shared features with North Bull Island SPA and North Dublin Bay SAC. |
| South Dublin Bay pNHA | 0.55km SE Hydrologically Connected | Shared features with South Dublin Bay and River Tolka Estuary SPA |
| Dolphins, Dublin Docks pNHA | 0.0km S (Adjacent) Hydrologically Connected | Shared features with South Dublin Bay and River Tolka Estuary SPA |
| Grand Canal pNHA | 0.82km W Hydrologically Connected (Upstream) | Otter (*Lutra lutra)*<br>Aquatic Plant Species<br>Calcareous Species<br>Smooth Newt (*Lissotriton vulgaris)*<br>Opposite-Leaved Pondweed *(Eryngium mathiasiae*) |
| Royal Canal pNHA | 1.08km W<br>Hydrologically Connected (Upstream) | Aquatic Species<br>Species Rich Grassland<br>Calcareous Grassland |
| Booterstown Marsh pNHA | 3.33km S Hydrologically Connected | Brackish Saltmarsh Habitats<br>Migrating Waterbirds<br>Moorhen (*Gallinula chloropus*)<br>Reed Bunting (*Emberiza schoeniclus)*<br>Sedge Warbler *(Acrocephalus schoenobaenus)*<br>Teal (*Anas crecca)*<br>Snipe (*Gallinago gallinago*)<br>Lapwing (*Vanellus Vanellus)*<br>Oystercatcher (*Haematopus ostralegus*)<br>Redshank (*Tringa totanus)*<br>Dunlin (*Calidris alpina*)<br>Brent Geese (*Branta bernicla*) |

## 7.3.3 Description of Likely Significant Effects

### 7.3.3.1 Potential Construction Impacts

#### 7.3.3.1.1 Habitats

The following habitat features will be affected by the development:

- **Scrub**
  - Up to approximately 0.3251ha of scrub at various locations will be lost on lands adjacent to Berths 52/53 as part of the basin infilling process and associated infrastructure/hard-standing construction efforts proposed as part of the ABR2 Project (See **Section 7.2.3.1.4**). These features are of Local (Lower) value.
- **Spoil & Bare Ground**
  - Up to approximately 2.77ha of bare ground will be lost on land adjacent to Berths 52/53 as part of the basin infilling process and associated infrastructure/hard-standing construction efforts proposed as part of the ABR2 Project (See **Section 7.2.3.1.5**). These features are of negligible ecological value.
- **Amenity Grassland GA2**
  - Up to approximately 0.03ha of amenity grassland will be lost adjacent to the existing ferry terminal west of Berths 52/53 (See **Section 7.2.3.1.1**). These features are of negligible ecological value.

The permanent loss of those features of Local (Lower) ecological value is predicted to result in a minor negative magnitude of effect, as their loss does not result in any significant environmental effect. In accordance with the methodology set out in **Section 7.2** these impacts do not require avoidance, mitigation or counterbalancing measures to be implemented.

#### 7.3.3.1.2 Badger

No evidence of badger using the site was found, with no latrines, hair, mammal paths, setts or any other evidential features during the 2025 survey. Extremely limited suitable habitat is present, with narrow strips of scrub habitat to the north and east of Berths 52/53 offering some low-value foraging and commuting habitat.

Due to the 24/7 noise produced by ongoing port activities and the high level of light pollution across a vast majority of the site, the ABR2 Project is highly unsuitable for badger.

Therefore, no adverse significant effects on Badger are predicted, even in the absence of mitigation. Badger have therefore been scoped out of further assessment.

#### 7.3.3.1.3 Otter

During the 2025 survey, as confirmed in 2026, the site was assessed for signs or evidence of otter, up to 150m outside the site boundary, where access was safe and granted and additional areas on the northern edge of

the Port Estate on the Tolka Estuary. No fresh evidence of otter utilisation of the site was found during the survey.

As noted in Section 7.3.1.3.3, the entrances to two potential holts were lost during construction works associated with Port Internal Road Network (Planning Reg. Ref. 3084/16 as amended by Planning Reg. Ref. 3220/21) and the Liffey Tolka Greenway (PL29N.312692) as part of preparatory ground works to accommodate sheet piling and revetment replacement activities permitted under the above-mentioned planning permissions.

DPC subsequently engaged with NPWS and provided two new artificial holts at the location of the two former potential holts in June 2026 in consultation with NPWS. To date, there has been no evidence of otter occupancy, however this is not unusual given the relatively short time since they were constructed. The locations of these two artificial holts are illustrated in Figure 7 4.

Although these two new artificial otter holts are located adjacent to the red line boundary, they are located c.220m from any proposed construction activities (i.e. raising of levels). Given the distance between the holts and any proposed construction activities and given that there has been no evidence of otter occupancy, no significant ecological effects are predicted to occur on otter utilising the rock armour shoreline and Tolka Estuary coastline north of the ABR2 Project study area as a result of the construction of the Project.

In coastal areas, otters usually alternate between marine and freshwater habitats (Kruuk, 1995). They also require sources of freshwater to wash saltwater off their coats prior to resting in their coastal holts. Otters must keep their fur in good condition. It has been shown that seawater reduces the waterproofing properties of otter fur, and this is why freshwater sources are so important for otters living on the coast. If they are unable to wash in freshwater, salt crystals begin to form in the fur, and the guard hairs clump together, reducing insulating properties (Chanin, 2023). Their coastal territories will always include a stream or spring within close proximity to their holts with accessibility over land (NPWS, 2025). In the Shetland Islands, coastal otter holts were never found further than 700m over land from freshwater sources. The River Tolka is the nearest freshwater source to the potential holts found in Figure 7-6 with an approximate separation distance of 3km.

The rock armour and sea walls bounding Alexandra Basin and Berths 52/53 possessed no holes or crevices large enough to support otter above the high-water mark.

However, otter is a highly mobile species and could potentially be foraging in Alexandra Basin West, Berths 52/53 and the wider Liffey and Dodder estuaries. The increase in construction dredging could introduce heightened sediment pollution into the water column that may adversely affect their ability to forage in the area. There is also a risk of hydrocarbon pollution entering the water column arising from construction plant vehicles. Due to the risk of pollutants entering the water column during construction, adverse likely significant effects on foraging and commuting otter during construction cannot be fully scoped out of the assessment in the absence of mitigation.

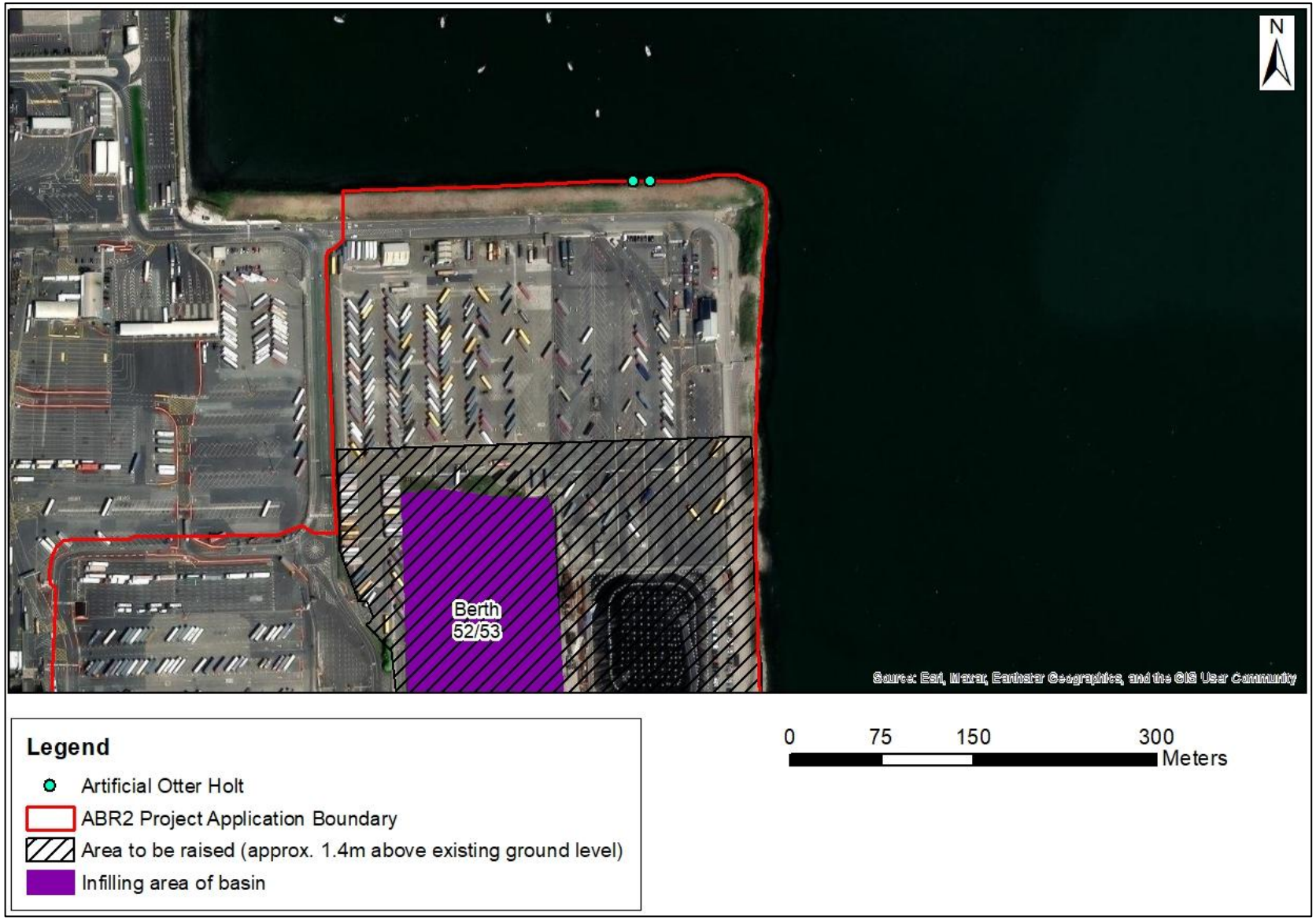
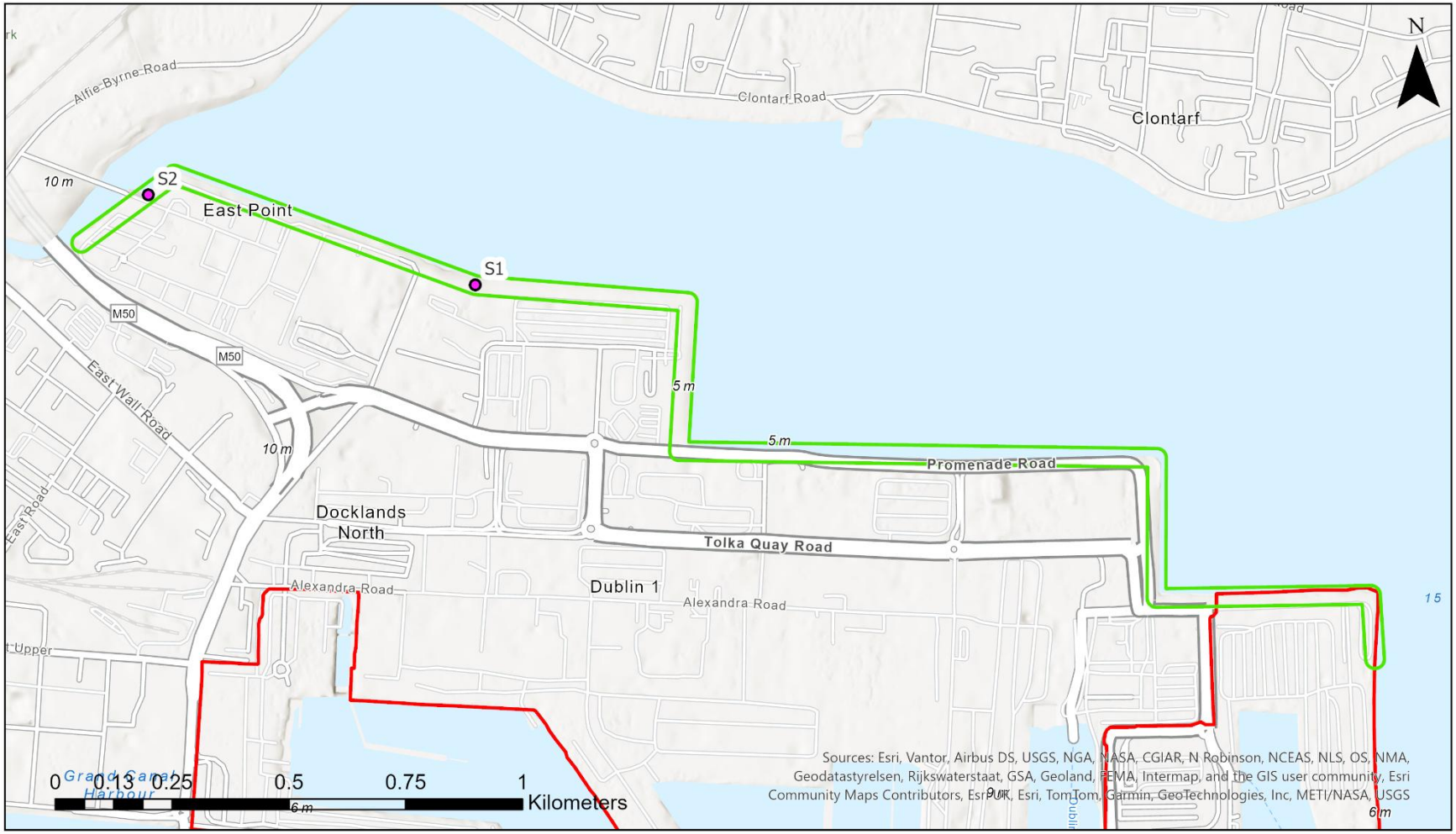



**Figure 7-5: Otter Survey Results**




**Legend**

- Spraint Location
- 2026 Otter Survey Area
- ABR2 Red Line

**Figure 7-6: 2026 Extended Otter Survey Results**

#### 7.3.3.1.4 Bats

No structures with suitability for roosting bats are present within the ABR2 Project's study area. The majority of the site consists of estuary open water and hardstanding which experiences 24/7 lighting and anthropogenic disturbance.

A small line of juvenile lime trees is present adjacent to Berth 52/53 near Terminal 1. These trees are young, with narrow trunks that possessed no ivy cladding or other features capable of supporting roosting bats. They are of limited foraging or roosting value and are highly illuminated by overhead port lighting.

The narrow strips of scrub habitat located to Berths 52/53's northern and eastern boundaries offer some commuting and foraging habitat for local bat species. These habitats have been cleared and are now bare ground actively undergoing construction as part of other port development projects. No suitable habitat remains in these areas.

Commuting and foraging common pipistrelle (and soprano pipistrelle) bats are shown to be tolerant of nighttime artificial lighting (ILP, 2023). However, unsuitable / obtrusive lighting could discourage foraging and/or commuting activity, certainly in the immediate vicinity of the coastal path where lux levels are highest. Such changes could result in a significant negative effect - moderate negative effect, in the absence of mitigation.

As the site experiences substantial ongoing anthropogenic disturbance and continuous lighting disturbance, possesses no suitable trees and no buildings with any suitability for bats, no adverse significant effects on bats are predicted, even in the absence of mitigation. Bats have therefore been scoped out of further assessment.

#### 7.3.3.1.5 Birds

Black Guillemots are seabirds that nest in crevices within the quays and other structures of Dublin Port between Poolbeg and Butt Bridge on the River Liffey. The sites are mainly inside old drainage pipes, some in the vertical face of quay walls and some in metal ramps. A few are in wooden nest boxes installed in 2015, well above the highest tide level, to be suitable for the birds. It is proposed to infill the basin of Berths 52/53. Dublin Port's Black Guillemot Management Plan 2023-2030 (DPC, 2023) indicates that there are at least two occupied nest sites within this area, at Ro/Ro Ramp no. 6 and Ro/Ro Ramp no. 7, which are acknowledged within the Management Plan. In order to mitigate the loss of these nest sites, the Management Plan sets out that six new nest boxes are proposed within the new Berth 53 open pile structure at the eastern end of the Port.

The sounds that birds hear can be divided into threatening and non-threatening sounds. Examples of non-threatening sounds are wave noise on a beach or constant traffic noise from a road. Threatening sounds include impulsive sounds such as gunfire, explosions, or the barking of a dog. The sound of construction is not impulsive (sudden, loud or shocking) but tends to be continuous and low-frequency noise such as that made by machinery and vehicular traffic.

Dooling (2002) reviewed the literature on how well birds can hear in noisy (windy) conditions and suggested that birds cannot hear certain mechanical noises as well as humans can in these conditions. Results of a trial for a colony of a different species, the Crested Tern *(Sterna bergii)* in Australia, found that the maximum responses observed, preparing to fly or flying off, were restricted to exposures to simulated aircraft noise levels

of greater than 85 dB(A). Although the Dooling (2002) study does not specifically focus on port activity, it establishes core acoustic principles directly applicable to industrial, shipping, and port environments.

Continuous monitoring of noise levels during 2017 and 2018 at Poolbeg Marina indicates that daily average noise levels from existing port activities and construction (at 575m distance) do not exceed 65 dB(A), lower than the 85 dB(A) outlined above.

There will be no indirect impacts on breeding Black Guillemots elsewhere in the port due to disturbance, as the birds are already habituated to construction noise in the Port. For example, they continue to breed in close proximity to construction activity in Alexandra Basin West, along with landward and seaward port activities and traffic.

Two species of terns, Common Tern *(Sterna hirundo)* and Arctic Tern *(Sterna paradisaea),* breed in Dublin Port. The tern colony currently occupies four separate subsites entirely on artificial structures. Two of these sites are located an estimated 300m to the south of Berths 52/53 (CDL Dolphin and ESB Dolphin). No works will occur on these platforms associated with the ABR2 Project, and no adverse effects are predicted during construction due to noise disturbance.

The area immediately to the north of the proposed Berth 53 is covered by shallow water at most stages of the tidal cycle. However, the intertidal substrate is exposed during low tide. No works will occur on these habitats due to the ABR2 Project, and they are spatially separated (an estimated 40m) from the proposed works by a roadway, scrub mound and rock armour.

#### 7.3.3.1.6 Invasive Species

During the construction phase, medium impact invasive species such as butterfly bush and narrow-leaved ragwort located within the site boundary of the ABR2 Project have the potential to spread within and outside of the site in the absence of mitigation during ground works.

Records of Harlequin Ladybird were found, however no evidence of Harlequin Ladybird within the boundary of the ABR2 Project was identified during the site surveys in 2025 or 2026, and they have therefore been scoped out of assessment as there is no potential for adverse significant effects to occur.

#### 7.3.3.1.7 Designated Sites

##### European Sites

The AASR/NIS has been prepared to enable to the competent authority to carry out the necessary assessments pursuant to Article 6(3) of the Habitats Directive and relevant Irish implementing legislation.

##### National Designated Sites

Whilst there are no designated Natural Heritage Areas within, or proximate to, the Project Area, there are a number of proposed Natural Heritage Areas [pNHAs] located in close proximity to the proposed development and hydrologically linked via the Tolka Estuary and Dublin Bay:

- Royal Canal pNHA,

- Grand Canal pNHA,
- North Dublin Bay pNHA,
- Dolphins,  Dublin Docks pNHA,
- South Dublin Bay pNHA and
- Booterstown Marsh pNHA are.

During the construction phase, increased suspended sediment levels could potentially occur due to the accidental release of sediment to the water column as a result of:

- Increased suspended sediment levels due to the accidental release of sediment to the water column during the infilling of the Berths 52/53 basin;
- Site Clearance Works, along with associated sand and soil disturbance caused by the construction of Replacement Riverside Berths 52 and 53 and the construction of Berth 52 West;
- Capital dredging at Alexandra Basin West & remediation of dredged material;
- Relocation of surcharge material from above infilled sediments to provide subbase in all areas to be repaved to provide the Unified Ferry Terminal (UFT);
- General water quality impacts associated with works machinery, infrastructure and on-land operations, including the temporary storage of construction materials, oils, fuels and chemicals; and
- Accidental release of highly alkaline contaminants from concrete and cement during demolition works proposed at Berths 52/53 basin involves the removal of existing marine infrastructure, prior to the infilling of the Berths 52/53 basin.

North Dublin Bay pNHA, Dolphins, Dublin Docks pNHA, South Dublin Bay pNHA and Booterstown Marsh pNHA are closely hydrologically linked to the proposed development and may potentially be impacted by point-source-pollution release into the water column, resulting in diminution of water quality and degradation of habitats. However, mitigation measures are proposed to prevent such impact occurring (as set out in **Section 7.2.6**.

### 7.3.3.2 Assessment of Operational Effects

#### 7.3.3.2.1 Habitats

Operation of the proposed development will involve minimal changes to land use within the ABR2 Project, as most of the site will remain hardstanding, port infrastructure and buildings. There is a risk of operational maintenance causing hydrocarbon and sedimentary pollution arising from vehicles and plant equipment.

Point-source-pollution via the pathways outlined above may potentially cause adverse effects on estuary habitats in proximity to the ABR2 Project, in the absence of mitigation.

Likely significant adverse operational effects on habitats are expected in the absence of mitigation and issues arising are examined further below.

#### 7.3.3.2.2 Badger

No evidence of badger using the site was found, with no latrines, hair, mammal paths, setts or any other evidential features during the 2025 survey. No adverse significant operational effects on Badger are predicted, even in the absence of mitigation. Badger have therefore been scoped out of further assessment.

#### 7.3.3.2.3 Otter

Otter may range widely and could potentially be affected by operational phase port activities and its associated noise while foraging. Otter have therefore been scoped into further assessment and mitigation.

No operational phase effects will occur on any holts due to the ABR2 Project.

#### 7.3.3.2.4 Birds

No operational effects are predicted on Black Guillemot during operation of the ABR2 Project. Nesting Terns located to the south of Berths 52/53 will not be adversely affected by the proposed development, as no works will occur in proximity to, or on, the artificial nesting structures.

Noise and visual disturbance in relation to the ABR2 Project are predicted to be in line with the existing baseline level of anthropogenic noise and disturbance currently ongoing at Dublin Port. Local bird species are already attenuated to this level of disturbance.

All exposed intertidal substrate is spatially separated from the proposed development by 40m of roadways, port infrastructure, rock armour and scrubland to the north of Berths 52/53. No intertidal foraging habitats will be lost due to the ABR2 Project.

No significant impacts are predicted to occur on local bird populations due to the ABR2 Project.

#### 7.3.3.2.5 Bats

A majority of the existing structures within the ABR2 Project Area will be demolished pursuant to previous development consents and in the event that permission is granted. A majority of the site will consist of estuary open water and hardstanding, which will (and currently do) experience 24/7 lighting and anthropogenic disturbance.

Small areas of scrub and rock armour will be lost under the ABR2 Project. These habitats offer extremely limited foraging habitat and are illuminated by nearby roadways and ongoing port activities.

No adverse significant operational effects on bats are predicted, even in the absence of mitigation. Bats have therefore been scoped out of further assessment.

#### 7.3.3.2.6 Designated Sites

Operational-phase Likely Significant Effects in relation to potential diminution of water quality and habitat deterioration have been screened in for South Dublin Bay & River Tolka Estuary SPA, Northwest Irish Sea SPA,

North Bull Island SPA, South Dublin Bay SAC, Rockabill to Dalkey Island SAC, Codling Fault Zone SAC, Lambay Island SAC, Howth head SAC, North Dublin Bay pNHA, Dolphins, Dublin Docks pNHA, South Dublin Bay pNHA and Booterstown Marsh pNHA, However, with the effective implementation of surface water and foul water measures proposed to manage the risk of pollution during operational phase, the residual effect on designated sites is not significant. In addition, for the reasons set out in detail in the AASR/NIS which accompanies the application for permission, there will not be any adverse effects on the integrity of any European site as a result of the operational phase of the Project.

#### 7.3.3.2.7 Invasive Species

Operational maintenance of the ABR2 Project will not assist the spread of butterfly bush or narrow-leaved ragwort within the ABR2 Project. In the absence of mitigation, butterfly bush and ragwort may colonise exposed substrates across the ABR2 Project. Adverse effects in relation to invasive species are not predicted, as they are low-impact species already widespread in the area.

### 7.3.4 Inter-relationships

Effects on Terrestrial Biodiversity also have the potential to have secondary effects on other receptors, which are considered in relevant topic-specific chapters. These receptors and effects are:

- Water Quality, Coastal Processes and Benthic Biodiversity & Fisheries

Release of sedimentary and hydrocarbon pollutants into the water column, leading to an increase in water turbidity and degradation of water quality. This can directly impact on benthic biodiversity and fisheries and indirectly impact on feeding resource and habitat availability for birds.

The impacts associated with these pathways are assessed fully in **Chapter 9** and **Chapter 14**. With the implementation of mitigation measures relating to dredging methodology, sediment management and water quality protection, these effects are predicted to remain localised, temporary and not significant.

- Terrestrial Noise & Vibration

Noise levels associated with the ABR2 Project have the potential to impact on ornithological receptors through disturbance. Tetra Tech (formerly RPS) has completed detailed impact assessments, including terrestrial noise and vibration assessments, for a number of large-scale projects in the Dublin Port area for over a decade, including the ABR Project, the MP2 Project and the 3FM Project. In the course of completing these assessments, a large dataset of source information has been gathered within the study area. This information includes the accumulation of extensive desktop datasets, site survey data and many years of recorded noise monitoring data at multiple locations within the vicinity of the Port area.

The Dooling (2002) study, which is directly applicable to industrial, shipping, and port environments, considered that disturbance responses were restricted to noise levels exceeding 85dB(A), much higher than the noise levels predicted for the ABR2 Project (refer to Chapter 12, Section 12.4). Although noise levels will be below those predicted to have adverse effects, best practice noise and vibration control will be put in place to further reduce noise levels.

The assessments identified that the mitigation measures were suitable for the interactions with no additional or modified measures required for the interaction between Biodiversity, Flora and Fauna and these potentially interacting environmental topics.

## 7.3.5 Mitigation and Monitoring

### 7.3.5.1 Mitigation

#### 7.3.5.1.1 Habitat Loss

As outlined in **Section 7.3.3.1.1**, potential impacts regarding habitat loss are predicted to be minor negative. As such, no significant effects are predicted in relation to habitat loss, therefore no avoidance, reduction or planting measures need to be implemented.

#### 7.3.5.1.2 Black Guillemot Nests

As outlined in **Sections 7.3.2.7** and **7.3.3.1.5** Black Guillemot nests may be lost as part of the infilling process at Berths 52/53. To compensate for the loss of these 2 no. nests the following mitigation is proposed:

The Dublin Port Companies Black Guillemot Management Plan 2023-2030 (DPC, 2023, RPS, 2024) sets out that six new nest boxes are proposed within the new Berth 53 open pile structure at the eastern end of the Port. This will increase the amount of available nesting habitat available for Back Guillemot and offset the loss of 2 no. nests during the infilling of the Berths 52/53 basin. These nest box locations are proposed under the MP2 project as part of MP2 Project Foreshore consent, Condition 2(b), and the ports wider biodiversity strategy.

#### 7.3.5.1.1 Potential Diminution of Water Quality and Habitat Deterioration

A CEMP (Construction Environment Management Plan), detailing the best practice mitigation measures and standards, has been submitted with the application for permission and, with any additional mitigation measures prescribed by conditions attached to any permission granted, shall be effectively implemented during the construction phase.

**Dredging**

As noted in Chapter 9 (Water Quality and Flood risk Assessment), the following key relevant mitigation measures will apply to each dredging campaign in the ABR2 Project:

- Loading will be carried out by a backhoe dredger.
- The backhoe will have a clamshell bucket adapted for environmental dredging when working in Alexandra Basin West.
- A silt curtain is to be utilised around the dredger whilst the dredging of contaminated material is ongoing.
- Material dredged in Alexandra Basin West is to be treated and reused for reclamation within the Port as far as practicable, specifically as infill for Berths 52/53.

- A contingency bubble curtain installed across the entrance to Alexandra Basin West will be utilised in the event of a breach of the silt curtain around the dredger.
- Dredged material will be transported to the proposed treatment facility by barge and treated under the terms of the existing IE licence P1002-02, or as may otherwise be agreed with the EPA during a licence review to account for amendments to the licence which may be required to accommodate the works as outlined in the ABR2 Project.
- No overtopping of barges is permitted, and spill plates are to be utilised to prevent spillage during offloading operations.
- Full-time monitoring of Marine Mammals within 500m of loading operations will be undertaken in accordance with the measures contained in the Guidance to Manage the Risk to Marine Mammals from Man-Made Sound Sources in Irish Waters (NPWS, 2014).
- A documented Accident Prevention Procedure will be put in place prior to commencement.
- A documented Emergency Response Procedure will be put in place prior to commencement.
- A full record of loading locations and a record of the material being treated will be maintained for each trip.
- When any dredging is scheduled to take place within a 500m radius of power station intakes, the relevant stakeholders will be notified so that precautionary measures can be taken if deemed necessary.

**Release of contaminated surface water drainage**

Sediments arising from Alexandra Basin West will be subjected to storage in stockpiles and potentially soil washing techniques appropriate to the concentrations of contaminants.

All contaminated water will be managed and directed through the wastewater treatment system prior to discharge under the requirements of the IE licence. Dredged sediments will be stored in bunded areas, stockpiles will not exceed the heights applicable to the material being stored at North Wall Quay Extension to ensure that the loading of materials onto the structure do not exceed service loading, or at Berth 49 and Riverside Berth 52 West will not exceed the height of a stockpile placed at the natural angle of repose of the sediments within the footprints of the storage areas (nominally 4.5m in height). Precipitation falling on the stockpiled dredge material within the three treatment areas will be collected within a bund surrounding the contaminated material and then subsequently pumped to the wastewater treatment works for treatment. Therefore, the surface water generated in the stockpiled contaminated dredge areas will be contained within the bund and then treated in the wastewater treatment plant. Clean surface water generated in the treatment areas will drain to the existing drainage network.

The treatment of soil and sediment washing allows the recovery of the inert fraction with coarser particle size (sands and gravels) for reuse on site. It is expected that this form of treatment will be applied to c. 120,000m$^3$ of dredge sediment arising from Alexandra Basin West.

The mitigation and control measures to address the impact from suspended sediments associated with these activities will follow sound design principles and good working practices as listed in the NetRegs Guidance for

Pollution Prevention series. In addition to the requirements of best practice and relevant guidelines, the following mitigation measures will be implemented by the contractor during the construction phase:

- Sampling points will be included within the pipe work system of the wastewater treatment system for contaminated water to allow for the collection of water samples from the emission point as per the IE licence. The sampling and testing schedule will be in accordance with Schedule C of the IE licence;
- A controlled outlet from Berths 52/53 will be constructed to control water level/flow. A written record of the types and quantities of material recovered at the infill sites will be maintained. Ongoing monitoring of the soil washing and S/S process will also take place during construction and will consist of the following:

– Geotechnical tests, e.g. the permeability (hydraulic conductivity) and the compression strength of the stabilised materials after different strength development periods;

– Environmental testing, e.g. batch leaching tests and diffusion testing to measure the leaching of contaminants from the treated dredge material as per the IE licence requirements;

– An ongoing monitoring programme will be undertaken prior to, during, and post the recovery operation (surface water quality in harbour, monitoring of pore water in the construction, sediment samples from the harbour, water levels and groundwater quality) as per the IE licence requirements; and

– A Quality Assurance/Quality Control (QA/QC) programme will be established.

- Where preferential surface flow paths occur, silt fencing or other suitable barriers will be used to ensure silt-laden or contaminated surface runoff from the site does not discharge directly to a water body or surface water drain.
- In the event that dewatering of foundations or drainage trenches is required during construction and/or discharge of surface water from sumps, a treatment system prior to the discharge will be used; silt traps, settlement skips, etc. This measure will allow additional settlement of any suspended solids within stormwater arising from the construction areas.

#### 7.3.5.1.2 Otter

**Pre-Commencement Terrestrial Otter Search**

Prior to the commencement of any construction works (including the moving and storage of materials), an Environmental Facilities Manager will undertake a confirmatory search to ensure that there are no resting otters along all potentially suitable land along the water's edge, out to more than 30m from proposed construction works. If otters are encountered, all works in that vicinity will cease until they have moved on.

**Timing of Works**

Otter are most active during and after sunset, emerging from their holts to hunt, forage, and commute. The current IE Licence facilitates operation of the treatment infrastructure between the hours of:

- 08:00 and 18:00 on Monday to Friday.
- 08:00 and 13:00 on Saturday

Alexandra Basin West dredging and treatment of dredged material may occur during a daytime window of 07:00-19:00 and an evening window of 19:00-23:00.

Activity will be lower during the night, with the only permitted activities during a 23:00-07:00 window being dredging of Alexandra Basin West area 1 and area 4, along with associated barge transport of dredged material.

**Excavations & Pipes**

Open excavations and / or trenches will either be covered to avoid access by otters, or a means of escape installed to facilitate egress, at the end of each working day. All pipes will be capped overnight to prevent access by otters.

### 7.3.6 Potential Cumulative Effects

**Chapter 21 Cumulative Effects and Environmental Interactions** outlines the methodology used to complete the assessment of cumulative effects, which may arise from adjacent or nearby projects, as well as plans, together with those impacts predicted for the Project. The projects which have been considered within the assessment of cumulative effects are outlined in **Chapter 21**.

On this basis, a range of other projects were considered in terms of their potential to have in-combination effects with the proposed development, as listed in Table 7-8**.**

**Table 7-8: In-Combination Effects Table**

| Existing, Approved or Under Consideration Projects and Plans | Project Description | Screened In/Out & Reasoning |
|---|---|---|
| **National Biodiversity Action Plan 2023-2030** | Ireland's 4th National Biodiversity Action Plan (NBAP) sets the national biodiversity agenda for the period 2023-2030 and aims to deliver the transformative changes required to the ways in which we value and protect nature. The 4th NBAP has been developed with the support, advice and input of the interdepartmental Biodiversity Working Group and the independent Biodiversity Forum.<br><br>The 4th NBAP outlines the following key objectives:<br>• Objective 1 Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity<br>• Objective 2 Meet Urgent Conservation and Restoration Needs<br>• Objective 3 Secure Nature's Contribution to People<br>• Objective 4 Enhance the Evidence Base for Action on Biodiversity<br>Objective 5 Strengthen Ireland's Contribution to International Biodiversity Initiatives. | Screened out of further assessment.<br><br>The National Biodiversity Action Plan does not outline any environmental measures or proposed development schemes that may have an in-combination effect with the ABR2 Project.<br><br>Funding has been allocated for a Dublin City otter habitat survey, this survey has been completed and there is no expected pathway for in-combination disturbance effects to occur in tandem with the surveys commissioned as part of the ABR2 development. |

| Existing, Approved or Under Consideration Projects and Plans | Project Description | Screened In/Out & Reasoning |
|---|---|---|
| **National Planning Framework 1st Revision (Project Ireland 2040)** | The National Planning Framework (NPF), is the long-term, 20-year strategy for strategic planning and sustainable development of our urban and rural areas to 2040, with the core objectives of securing balanced regional development and a sustainable 'compact growth' approach to the form and pattern of future development.<br><br>The NPF, together with the National Development Plan 2021 (NDP), combine to form Project Ireland 2040, the overarching planning and investment framework for the social, economic and cultural development of Ireland. | The NPF (Project Ireland 2040) outlines a need to:<br>*"Facilitating the growth of Dublin Port through greater efficiency, including improved rail freight transfer options, automation and technology updates, limited expansion into Dublin Harbour and improved road access, particularly to/from the southern port area;"*<br><br>No adverse effects are expected and only a high-level overview of a need for development is outlined. The projects this goal applies to have been assessed below (ABR2, 3FM, MP2, dredging programs, etc) have been screened in and assessed fully for in-combination effects, with all adverse effects scoped out.<br>Therefore, the NPF has been scoped out of further assessment as there are no pathways for adverse effects to occur over. |
| **Dublin City Development Plan 2022-2028** | The Dublin City Development Plan (2022–2028) sets out an integrated, coherent spatial framework to ensure our city is developed in an inclusive way which improves the quality of life for its citizens and ensures that it is an attractive place to live, work and visit. The plan guides future growth and development and provides the overall strategy to achieve proper planning and sustainable development, through a range of policies and objectives. | A Strategic Environmental Assessment and Appropriate Assessment Screening Report & Natura Impact Statement was prepared to support the Development Plan. It identified several adverse effects (in the absence of mitigation) on habitats, protected species and designated sites in the Dublin Bay area.<br>Therefore, due to this overlapping zone of interest the development plan has been screened in for further assessment. |
| **3FM – ABP Reg. Ref.PA29N.320250** | Proposed '3FM Project' consisting of a Southern Port Access Route and road network improvements, construction of a Lo-Lo container terminal, Ro-Ro freight terminal and other works. | Screened in for further assessment.<br>Partially overlapping development footprint and similar scope of works. Both the ABR2 Project and the 3FM Project are hydrologically linked to Dublin Bay. |
| **MP2 Reg. Ref. ABP304888-19** | 15-year permission for development at Oil Berth 3 and Oil Berth 4, Eastern Oil Jetty and at Berths 50A, 50N, 50S, 51, 51A, 49, 52, 53 and associated terminal yards to provide for various elements, including a new Ro-Ro jetty and consolidation of passenger terminal buildings. | Screened in for further assessment.<br>Partially overlapping development footprint and similar scope of works. Both the ABR2 Project and MP2 Project are hydrologically linked to Dublin Bay. |

| Existing, Approved or Under Consideration Projects and Plans | Project Description | Screened In/Out & Reasoning |
|---|---|---|
| **Dublin Harbour Capital Dredging Project – Reg. Ref. Foreshore Application FS007164/DAS Application S0033-01** | The works proposed in the Dublin Harbour Capital Dredging Project comprise several elements:<br>Deepening the navigation channel between North Wall Quay Extension and the Western Oil Jetty, including riverside Berth 35;<br>Deepening of Alexandra Basin East and deepening/widening of berths;<br>Deepening of the Oil Basin and widening of berths;<br>Deepening of the Ferryport Basin;<br>Deepening of Riverside Berth 52;<br>Widening the South Port (Berths 42 - 47) berths; and<br>Removal of ridge between the navigation channel and the Poolbeg Oil Jetty (Berth 48). | Screened in for further assessment.<br>Partially overlapping development footprint and similar scope of works. Both the ABR2 Project and Dublin Harbour Capital Dredging both involve dredging works on Alexandra Basin and Dublin Harbor, but the dredging campaigns will not occur at the same time. |
| **Dublin Port Maintenance Dredging Programme 20222029 – Reg. Ref. FS007132 / DAS Permit S0004-03** | It is proposed that quantities of material will be dredged from the Inner Liffey Channel (Dublin Harbour) and Dublin Bay during the 2022 to 2029 maintenance dredging campaigns.<br>Based on previous maintenance dredging campaigns undertaken within Dublin Port, it is estimated that the proposed 2022-2029 programme will result in the dredging of approximately 300,000 cubic metres of material per annum.<br>This material consists mostly of silt and sand with elements of clay, gravel and cobbles. | Screened in for further assessment.<br>Partially overlapping development footprint and similar scope of works. Both the ABR2 Project and Dublin Harbour Dublin Port Maintenance Dredging Programme both involve dredging works on Alexandra Basin and Dublin Harbour, but capital and maintenance dredging campaigns are permitted by the EPA to be undertaken during different seasons. The dredging campaigns will not occur at the same time. |
| **Development at the Ringsend Wastewater Treatment Plan. Reg. Ref. 5319/22** | 10-year permission for development of the Ringsend wastewater treatment plant upgrade project, including a regional biosolids storage facility | Screened in for further assessment.<br>Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project. Therefore, it has been assessed further below. |
| **Upgrade of the Ringsend Wastewater Treatment Plant (WwTP). Reg. Ref. PL29S.301798** | 10-year permission for development of the Ringsend wastewater treatment plant upgrade project, including a regional biosolids storage facility | Screened in for further assessment.<br>Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project. Therefore, it has been assessed further below. |
| **Site bounded by Alexandra Road, Branch Road No. 1 and railway, Branch Road No. 3 and Alexandra Basin, Dublin Port, Dublin 1 - Case reference: PL29N.319742** | PROTECTED STRUCTURE: Demolition of quayside infrastructure. Construction of bulk product intake/outtake, storage, and transport infrastructure with all associated site works. NIS submitted. | Screened in for further assessment.<br>Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project. Therefore, it has been assessed further below. |

| Existing, Approved or Under Consideration Projects and Plans | Project Description | Screened In/Out & Reasoning |
|---|---|---|
| **Bond Drive, Dublin Port, Dublin 1 to Dublin Airport, Co. Dublin. - Case reference: PL29N.245738** | Aviation fuel pipeline. Inlet Station at Team CV Ltd, EIAR & NIS submitted. | Screened in for further assessment. Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project. Therefore, it has been assessed further below |
| **Adjacent to Berth 49, Ferryport Terminal 1, Dublin Port, Dublin 1 – Application Number 3176/19** | The development will consist of: a c.189m long, c.10m wide approachway and ramp; 1 no. office and staff facilities building (c.193 sq.m and 7.7m in height); 1 no. control kiosk (c.6 sq.m and 2.3m in height); 1 no. control cabin (c.20 sq.m and 2.3m in height); new lighting (including 18 no. lighting columns 10m high); demolition of 5 no. existing staff facilities buildings with a combined area of c.329 sq.m; building 1 has an area of c.198 sq.m, building 2 has an area of c.10.7 sq.m, building 3 has an area of c.35.5 sq.m, building 4 has an area of c.42.4 sq.m, building 5 has an area of c.42.4 sq.m; and associated site works to include 15 no. tug parking spaces, drainage, utility services, fencing 2.4m in height and pedestrian gate 2.4m in height on a site of approx. 1.3 hectares. A Natura Impact Statement (NIS) will be submitted to the Planning Authority with the planning application. | Screened in for further assessment. Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project. Therefore, it has been assessed further below |
| **Terminal 4 North Lands, Dublin Port, Dublin 1, bounded by Bond Road, Tolka Quay Road & Promenade Road – Application Number 4483/19** | The proposed development will consist of the demolition of 10 no. redundant buildings (c. 6830sqm) and removal of temporary structures including portacabins and general site clearance (an existing substation and pump house will remain in situ) to optimise the use of the site as a multi-functional storage yard (primarily for heavy goods vehicles) and facilitate wider infrastructural upgrades to provide additional capacity within the Port. The proposed development will also include: construction of vehicular check-in booths (c. 30sqm); an open-air blockwork electrical enclosure; amendments to boundary treatments including provision of 4m high security fencing (including 1.5m high retaining walls) on the northern, eastern and southern boundaries; 4m high security fencing fixed to the existing masonry wall along the western boundary with Bond Road; 3 no. new 12m wide automatic vehicular sliding gates and re-building of 1 no. existing 9m wide automatic vehicular sliding gate; provision of 14 no. high mast lighting columns (30m high) and 54 no. perimeter lighting | Screened in for further assessment. Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project. Therefore, it has been assessed further below |

| Existing, Approved or Under Consideration Projects and Plans | Project Description | Screened In/Out & Reasoning |
|---|---|---|
| | columns (12m high); installation of 9 no. CCTV columns (18m high); installation of new pavement, underground drainage, attenuation, interceptors, water services and electrical infrastructure; installation of new wash bay and fuel spill areas; installation of pedestrian barriers; and all associated site and development works on a site of c. 9.52ha. | |
| **A site generally bounded by Alexandra Road to the north, Branch Road No.1 and rail line to the west, Branch Road No.3 to the east and Alexandra Basin to the south, at Dublin Port, Dublin 1, which includes R&H Hall Silo Building (a protected structure,) – Application Number 4585/23** | PROTECTED STRUCTURE: PERMISSION:The development will consist of: A. Demolition and removal of existing quayside overhead bulk material conveyor system (2no. North/South and 1no. East/West), 2no. associated elevator/weighing towers, redundant transformer building and weighbridge and associated infrastructure to include site clearance of redundant walls, plinths and fences; B. Reinstatement of window opening to the R&H Hall Silo Building, a protected structure, following removal of the elevated conveyor system (within its curtilage) together with internal and external repair works to the remainder of the building; C. Relocation of existing rail line northwards to a safe zone set further back from the quayside, existing crane rails along the quayside and existing 30m high mast lighting (HML) tower; D. Relocation of existing reefer gantries and 30m HML towers located at McCairn's Yard and provision of 2no. new reefer gantries; E. Quayside and yard pavement upgrades and reinforcement works and installation of new 30m HML towers; F. Construction of a new bulk product silo facility at McCairn's Yard, to include intake/outtake of bulk product from vessels to quayside storage and onward transport. The facility will consist of 6no. bulk product storage silo bins c.30.0m in height (c.1,701sq.m), below ground conveyor system from intake pit to silo bins (c.-7.5m), above ground conveyor system up to c.32.8m in height, bulk material out-loading building c.9.1m in height (c.234sq.m), weighbridge control office c.4.0m in height (c.59sq.m), motor control centre and switch room c.5.080m in height (c.70sq.m), intake elevator tower and weighting tower c.41.11m in height (c.97sq.m), bulk material intake building c.11.66m in height (c.2,326sq.m), administration office and welfare building c.6.8m in height (c.164sq.m), workshop and covered external area c.6.9m in height (c.592sq.m), weighbridges, associated | Screened in for further assessment.<br>Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project.<br>Therefore, it has been assessed further below |

| Existing, Approved or Under Consideration Projects and Plans | Project Description | Screened In/Out & Reasoning |
|---|---|---|
| | infrastructure, skip area, chemical storage area, diesel tank bunded area, ancillary lighting, and automated gate entry; G. Provision of a new substation c.2.97m in height (c.196sq.m); and; H. New access and egress onto Alexandra Road, provision of International Ship and Port Security (ISPS) fencing and gates to matching existing fencing, internal roads, ancillary car and bicycle parking, ancillary lighting, waste management facilities and all associated site development works including revised utilities/drainage arrangements and construction compound. A Natura Impact Statement (NIS) will be submitted to the Planning Authority with the planning application. | |
| **Kish and Bray Banks**<br>**Case reference: OA06D.321992** | The proposed Dublin Array Offshore Wind Farm (Dublin Array) is located on the Kish and Bray Banks, approximately 10 km off the east coast of Ireland.<br>The project will include between 39 and 50 wind turbines, which will generate electricity from the wind.<br>These turbines will be connected by subsea cables (called inter-array cables) to an offshore substation on a platform at sea. | Screened in for further assessment.<br>Potential effects on ecological receptors shared with the ABR2 Project have been scoped in for this project.<br>Therefore, it has been assessed further below |

#### 7.3.6.1.1 Dublin City Development Plan 2022-2028

The AASR prepared for the Dublin City Development Plan concluded the following:

“Implementation of the policies and objectives and proposed zonings could result in a number of potential impacts on the conservation objectives of those European site(s) including:

- Habitat Loss
- Habitat Degradation
- Disturbance and Displacement of Species.”

Thus in the assessment undertaken in the Natura Impact Report (NIR), there are a total of 23 no. European sites located within the ZoI of the Plan for which a source pathway receptor linkage is identified. Four of these sites are located in the administrative boundary of DCC and in Dublin Bay: North Dublin Bay SAC, South Dublin Bay SAC, North Bull Island SPA and South Dublin Bay and River Tolka SPA.

All of these European sites are hydrologically connected to the Plan area via the following watercourses: Mayne River, Santry River, Naniken River, River Tolka, River Liffey, Royal Canal, Liffey Estuary Upper, Liffey Estuary Lower, Grand Canal, River Dodder, River Camac, River Poddle and the Brewery Stream. The remaining 19 sites (8 Special Areas of Conservation (SACs) and 11 Special Protection Areas (SPAs)) (Including the additional sites of Poulaphouca Reservoir SPA and The Murrough SPA, brought into consideration as part of the evolving NIR evaluation) are outside the DCC administrative boundary, but within the potential ZoI by virtue of: “

“Hydrological pathways; and use of ex-situ inland feeding sites by SCI winter bird species from European sites across the wider Dublin Area.”

The ABR2 Project has the potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration (due to contaminant/pollutant release into the water column) on local foraging Otter populations, however, following mitigation outlined in **Section 7.3.5.1** (and mitigation measures defined with the Dublin City Development Plan NIR) these impact pathways will be reduced to a negligible level. The ABR2 Project possesses no pathways for significant effects on habitats, bats, invasive species or badgers. There are no pathways for in-combination effects to occur, and they have been scoped out of further assessment.

The NIR further concludes: *“It has been objectively concluded by Scott Cawley Ltd., following an examination, analysis and evaluation of the relevant information, including in particular the nature of the predicted impacts associated with the Plan, and that the implementation of mitigatory measures identified in Section 8 of the NIR (and included as objectives and policies of the Plan),that the Plan will not adversely affect (either directly or indirectly) the integrity of any European site, either alone or in combination with other plans or projects.”*

Following mitigation measure implementation as defined within this EIAR, and in consideration of the mitigation measures defined within the Dublin City Development Plan NIR, no pathway for impacts to occur exists, and therefore no significant effects are predicted, either alone or in-combination with the ABR2 Project.

#### 7.3.6.1.2 3FM – ABP Reg. Ref.PA29N.320250

The 3FM project has six key elements:

1) A new public road and bridge called the Southern Port Access Route (SPAR) to link the north and south port areas.
2) A new Lift-on Lift-off (Lo-Lo) container terminal with an annual throughput capacity of 550,000 Twenty-foot Equivalent Units (TEU) or 5.34 million tonnes. The Lo-Lo container terminal will consist of two main components:
3) Replacement of the existing Lo-Lo container terminal, currently operated by Marine Terminals Limited (MTL), with a new Roll-On Roll-Off (Ro-Ro) freight terminal with an annual throughput capacity of 360,000 Ro-Ro units or 8.69 million tonnes.
4) Provision of a 325 m diameter ship turning circle in the river channel north of Pigeon House Harbour, dredged to a depth of -10.0 m CD. The ship turning circle will enable safe navigation and efficient manoeuvring of vessels up to 240 m in length.
5) Development of a new Maritime Village at Pigeon House Road and Berth 41.
6) Community Gain - Integrating Dublin Port with Dublin City and its people is a core objective of the Masterplan for Dublin Port.

An EIAR was also submitted with, with impacts in relation to Habitats, Invasive Species, Badger and Bats assessed as requiring mitigation. Otter and Protected Flora were scoped out of further assessment due to a lack of potential impact pathways.

The ABR2 Project has the potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration (due to contaminant/pollutant release into the water column) on local foraging Otter populations, however, following mitigation outlined in **Section 7.3.5.1** these impact pathways will be reduced to a negligible level. The ABR2 Project possesses no pathways for significant effects on habitats, bats, invasive species or badgers. There are no pathways for in-combination effects to occur, and they have been scoped out of further assessment.

As both sites, following mitigation measure implementation will have no significant adverse effect, no pathway for impacts to occur over exists, and therefore no significant effects are predicted, either alone or in-combination with the ABR2 Project.

#### 7.3.6.1.3 MP2 Reg. Ref. ABP304888-19

The MP2 Project includes the following elements:

- Construction of a new Ro-Ro jetty (Berth 53) for ferries up to 240m in length
- A reorientation of the already consented Berth 52
- A lengthening of an existing river berth (50A) to provide the Container Freight Terminal with additional capacity to handle larger container ships.

- As part of the infilling of Oil Berth 4, it is proposed to redevelop Oil Berth 3 as a future deep-water container berth (standard depth of -13.0m CD) for the Container Freight Terminal.
- Dredging at the proposed Berth 53 and channel widening to a standard depth of -10.0m CD which is a proposed amendment to the channel dredging as permitted under the ABR Project
- Consolidation of passenger terminal buildings, demolition of redundant structures and buildings, and removal of connecting roads
- A heritage zone adjacent to Berth 53 and the Unified Ferry Terminal set down area

A Biodiversity Chapter was produced to support the MP2 application, with impacts in relation to Habitats. Protected Fauna (Bats, Badger, Otter) and Protected Flora scoped out of further assessment due to a lack of potential impact pathways.

The ABR2 Project has the potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration. The ABR2 Project possesses no pathways for significant effects on terrestrial habitats, bats, invasive species or badgers. There are no pathways for in-combination effects to occur, and they have been scoped out of further assessment.

The ABR2 Project has the potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration and may impact local Otter populations, however following mitigation outlined in **Section 7.3.5.1** these impact pathways will be reduced to a negligible level. The ABR2 Project possesses no pathways for significant effects on habitats, bats, invasive species or badgers.

As both sites, following mitigation measure implementation, no significant effects are predicted, either alone or in-combination with the ABR2 Project.

#### 7.3.6.1.4 Dublin Harbour Capital Dredging Project – Reg. Ref. Foreshore Application FS007164/DAS Application S0033-01

The works proposed in the Dublin Harbour Capital Dredging Project comprise a number of elements: Deepening the navigation channel between North Wall Quay Extension and the Western Oil Jetty, including riverside Berth 35.

- Deepening of Alexandra Basin East and deepening/widening of berths;
- Deepening of the Oil Basin and widening of berths;
- Deepening of the Ferryport Basin;
- Deepening of riverside Berth 52;
- Widening the South Port (Berths 42 - 47) berths, and
- Removal of ridge between the navigation channel and the Poolbeg Oil Jetty (Berth 48

The Biodiversity Chapter, prepared to support the Capital Dredging Project, identified potential habitat loss in relation to dredging of the sea floor. In-combination effects were scoped in regarding the Maintenance Dredging Program and ABR2 Project due to their dredging components in the absence of mitigation.

The ABR2 Project has the potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration and may impact local Otter populations, in the absence of mitigation.

Following the implementation of mitigation measures outlined in **Section 7.3.5.1**, no pathways for adverse effects on water quality remain. As the ABR2 Project, following mitigation, is predicted to have a negligible impact on water quality, no significant in-combination effects are predicted, either alone or in-combination with the Dublin Harbour Capital Dredging Project or any other plan/project.

#### 7.3.6.1.5 Dublin Port Maintenance Dredging Programme 20222029 – Reg. Ref. FS007132 / DAS Permit S0004-03

Dublin Port Maintenance Dredging Programme proposed maintenance dredging in their navigation channel, basins and berths between 2022 and 2029.

The Biodiversity Chapter, prepared to support the Maintenance Dredging Project, identified potential habitat loss in relation to dredging of the sea floor. The ABR2 Project, 3FM Project and Dublin Port Dredging programmes may also involve disturbance of the sea floor via dredging works.

The ABR2 Project has the potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration and may impact local Otter populations, however, following mitigation outlined in **Section 7.3.5.1** these impact pathways will be reduced to a negligible level. The ABR2 Project possesses no pathways for significant effects on habitats, bats, invasive species or badgers.

As both projects, following mitigation measure implementation, will not have any significant effects, as no pathway for impacts to occur exists, therefore, no significant adverse effects are predicted either alone or in-combination with the ABR2 Project.

#### 7.3.6.1.6 Development at the Ringsend Wastewater Treatment Plan. Reg. Ref. 5319/22 & Upgrade of the Ringsend Wastewater Treatment Plant (WwTP). Reg. Ref. PL29S.301798

A 10-year permission was granted (reg. ref. no. 5319/22 and ACP ref PL29S.30178) for the development of the Ringsend wastewater treatment plant upgrade project, including a regional biosolids storage facility.

Key elements of the Ringsend Wastewater Treatment project include:

- *Omission of a 9-kilometre tunnel, associated works including onshore inlet shaft and construction*
- *compound;*
- *Retrofit of existing secondary treatment tanks with AGS technology to increase biological*
- *treatment capacity thus reducing nitrogen and phosphorus levels (W4);*
- *Installation of new UV lamps to increase disinfection capacity (W6);*

- *Modifications to the pumping station to control and distribute flows (W7);*
- *Sludge pasteurisation building to thermally treat primary sludge to reduce pathogen levels (S2);*
- *New phosphorus recovery facility building to extract phosphorus from the sludge liquors (S4);*
- *Electrical upgrade which includes connection of existing ESB power cables to site and provision*
- *of additional diesel generators (A1);*
- *The use on a permanent basis of a vehicular entrance off Pigeon House Road, and associated*
- *landscaping (A2);*
- *New bypass connection from final effluent culvert to existing connection to storm tanks (A4);*
- *Modification to the fats, oils and grease (FOG) and sludge removal systems in the existing primary*
- *settlement tanks (A5);*
- *The continued use of two temporary construction compounds (C1 and C2) for 10-years; and*
- *The omission of two temporary construction compounds located west of the Ringsend WwTP.*

The works to repair and upgrade the UWWT plant discharge channel adjacent to the ESB Poolbeg Generating Station are expected to be completed prior to the commencement of the ABR2 Project.

The ABR2 Project has potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration in the absence of mitigation. However, construction of the Ringsend Road Wastewater Treatment upgrade project is expected to be completed prior to commencement of the ABR2 Project.

The ABR2 Project's operation and maintenance will be in line with existing port activities and does not offer any new or significant pathways for operational water pollution to occur.

The ABR2 Project does not share any terrestrial habitat features of ecological importance, invasive species or Protect Flora & Fauna impact pathways with the operational phase of the Ringsend Water Treatment Plant. No pathways for in-combination effects to occur over are present. Therefore, there are no pathways for effects to occur, in-combination with the ABR2 Project or the upgrade works associated with the Ringsend Wastewater Treatment Plant.

#### 7.3.6.1.7 Alexandra Basin & R&H Hall Silo Building: Application Number 4585/23

The works proposed as part of Application 4585/23 include the following (summarised):

A. Demolition and removal of existing quayside overhead bulk material conveyor system (2no. North/South and 1no. East/West), 2no. associated elevator/weighing towers, redundant transformer building and weighbridge and associated infrastructure to include site clearance of redundant walls, plinths and fences;
B. Reinstatement of window opening to the R&H Hall Silo Building, a protected structure, following removal of the elevated conveyor system
C. Relocation of existing rail line northwards to a safe zone set further back from the quayside
D. Relocation of existing reefer gantries and 30m HML towers located at McCairn's Yard and provision of 2no. new reefer gantries;
E. Quayside and yard pavement upgrades and reinforcement works and installation of new 30m HML towers;
F. Construction of a new bulk product silo facility at McCairn's Yard, to include intake/outtake of bulk product from vessels to quayside storage and onward transport.
G. Provision of a new substation c.2.97m in height (c.196sq.m); and;

H. New access and egress onto Alexandra Road, provision of International Ship and Port Security (ISPS) fencing and gates to match existing fencing

The ABR2 Project has the potential to cause likely significant effects in relation to Diminution of Water Quality and Habitat Deterioration. Following the implementation of mitigation measures outlined in **Section 7.3.5.1** , no pathways for adverse effects on water quality remain. As the ABR2 Project, following mitigation, is predicted to have a negligible impact on water quality, no significant in-combination effects are predicted, either alone or in-combination with the Alexandra Basin & R&H Hall Silo Building project.

#### 7.3.6.1.8 Branch Road No. 1: Case reference: PL29N.319742

Application PL29N.319742 includes the following works: demolition of quayside infrastructure. Construction of bulk product intake/outtake, storage, and transport infrastructure with all associated site works.

The proposed works are currently ongoing and are located adjacent to the ABR2 Project. There is a risk of localised diminution of water quality arising from construction sediment or hydrocarbon pollution due to PL29N.319742 in the absence of mitigation measures.

Following the implementation of mitigation measures outlined in **Section 7.3.5.1**, no pathways for adverse effects on water quality or local otter populations remain. As the ABR2 Project, following mitigation, is predicted to have a negligible impact on water quality, no significant in-combination effects are predicted, either alone or in-combination with the Branch Road No.1 project.

#### 7.3.6.1.9 Aviation Fuel Pipeline: Case reference: PL29N.245738

Application PL29N.245738 (2552/15) includes for the following works:

- Permission for development of an aviation fuel pipeline from Dublin Port, Dublin 1 to Dublin Airport, Co Dublin. The route of the pipeline is from proposed inlet station at Team CV Ltd, Bond Drive, Dublin Port, Dublin 1 and via Bond Drive, Tolka Quay Road, East Wall Road, under the Tolka River, Alfie Byrne Road, Clontarf Road, Howth Road, Copeland Avenue, Malahide Road (R107) and R139 (formerly N32). (It then enters Fingal Co. Council administrative area at Clonshaugh Rd. and routes via AUL/FAI sports ground, under the M1 motorway via the DAA Long Term Red Carpark, adjacent to Eastlands Car Hire Compound, ALSAA complex, under the Swords Road R132 and via Corballis Road to a reception station at Dublin Airport, Co Dublin.
- The development will consist of (a) single-storey Control Building, pumps and ancillary pipework in a fenced compound at Bond Drive, Dublin Port, Dublin 1
- (b) a 200mm diameter continuously welded steel pipeline, laid generally in the public road at a depth of circa 1.2m below surface level except where it will pass under the Tolka and Santry Rivers and culverted streams. The length of the pipeline in Dublin City Council administrative area will be circa 11.4 km (total length will be circa 14.4km.)

- (c) 2no. above-ground control boxes associated with emergency shut-down valves on the pipeline, at the junction of the Malahide Road R107 and Donnycarney Road and on the R139 (formerly N32) east of the junction with Clonshaugh Road South.

Construction of Application PL29N.245738 has been completed, therefore there are no pathways for construction-related effects to occur, either alone or in combination with any other plan/project. The pipeline possesses a robust operational phase leak detection and shutoff system, capable of preventing significant hydrocarbon release in the event of damage/leaks/other failure.

Following the implementation of mitigation measures outlined in **Section 7.3.5.1**, no pathways for adverse effects on water quality or local otter populations due to the ABR2 Project remain.

As the ABR2 Project, following mitigation is predicted to have a negligible impact on water quality, no significant in-combination effects are predicted, either alone or in-combination with the aviation fuel pipeline project.

#### 7.3.6.1.10 Terminal 4 North Land: Application Number 4483/19

Application 4483/19 includes the following proposed works:

- Demolition of 10 no. redundant buildings (c. 6830sqm) and removal of temporary structures, including portacabins and general site clearance (an existing substation and pump house will remain in situ) to optimise the use of the site as a multi-functional storage yard (primarily for heavy goods vehicles) and facilitate wider infrastructural upgrades to provide additional capacity within the Port.
- Construction of vehicle check-in booths (c. 30sqm); an open-air blockwork electrical enclosure; amendments to boundary treatments, including provision of 4m high security fencing (including 1.5m high retaining walls) on the northern, eastern and southern boundaries;
- 4m high security fencing fixed to the existing masonry wall along the western boundary with Bond Road; 3 no. new 12m wide automatic vehicular sliding gates and re-building of 1 no. existing 9m wide automatic vehicular sliding gate.

Construction of the Terminal 4 North development authorised pursuant to permission granted under reg. ref. no. 4483/19 has been completed, and no pathways for likely significant impacts on nearby habitats remain.

Following the implementation of mitigation measures outlined in **Section 7.3.5.1**, no pathways for adverse effects on water quality remain. As the ABR2 Project, following mitigation is predicted to have a negligible impact on water quality, no significant effects are predicted, either alone or in-combination with the Terminal 4 North land project.

#### 7.3.6.1.11 Berth 49 Ramp and Approachway: Application Number 3176/19

The development authorised under reg. ref. no. 3176/19 includes the following components:

- 189m long, c.10m wide approachway and ramp;
- 1 no. office and staff facilities building (c.193 sq.m and 7.7m in height);
- 1 no. control kiosk (c.6 sq.m and 2.3m in height);

- 1 no. control cabin (c.20 sq.m and 2.3m in height);
- new lighting (including 18 no. lighting columns 10m high);
- demolition of 5 no. existing staff facilities buildings with a combined area of c.329 sq.m;
- building 1 has an area of c.198 sq.m, building 2 has an area of c.10.7 sq.m, building 3 has an area of c.35.5 sq.m, building 4 has an area of c.42.4 sq.m, building 5 has an area of c.42.4 sq.m;
- 15 no. tug parking spaces, drainage, utility services, fencing 2.4m in height and pedestrian gate 2.4m in height on a site of approx. 1.3 hectares.
- Installation of new pavement, underground drainage, attenuation, interceptors, water services and electrical infrastructure; installation of new wash bay and fuel spill areas; installation of pedestrian barriers; and all associated site and development works on a site of c. 9.52ha.

Following the implementation of mitigation measures outlined in **Section 7.3.5.1**, no pathways for adverse effects on water quality or local otter populations remain. As the ABR2 Project, following mitigation is predicted to have a negligible impact on water quality, no significant in-combination effects are predicted, either alone or in-combination with the Berth 49 Ramp and Approachway project.

#### 7.3.6.1.12 Kish and Bray Banks Case reference: OA06D.321992

Kish and Bray Banks Case reference: OA06D.321992 includes the following components:

- between 39 and 50 wind turbines, connected by subsea cables (called inter-array cables) to an offshore substation on a platform at sea;
- electricity from the offshore substation platform is brought to shore in two subsea electricity cables, located at Shanganagh Cliffs, County Dublin;
- from the Landfall two underground electricity cable installations will bring the electricity to a new proposed substation at Carrickmines, Dublin 18;
- the electricity from this substation will be connected into the existing national electricity grid. The onshore transmission infrastructure works include a Landfall site at Shanganagh and an underground cable route leading to an Onshore Substation at Carrickmines; and
- there will be a centre for operations and maintenance at Dún Laoghaire Harbour, supporting both construction and long-term maintenance.

An EIA was prepared to support the application. The following text has been taken from the Non-Technical Summary document regarding marine mammals and water pollution:

- “[..]mitigation measures such as a noise abatement system, pre-survey watches and controlled use of deterrent devices will reduce these risks; these measures have been detailed in a Marine Megafauna Mitigation Plan included in the EIAR.”
- “During operation, noise from wind turbines is predicted to be low and unlikely to disturb marine mammals.”

- "Short-term increases in suspended sediment were also expected, but these effects were predicted to be localised and temporary.**"**
- "Overall, it concluded that with the proposed mitigation measures, Dublin Array is unlikely to have significant long-term effects on marine mammals."

Following the implementation of mitigation measures outlined in **Section 7.3.5.1**, no pathways for adverse effects on water quality remain. As the ABR2 Project, following mitigation, is predicted to have a negligible impact on water quality, no significant in-combination effects are predicted, either alone or in-combination with Case Ref.OA06D.321992or any other plan/project.

## 7.3.7 Residual Impacts

### 7.3.7.1 Flora & Habitats

There are no significant residual impacts predicted on terrestrial flora and habitat features as a result of the construction and operation of the AB2 Project.

### 7.3.7.2 Protected Species

There are no significant residual impacts predicted on terrestrial protected species as a result of the construction and operation of the ABR2 Project.

### 7.3.7.3 Designated Sites

There are no significant residual impacts predicted on designated sites as a result of the construction and operation of the ABR2 Project.

## 7.3.8 Summary of Effects and Conclusions

A summary of the impact assessment is provided in **Table 7-9**.

The potential impact of the proposed project site has been documented in this report. It is concluded that with the implementation of appropriate mitigation measures, there will be **no significant residual effect** on the ecological features considered in the assessment.

The project will **not result in significant effects** on Dublin Bay or any nearby watercourses once the mitigation prescribed in this report is implemented.

The project will have **no significant effect** on habitats of local or regional value following the implementation of mitigation measures as outlined above.

The project will have **no significant effect** on local populations of protected species following the implementation of mitigation measures as outlined above.

**Table 7-9: Summary of Effects relating to Terrestrial Biodiversity and Ornithology**

| Potential Effect and Receptor | Phase[1] | | Magnitude of Effects | Sensitivity of Receptor | Significance of Effect | Significant/Not Significant | Mitigation Measures | Residual Effects |
|---|---|---|---|---|---|---|---|---|
| | C | O | | | | | | |
| Habitats | ✓ | ✓ | C: Low<br>O: Negligible | C: Low<br>O: Negligible | C: Minor<br>O: Negligible | C: Not Significant<br>O: Not Significant | N/A | No Significant Adverse Effects |
| Badger | - | - | C: Negligible<br>O: Negligible | O: Negligible | C: Negligible<br>O: Negligible | C: Not Significant<br>O: Not Significant | N/A | No Significant Adverse Effects |
| Otter | ✓ | ✓ | C: Moderate<br>O: Low | C: High<br>O: Low | C: Minor<br>O: Negligible | C: Significant Adverse<br>O: Not Significant | Pre-Commencement Terrestrial Otter Search<br>Construction of escape ramps and covering of excavations.<br>Capping of pipes. | No Significant Adverse Effects |
| Bats | - | - | C: Negligible<br>O: Negligible | C: Negligible<br>O: Negligible | O: Negligible<br>O: Negligible | C: Not Significant<br>O: Not Significant | N/A | No Significant Adverse Effects |
| Birds | ✓ | ✓ | C: Low<br>O: Negligible | C: Low<br>O: Negligible | C: Low<br>O: Negligible | C: Not Significant<br>O: Not Significant | See **Section 7.3.5.1.2** Black Guillemot Nests. | No Significant Adverse Effects |
| Invasive Species | - | - | C: Negligible<br>O: Negligible | C: Negligible<br>O: Negligible | C: Negligible<br>O: Negligible | C: Not Significant<br>O: Not Significant | N/A | No Significant Adverse Effects |
| Diminution of Water Quality and Habitat Deterioration | ✓ | - | C: Low<br>O: Negligible | C: Low<br>O: Negligible | C: Low<br>O: Negligible | C: Significant Adverse<br>O: Not Significant | See **Section 7.3.5.1.1**. | No Significant Adverse Effects |

[1] C: Construction Phase; O: Operational Phase

### 7.3.9 Limitations of Assessment

Rock armour located to the north and west of Berths 52/53 was judged by dynamic risk assessment to be too unstable to access from land. This area was surveyed using a boat, however due to navigational safety concerns the boat could not access the estuary right up to the rock armour, despite the low tide conditions selected for survey, due to the risk of running aground. Binoculars were used to view rock armour where close inspection was unavailable.

# 7.4 Benthic Biodiversity and Fisheries

## 7.4.1 Scope of the Assessment

The scope of this assessment has been informed by the ABR2 EIA Scoping Report and the consultation process undertaken with prescribed bodies and relevant stakeholders. The scoping process considered the nature, scale and location of the proposed works within Dublin Port, together with the characteristics of the receiving environment, to identify the ecological receptors and impact pathways requiring detailed assessment within this chapter.

The assessment focuses on benthic biodiversity and fisheries receptors within Alexandra Basin West, the Berths 52/53 basin and the wider lower River Liffey and Dublin Bay, where potential interactions with the Project may occur. The key receptors identified during scoping include benthic habitats and infaunal communities within the footprint of the proposed works, estuarine fish species utilising the transitional waters of the Liffey Estuary, and diadromous migratory species, including Atlantic salmon, European eel and lamprey species, which pass through Dublin Port during upstream and downstream migration. These receptors were selected on the basis of their known presence within the study area and their potential sensitivity to disturbance arising from dredging, sediment handling and marine construction activities.

The scoping process identified a number of impact pathways with the potential to give rise to significant effects and therefore require detailed assessment. These include the direct disturbance and removal of benthic habitats as a result of capital dredging, the resuspension and subsequent deposition of fine sediments, temporary changes in water quality, including increased turbidity and the mobilisation of sediment-bound contaminants, and the generation of underwater noise and vibration capable of affecting fish behaviour. The permanent loss of benthic habitat associated with the infilling of the Berths 52/53 basin was also identified as a key impact pathway, along with the potential for temporary disturbance to migratory pathways for diadromous species. These pathways form the basis of the impact assessment presented in **Section 7.4.3**.

A number of potential receptors and pathways were considered during the scoping process, but were not carried forward for detailed assessment within this chapter. Annex I habitats and other sensitive benthic features were scoped out on the basis that no such habitats are present within the project footprint or the immediate zone of influence, as confirmed by baseline surveys. Similarly, the study area does not support any known spawning or nursery habitats of high ecological importance, and the benthic communities present are characteristic of a highly modified port environment. Commercial fisheries were not considered further due to the absence of significant fishing activity within the confined basin areas of Dublin Port. Potential effects on marine mammals and ornithological receptors are addressed in separate sections of this EIAR chapter and are therefore not considered further here.

Overall, the scope of the assessment reflects the confined and heavily modified nature of the study area, with the focus placed on those receptors and impact pathways where a plausible mechanism for interaction exists. The approach ensures that the assessment is proportionate and targeted, while capturing all relevant potential effects on benthic biodiversity and fisheries arising from the construction and operation of the ABR2 Project.

### 7.4.1.1 Relevant Guidance

In carrying out is assessment of the likely significant effects of the ABR2 Project on the environment, the competent authority will be cognisant of its obligations under the EIA Directive and also, to the extent necessary, provisions of the Water Framework Directive and Marine Strategy Framework Directive. The assessment of Benthic Biodiversity and Fisheries has been informed by the following guidance frameworks, which provide the regulatory and methodological context for characterising the baseline environment and for identifying potential interactions between the Project and relevant ecological receptors:

**National Legislation and Policy**

- **National Biodiversity Action Plan:** Outlines national priorities for the protection and restoration of biodiversity, including marine and estuarine ecological receptors.
- **National Marine Planning Framework (NMFP):** Provides policy objectives for sustainable development and environmental protection within Ireland's marine area, relevant to dredging, port activities and ecological management.

**Technical and Methodological Guidance**

- **CIEEM (2018, Updated 2024) Guidelines for Ecological Impact Assessment:** Provides the standard framework used to evaluate ecological receptors, determine their value and assess potential effects.
- **NPWS marine and estuarine habitat guidance:** Used to support habitat descriptions and confirm the absence of protected benthic habitats within the Project footprint.
- **IFI guidance:** Informs the characterisation of estuarine and migratory fish species, including seasonal migration patterns for diadromous species.
- **OSPAR guidance on dredging and marine sediment management:** Provides best-practice approaches relevant to assessing dredging-related seabed disturbance and sediment handling.
- **JNCC and EUNIS habitat classification frameworks:** Used to classify benthic habitats and biotopes based on field survey and sediment analysis.
- **Ireland's Marine Atlas and Marine Institute datasets:** Provide supporting spatial data for habitat mapping, sediment type and environmental context**.**

These guidance sources collectively frame the methodology used in this chapter and support the systematic identification and assessment of ecological receptors relevant to benthic habitats and fisheries.

### 7.4.1.2 Study Area

The study area for Benthic Biodiversity and Fisheries encompasses the locations where potential direct or indirect interactions between the Project and relevant ecological receptors may occur. The primary focus of the study area includes Alexandra Basin West, where capital dredging activities will be undertaken to achieve a declared depth of –10m CD, and the Berths 52/53 basin, where dredged sediments will be treated and placed as part of the infilling works. These areas represent the zones of direct seabed disturbance and sediment

modification and therefore form the core of the benthic assessment. This defines the primary Zone of Influence (ZoI) for benthic receptors.

The study area for Benthic Biodiversity and Fisheries also includes the immediate surrounding waters within Dublin Port, extending through the navigation channel and into the inner Liffey Estuary. These areas encompass locations where dredging and vessel movements may generate temporary increases in suspended sediments, where treated wastewater discharges may occur from one or more of the proposed treatment facilities, and where transport of dredged material may create potential pathways for ecological interactions. The study area therefore, incorporates potential sediment dispersion zones within Alexandra Basin West, Berth 49, North Wall Quay Extension, and the approaches to the Liffey channel, consistent with the hydrodynamic context described in supporting technical documentation. The study area also accounts for potential variation in treatment facility locations and associated material handling and transport pathways within Dublin Port, reflecting the flexible design approach adopted for the Project.

For fisheries, the study area extends to the Liffey Estuary and its transitional waters, which are used by estuarine resident species and serve as an important migratory corridor for diadromous species, including Atlantic salmon, European eel and lamprey. Although these species migrate beyond the physical footprint of construction activities, the study area includes the wider estuarine channel to account for the potential interaction of migratory pathways with areas of temporary turbidity or increased vessel activity, representing the spatial extent over which construction-related disturbance could reasonably influence fish behaviour.

The study area for Benthic Biodiversity and Fisheries is therefore defined to capture both the localised footprint of physical works and the wider estuarine context in which relevant fish species and benthic communities occur, ensuring that all ecological receptors with a reasonable potential to interact with the ABR2 Project are appropriately considered in the subsequent assessment. The extent of the study area is considered proportionate to the scale and nature of the ABR2 Project and the identified impact pathways relating to benthic biodiversity and fisheries.

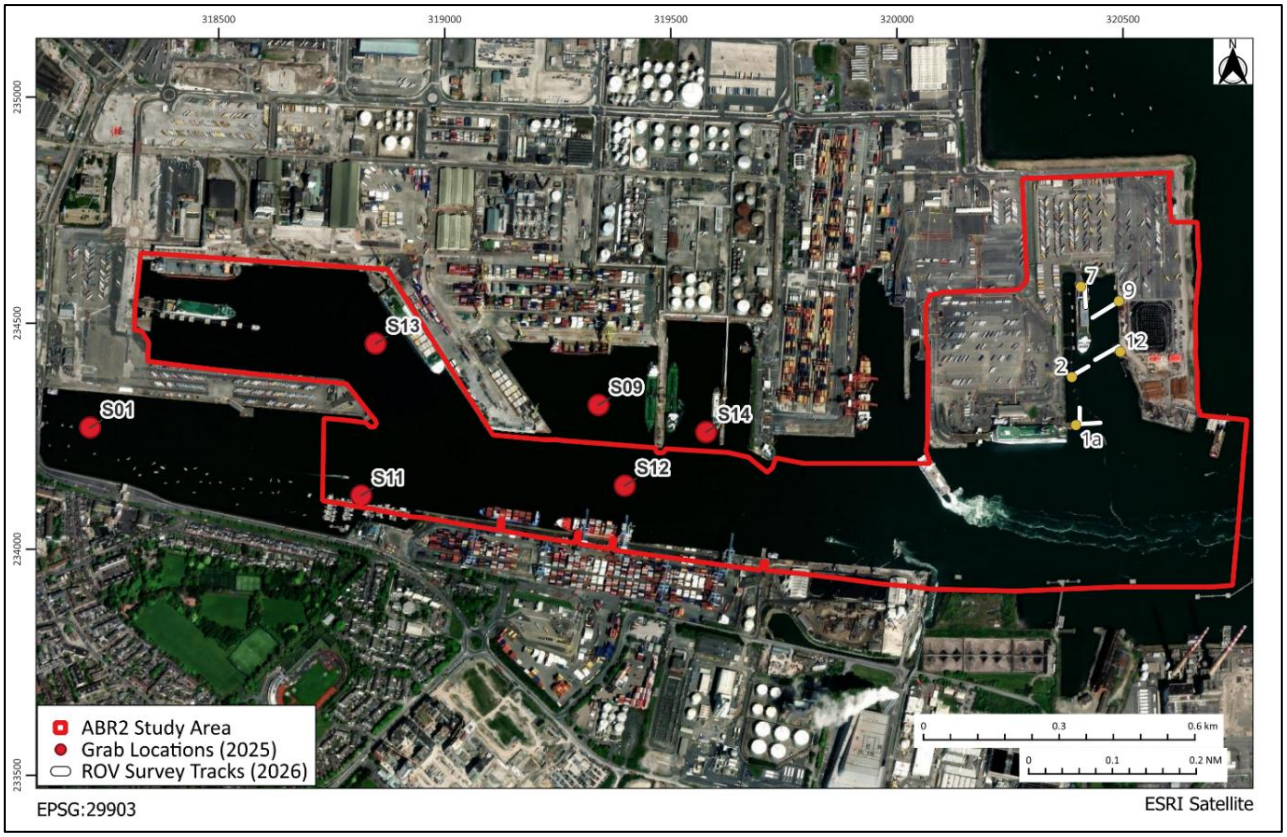



**Figure 7-7: Benthic Biodiversity and Fisheries Study Area**

### 7.4.1.3 Baseline Assessment Methodology

The baseline environment relevant to the assessment of Benthic Biodiversity and Fisheries was informed by a combination of desktop study and site-specific surveys. Desktop information included the results of previous benthic surveys undertaken within Alexandra Basin in 2013 and 2020, statutory datasets relating to estuarine and migratory fish species, publicly available marine habitat data, and project-specific technical documentation such as the Preliminary Materials Management Strategy. Site-specific data collection comprised the 2025 benthic grab sampling and drop-down video survey within Alexandra Basin West, supplemented by a targeted 2026 ROV survey of the Berths 52/53 basin to provide updated visual confirmation of seabed conditions in the infill area. These datasets were used collectively to characterise sediment type, benthic community composition, biotope distribution, fisheries presence and the ecological context of the wider Liffey Estuary. No significant technical difficulties were encountered during the compilation of baseline information; however, it is noted that grab sampling was not undertaken within the Berths 52/53 basin during the 2025 programme, as this location was not included in the sampling grid used in the preceding 2020 study, necessitating reliance on the 2013 benthic dataset and the subsequent 2026 ROV survey to update conditions for this area.

#### 7.4.1.3.1 Desktop Study

Information on the baseline environment was collected through a desktop review of existing studies and datasets relevant to benthic habitats, fisheries and migratory species within Alexandra Basin and the wider Liffey Estuary. The desktop study involved reviewing previous benthic ecological surveys undertaken for the

ABR Project, including the 2013 baseline survey and the 2020 update, together with the results of the 2025 benthic grab and DDV survey. Additional datasets consulted included national marine habitat mapping resources, water quality and sediment information, fisheries and migratory species data from IFI, and relevant technical documentation relating to sediment management and wastewater discharge within Dublin Port. These sources provided the foundation for describing the physical and ecological characteristics of the study area and for identifying receptors that may interact with the proposed works.

The sources used to inform the baseline environment are provided in Table 7-10.

**Table 7-10: Summary of Key Desktop Data Sources for Benthic Biodiversity and Fisheries**

| Data Title | Source/Author | Year |
|---|---|---|
| Alexandra Basin Redevelopment Project – Benthic Baseline Survey | ASU / RPS | 2013 |
| Dublin Port Maintenance Dredging Benthic and Fisheries Assessment | ASU | 2020 |
| Alexandra Basin West Benthic Survey (Grab & DDV) | Tetra Tech RPS | 2025 |
| Berths 52/53 ROV Seabed Condition Survey | Tetra Tech RPS | 2026 |
| Preliminary Materials Management Strategy | Tetra Tech RPS | 2025 |
| Article 10 Response: Wastewater Treatment and Assimilation Capacity Assessment | RPS | 2016 |
| Water Quality & Hydromorphology Data | EPA / Marine Institute | Various |
| Fisheries & Migratory Species Records | IFI | Various |
| Ireland's Marine Atlas (Habitat Maps & Sediment Data) | Marine Institute | Various |
| NPWS Site Synopses & Conservation Objectives (Dublin Bay Sites) | NPWS | Various |

#### 7.4.1.3.2 Site-specific Surveys

Site-specific surveys were undertaken to inform the baseline conditions for benthic habitats and fisheries within the ABR2 Project study area. These included a benthic grab sampling survey and drop-down video (DDV) survey carried out in 2025 within Alexandra Basin West, designed to characterise infaunal community structure, sediment composition and the presence of any notable habitats or species. Sediment samples were analysed for particle size distribution and total organic carbon, and infaunal samples were processed to species level where possible. To address gaps in the 2025 dataset, a targeted remotely operated vehicle (ROV) survey was subsequently undertaken in 2026 within the Berths 52/53 basin to provide up-to-date visual evidence of seabed

conditions in the proposed infill area. The ROV survey comprised a series of transects and high-definition imagery capturing substrate type, sediment consistency and any visible epifauna. These surveys collectively provide a current and representative dataset for assessing benthic conditions both within the proposed dredging footprint and within the Berths 52/53 basin. Detailed survey methodologies, sample processing procedures and station locations are provided in the accompanying technical **Appendix 7-1**.

#### 7.4.1.4 Consultation

Following completion of the EIA Scoping Report, consultation was undertaken to obtain opinions regarding the Project and its potential and scope for significant effects. A total of 12 consultation responses were received, broadly supporting the proposed approach to assessment while identifying a number of considerations relevant to the wider EIAR process. Specific comments relating to Benthic Biodiversity and Fisheries are set out in Table 7-11, including where additional information in relation to issues can be found in the EIAR.

**Table 7-11: ABR2 EIA Scoping Report Comments relating to Benthic Biodiversity and Fisheries**

| Organisation | Comment Response / Issue Raised | Response |
|---|---|---|
| Dublin City Council (DCC) | Advised that the EIAR should consider relevant EPA and EU EIA guidance and account for the Dublin City Development Plan 2022–2028. | The assessment methodology has been prepared with regard to EPA Guidelines for EIAR preparation, relevant EU guidance and applicable planning policy. |
| Maritime Area Regulatory Authority (MARA) | Requested consideration of cumulative effects associated with other maritime consents and activities. | A cumulative effects assessment has been undertaken within this chapter, considering relevant existing, permitted and proposed developments within Dublin Port and Dublin Bay. |
| Department of Agriculture, Food and the Marine / Marine Institute | Advised that the Project is not expected to have substantial impacts on fish stocks, fisheries or aquaculture, but recommended minimising disruption to fishing activity and considering the National Marine Planning Framework. | The EIAR includes an assessment of estuarine and migratory fish species and has considered the National Marine Planning Framework and potential fisheries interactions. |
| Department of Housing, Local Government and Heritage – Nature Conservation | Raised concerns regarding otter usage of areas adjacent to Alexandra Basin West and Berths 52/53 and recommended consideration of in-combination effects. | Otter usage and potential in-combination effects are considered within the Biodiversity chapter of the EIAR. Potential interactions with aquatic habitats and estuarine ecology have also been considered where relevant. |
| ESB | Requested consideration of potential impacts on cooling water infrastructure and highlighted the importance of mitigation measures to prevent accidental release of contaminated sediments during dredging and infilling activities. | The EIAR includes assessment of sediment disturbance, contaminant mobilisation and water quality effects associated with dredging and infilling activities. Embedded mitigation measures relating to sediment management and water quality protection are included within **Section 7.3.6**. |

### 7.4.1.5 Assessment Criteria and Assessment of Significance

Determining the significance of effects is a process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity for benthic biodiversity and fisheries are based on those set out in the CIEEM (2018, Updated 2024) Guidelines for Ecological Impact Assessment in the UK and Ireland, supplemented by relevant national and international marine ecological assessment guidance. The significance of each effect is determined through a matrix that correlates the magnitude of impact with receptor sensitivity, supported by expert judgement and available peer-reviewed literature. While the CIEEM guidance does not prescribe the use of a matrix-based approach, this method has been applied to provide a transparent and consistent framework for determining significance, supported by professional judgement. For the purposes of this assessment, effects assessed as Minor or lower are considered not significant in EIAR terms, while effects assessed as Moderate or higher are considered significant.

#### 7.4.1.5.1 Magnitude Criteria

Magnitude describes the predicted scale, extent or intensity of a potential impact on a receptor, relative to baseline conditions. Magnitude considers factors such as duration, spatial extent, reversibility and the degree of change from existing conditions. **Table 7-12** below summarises the magnitude criteria applied in this chapter.

**Table 7-12: Table of magnitude criteria**

| Magnitude | Description |
|---|---|
| High | Large-scale change resulting in substantial alteration to habitat structure, community composition or ecological function; typically, long-term or permanent within the footprint of works, and potentially irreversible. |
| Medium | Measurable change in habitat or species assemblage that may persist beyond the construction period but is reversible over time; moderate spatial extent relative to the study area. |
| Low | Small or localised change within natural variability, short-term in duration and fully reversible once activities cease. |
| Negligible | Change so small that it does not meaningfully differ from prevailing baseline conditions. |

#### 7.4.1.5.2 Sensitivity Criteria

Sensitivity refers to the ability of a receptor to tolerate or recover from a change. Sensitivity is informed by ecological value, conservation status, functional role, natural resilience, and dependence on specific habitat conditions. **Table 7-13** below summarises the sensitivity categories used.

**Table 7-13: Table of sensitivity criteria**

| Sensitivity | Description |
|---|---|
| High | Receptors of high ecological value, including rare, protected or conservation-listed species or habitats, or species with low tolerance to disturbance or slow recovery rates. |
| Medium | Receptors of moderate ecological value or those that may experience measurable changes but retain capacity for recovery within a feasible timeframe. |
| Low | Receptors of low ecological value, typically widely distributed, disturbance-tolerant species or habitats that routinely recover from physical or environmental changes. |
| Negligible | Receptors not considered ecologically important in the context of the Project and unlikely to be affected by Project activities. |

#### 7.4.1.5.3 Significance of Effects

The significance of effects refers to the consequences of an impact. The significance of the effect upon Benthic Biodiversity and Fisheries receptors is determined by correlating the magnitude of the impact and the sensitivity of the receptor. A range of significance of effect is presented in **Table 7-14**. The final assessment of significance for each effect is based upon expert judgement of the peer-reviewed literature.

For the purposes of this assessment, effects assessed as Moderate or higher are considered to be Significant in EIAR terms. Effects assessed as Minor or lower are considered Not Significant.

**Table 7-14: Table of significance of effects.**

| Magnitude \ Sensitivity | Negligible | Low | Medium | High |
|---|---|---|---|---|
| **High** | Minor | Moderate | Moderate–Significant | Significant |
| **Medium** | Minor | Minor–Moderate | Moderate | Moderate–Significant |
| **Low** | Negligible | Minor | Minor–Moderate | Moderate |
| **Negligible** | Negligible | Negligible | Minor | Minor |

## 7.4.2 Baseline Environment

Alexandra Basin is located in the north-eastern part of Dublin Bay which is a significantly modified section of Dublin Port. It is bordered by quay walls and an artificial shoreline. The seabed composition is predominantly fine sediments (silt and sand) with elevated levels of organic content, reflecting low hydrodynamic energy conditions and historic organic enrichment. Bathymetry data indicate that the basin has relatively uniform depth profiles within the dredged channel and turning basin, with typical depths ranging from -7 m to -10 m CD (INFOMAR), depending on previous dredging phases. Tidal influence is dominant, with semi-diurnal tides

producing strong bidirectional flows. The area is exposed to moderate wind and wave action, though relatively sheltered by surrounding port infrastructure. INFOMAR data suggest limited natural bedforms due to historical dredging and sediment disturbance.

Extensive benthic ecological surveys have previously been undertaken within Alexandra Basin to support earlier planning applications and dredging programmes, most notably surveys carried out by the Aquatic Services Unit (ASU) in 2013 (to support the ABR EIS), 2020, and subsequent maintenance dredging assessments. These studies included benthic grab sampling within Alexandra Basin West, the main navigation channel, and, importantly, within the Berths 52/53 basin, which is now proposed for infilling under ABR2. The findings of these surveys consistently identified a limited number of benthic biotopes characterised by organically enriched sediments and opportunistic infaunal assemblages, with no Annex I habitats or benthic species of conservation concern recorded within the basin.

In 2025, a further benthic ecological survey was commissioned by Tetra Tech RPS on behalf of Dublin Port Company and undertaken by AQUAFACT to provide an updated and comparative assessment of benthic conditions within Alexandra Basin (**Figure 7-7**). The purpose of this survey was not to provide a full standalone characterisation of all ABR2 impact areas, but rather to:

- confirm the continued presence and condition of benthic habitats previously recorded within the basin;
- assess whether any material change in benthic community structure has occurred since earlier surveys; and
- provide updated data to support the Biodiversity, Flora and Fauna chapter of the EIAR.

The 2025 survey comprised a drop-down video (DDV) survey across Alexandra Basin and associated channels, together with targeted benthic grab sampling for faunal analysis and sediment characterisation (particle size analysis and organic carbon). Grab sampling coverage within Alexandra Basin West was necessarily limited due to navigational constraints and the disturbed nature of the seabed, and no grab sampling was undertaken within the Berths 52/53 basin itself. Accordingly, the assessment of benthic conditions within the infill area relied primarily on the robust baseline established by the 2013 ASU survey, supplemented by comparative analysis of the 2020 and 2025 datasets to demonstrate the persistence and stability of benthic habitat types across the wider basin. Further detail on these surveys is provided in the Benthic Ecology Report (**Appendix 7-1**), including associated figures, sampling locations and station-level results.

While the Benthic Ecology Report clearly acknowledges this limitation and relies on the robust 2013 dataset to inform the EIAR assessment for the infill area, the value of providing updated confirmation of current conditions at Berths 52/53 was recognised. To address this, a targeted ROV survey was conducted of the infill area in February 2026. This survey would provide visual confirmation that seabed conditions and habitat characteristics remain consistent with those previously recorded. A total of 6 transects were surveyed, representing a relatively good coverage of the benthic community assemblage within the infill area of Berths 52/53.

### 7.4.2.1 Desk-based study

The ABR2 Project area is located within the highly modified estuarine environment of Dublin Port, situated along the lower reaches of the River Liffey. Existing information on the environmental conditions of the port has been assembled from previous ecological assessments, statutory datasets and national marine mapping resources. These sources describe the inner port basins, including Alexandra Basin West, the Berths 52/53 basin and Berth 49, as artificial, low-energy waterbodies shaped by long-term dredging, quay wall construction and restricted hydrodynamic circulation.

Sediment mapping and historic benthic sampling carried out for earlier phases of port development consistently describe the seabed throughout these areas as dominated by fine muddy sands and sandy muds, with locally higher gravel fractions in more open sections of the basin. Sediments typically contain elevated organic content, reflecting the depositional nature of the estuarine system and the influence of port activities on sediment accumulation. National seabed mapping datasets, including those available through Ireland's Marine Atlas, show a comparable distribution of soft sediments extending throughout the enclosed basins and inner channel. No records of subtidal Annex I habitats, such as reefs or seagrass beds, occur within these areas; such habitats are mapped further seaward in Dublin Bay, where more natural substrate conditions are present.

Existing benthic community data from previous surveys (2013 and 2020) indicate that the fauna associated with these soft sediments consist mainly of opportunistic and disturbance-tolerant species typical of modified port environments. These assemblages include polychaete worms, oligochaetes, small bivalves and other taxa adapted to organically enriched, low-complexity substrates. Species of conservation importance or specialised habitat requirements are not documented within the basin environments covered by the Project. Habitat classifications applied in earlier assessments identify these communities as belonging to broad-scale muddy sand biotopes characteristic of estuarine, fine-sediment settings.

Fisheries information available from IFI and national datasets shows that the lower Liffey Estuary supports a typical estuarine fish community, including flounder, mullet species, sand smelt and gobies. These species utilise transitional waters for feeding and juvenile development, but are not associated with the enclosed port basins as critical spawning or nursery areas. Site-specific fisheries data from the Aquatic Services Unit (ASU) 2020 Dublin Port Maintenance Dredging Benthic and Fisheries Assessment recorded a total of 13 fish species across beam trawl surveys within Dublin Port and the adjacent navigation channel. Fish assemblages were dominated by demersal and benthic-associated species, particularly plaice (*Pleuronectes platessa*), dab (*Limanda limanda*) and gobies (*Pomatoschistus* spp.), with other species such as flounder (*Platichthys flesus*), whiting (*Merlangius merlangus*), cod (*Gadus morhua*) and thornback ray (*Raja clavata*) recorded less frequently. Species richness was generally low within inner port areas and increased towards the outer estuary, reflecting the influence of salinity gradients and more marine conditions.

The ASU (2020) survey indicates that fish communities within the port are composed primarily of common, mobile and disturbance-tolerant species typical of estuarine and coastal environments, with no evidence of critical spawning or nursery habitats within the enclosed basins. These findings are consistent with earlier surveys (2013) and indicate temporal stability in fish assemblage composition within Dublin Port.

The Liffey is also recognised as a migration pathway for diadromous species such as Atlantic salmon (*Salmo salar*), European eel (*Anguilla anguilla*), sea lamprey (*Petromyzon marinus*) and river lamprey (*Lampetra fluviatilis*), which transit through the estuary during their seasonal upstream and downstream movements. These migration routes follow the main channel and are not linked to habitats within the enclosed basins or dredged berths. This reflects the confined and artificial nature of the port basins, which do not provide suitable habitat for key life stages of these species.

Commercial fishing activity does not occur within Dublin Port due to the navigational and operational characteristics of the area, with commercially exploited grounds instead located offshore within Dublin Bay. No invasive benthic species are recorded in desktop sources for the Alexandra Basin area, although the Port is recognised as an environment where vigilance for non-native species is required due to vessel movements. The absence of recorded invasive species in desktop sources does not preclude their presence but indicates that no established populations have been documented within the study area.

#### 7.4.2.2 Summary of Site-Specific Surveys

Site-specific surveys have been undertaken to supplement existing information and provide up-to-date data on benthic habitats, benthic communities and seabed conditions within the Project area. These surveys were designed to address gaps identified in the desk-based review and to provide contemporary ecological information to support the assessment of the ABR2 Project. The surveys undertaken comprise a benthic infaunal sampling programme, a drop-down video (DDV) survey and a subsequent remotely operated vehicle (ROV) survey (**Figure 7-7**). Further detail on these surveys is provided in the Benthic Ecology Report (**Appendix 7-1**), including associated figures, sampling locations and station-level results.

**Benthic Grab Survey**

A benthic grab sampling survey was carried out in 2025 within Alexandra Basin West, with sampling locations selected based on a review of previous survey stations used in 2020. At each location, sediment samples were collected for particle size distribution and total organic carbon analysis, alongside infaunal samples preserved for laboratory identification. This provided physical and biological data describing the current condition of subtidal sediments and infaunal communities within the basin.

**Dropdown Video Survey**

A drop-down video survey was undertaken alongside the 2025 sampling programme to characterise the visual structure and condition of the seabed within Alexandra Basin West. The DDV survey recorded seabed texture, evidence of biological activity, the presence or absence of notable epifauna, and any anthropogenic features or debris visible on the seabed surface. These visual datasets support the interpretation of habitat type and complement the sediment and infaunal information obtained from grab samples.

**ROV Survey**

Following the identification of a data gap within the Berths 52/53 basin, where no contemporary benthic data were available since the 2013 baseline survey, a targeted ROV survey was undertaken in 2026. This survey provided updated visual information on sediment characteristics, seabed structure and the presence of any

visible epifaunal organisms within the proposed infill area. The ROV transects covered the floor of the basin and adjacent areas to ensure coverage of all locations relevant to the ABR2 Project footprint.

Together, these site-specific surveys provide the up-to-date dataset required to describe existing benthic and seabed conditions within Alexandra Basin West and the Berths 52/53 basin. The results of these surveys are presented in **Section 7.4.2.3.**

### 7.4.2.3 Results of the Site-Specific Surveys

#### 7.4.2.3.1 Benthic Faunal Grabs

The 2025 benthic grab sampling survey undertaken within Alexandra Basin West generated a detailed dataset describing the sediment characteristics and infaunal community composition present within the ABR2 Project area of Dublin Port (**Figure 7-7**). Across the six stations sampled, the faunal analysis identified a total of 104 taxa comprising 576 individuals, representing eight phyla. Sixty of these taxa were identified to species level, while the remaining forty-four were classified to higher taxonomic levels due to juvenile condition, specimen damage or insufficient morphological features for species-level determination. The assemblage included one cnidarian, one nematode, fifty-four annelid taxa, twenty-one arthropods, twenty-one molluscs, two bryozoans, one phoronid and three echinoderms. No species of conservation concern, protected species or taxa listed under Annex II or Annex V of the Habitats Directive were recorded. The taxa present were characteristic of soft, organically enriched sediments subject to regular disturbance, aligning with conditions typically found within enclosed port basins.

Univariate analysis of the faunal dataset revealed variation in community structure between stations, reflecting differences in both species richness and relative abundance. The total number of taxa ranged from twenty-one at Station 12 to fifty-one at Station 9, while the number of individuals ranged from 312 at Station 12 to 1,667 at Station 1. Richness values showed a similar pattern, with the lowest value of 3.48 recorded at Station 12 and the highest value of 6.97 at Station 9. Evenness ranged between 0.48 at Station 1 and 0.66 at Station 13, indicating differing degrees of dominance across stations. Shannon-Wiener diversity values ranged from 1.73 at Station 1 to 2.41 at Station 9, and the Effective Number of Species (ENS) ranged from 5.61 at Station 1 to 11.14 at Station 9, demonstrating that Station 9 supported nearly twice the effective diversity of Station 1. Simpson's diversity varied from 0.70 at Station 1 to 0.87 at Station 13. These results reflect a community structure in which opportunistic species are prominent but not uniformly dominant across all stations.

Multivariate analysis supported the univariate results by indicating high similarity in faunal composition across all survey stations. SIMPROF testing identified no statistically significant differences between stations, and all samples formed a single cluster containing 96 taxa and 5,864 individuals. The MDS plot produced a stress value of 0.01, demonstrating an excellent fit and high reliability in the graphical representation of the dataset. Although the overall group contained a wide range of taxa, more than half were present at only one or two stations, while a small number of species contributed disproportionately to overall abundance. Six taxa accounted for over 75% of all individuals recorded. These included *Scalibregma inflatum, Peringia ulvae*, *Capitella* spp., Cirratulidae, *Chaetozone gibber* and *Tharyx sp.* SIMPER analysis confirmed similar

characterising species within the group, with the addition of *Abra alba* and *Abra nitida*, both of which are recognised as tolerant of organically enriched conditions.

The ecological characteristics of the dominant taxa reflect the environmental conditions within the basin. Species such as *Scalibregma inflatum, Peringia ulvae, Abra alba* and *Abra nitida* are known to thrive in sediments with elevated organic content, while Cirratulidae, *Chaetozone gibber* and *Tharyx sp*. are considered second-order opportunists associated with disturbed or transitional benthic conditions. *Capitella* spp., which were also numerically dominant, are recognised first-order opportunists that proliferate in reduced fine sediments typical of enclosed and periodically disturbed port environments.

When interpreted alongside sediment characteristics, the infaunal assemblage aligns with the JNCC biotope 'SS.SMu.ISaMu.Cap, *Capitella capitata* in enriched sublittoral muddy sediments (EUNIS code MB6246). This biotope classification reflects the predominance of opportunistic polychaetes, the high organic content of the sediments and the depositional conditions characteristic of the enclosed estuarine basins in this part of Dublin Port. The spatial distribution of this biotope across Alexandra Basin West and the navigation channel corresponds with the findings illustrated in Figure 3.49 of the benthic report (**Appendix 7-1**). Further detail on the results of the benthic grabs is provided in the Benthic Ecology Report (**Appendix 7-1**), including associated figures, sampling locations and station-level results.

#### 7.4.2.3.2 Benthic Sediment Grabs

The sediment samples collected during the 2025 benthic grab survey in Alexandra Basin West provide a clear and consistent description of the prevailing substrate across the surveyed area (**Figure 7-7**). Particle Size Analysis (PSA) confirms that sediments throughout the basin are dominated by muddy sand, with varying proportions of silt, clay and fine sand reflective of a low-energy, depositional environment typical of enclosed port basins within Dublin Port. Classification of the sediments according to Folk (1954) places the stations within the categories of slightly gravelly muddy sand and gravelly muddy sand. Stations 1, 11, 12 and 14 were classified as slightly gravelly muddy sand, while Stations 9 and 13 were classified as gravelly muddy sand, indicating localised variation in coarser sediment content but no transition to a distinct alternative substrate type.

The most gravel-influenced sediment was recorded at Station 9, which had the highest proportion of fine gravel (20.1%) and very fine gravel (10.3%), together with the lowest silt-clay content (11.1%), confirming a relatively coarser muddy sand compared with the other stations. Station 13 also showed a more gravelly and sandier composition, with the highest proportions of very coarse sand (16.0%) and coarse sand (15.6%) and was similarly classified as gravelly muddy sand. In contrast, Stations 11 and 12 contained the greatest proportions of fine material, with silt-clay fractions of 31.8% and 30.5%, respectively, consistent with more sheltered depositional conditions. Station 14 was notable for the highest proportions of fine sand (19.4%) and very fine sand (23.3%), while Station 1 retained a comparatively high mud content (25.7% silt-clay) and low gravel content, remaining within the slightly gravelly muddy sand category.

Fine fractions formed a substantial component of the sediment matrix at all stations, and the texture of the sediment was consistent with conditions where hydrodynamic flushing is reduced, and fine material settles readily after resuspension. This is characteristic of estuarine basins historically maintained through dredging.

The overall dominance of muddy sand is also in line with long-term patterns documented in earlier assessments of Alexandra Basin, including the 2013 Alexandra Basin Redevelopment survey and the 2020 benthic survey carried out for Dublin Port's maintenance dredging programme. The comparison presented in the benthic ecology report indicates that the main navigation channel stations (1, 11 and 12) and Station 14 remained slightly gravelly muddy sand in 2025, while Alexandra Basin West and Alexandra Basin East retained a more gravelly muddy sand composition.

Loss on ignition (LOI), used as a proxy for organic carbon content, was elevated across all stations, confirming the presence of organically enriched sediments. Values ranged from 8.05% at Station 12 to 12.05% at Station 1, with intermediate values of 8.83% at Station 9, 9.16% at Station 11, 10.3% at Station 13 and 9.43% at Station 14. These results indicate that all sampled sediments are organically enriched, although the highest enrichment was associated with the muddier sediments at Station 1. Elevated organic content is typical of muddy port sediments, where biodeposits, organic detritus and suspended materials settle and accumulate over time, supporting faunal communities adapted to low-oxygen microhabitats and periodic disturbance.

Collectively, the PSA and LOI results demonstrate that the benthic environment within Alexandra Basin West remains a fine-sediment, organically enriched habitat with only limited variation between stations. The sediment characteristics observed in 2025 closely match those identified in previous survey years, reflecting the persistent influence of estuarine deposition processes and dredging activities on the physical composition of the seabed, and supporting the interpretation of a broadly homogeneous benthic habitat across the study area. Further detail on the results of the benthic sediment grabs is provided in the Benthic Ecology Report (**Appendix 7-1**), including associated figures, sampling locations and station-level results.

#### 7.4.2.3.3 Drop-Down Video Survey

The drop-down video (DDV) survey undertaken in 2025 provided direct visual information on the seabed surface and associated epifaunal communities within Alexandra Basin West and the adjacent navigational channel of Dublin Port (see **Appendix 7-1**). The DDV transects enabled a qualitative assessment of substrate type, sediment surface features, and the presence or absence of visible biological communities that could not be captured through grab sampling alone. Across all DDV locations, the seabed was characterised by a predominately soft, fine-sediment surface consistent with the muddy sand substrate identified through particle size analysis. The seabed typically appeared smooth or lightly rippled, with localised patches of deposited silt, reflecting the low-energy hydrodynamic conditions of the basin. In several areas, thin layers of fine sediment overlay the underlying muddy sand, indicating recent deposition or minor resuspension from vessel activity or tidal movements. Occasional scattered cobbles and mixed sediment patches were observed at some stations (*e.g.* Station 12), but these were limited in extent and did not form continuous or structured habitats.

The DDV imagery did not record any biogenic reef structures or continuous hard-substrate habitats, however limited epibenthic features and biological material were present. Drift macroalgae (red and green algae and kelp fragments) were recorded at multiple stations, along with scattered hydroids, tunicates (*Ascidiella* sp.), sponges and serpulid worms associated with isolated cobbles or artificial substrates. The absence of structural habitat elements aligns with the enclosed nature of the basin and its long-term management as a dredged, operational port environment. Visible epifauna were generally sparse but not absent, with mobile crustaceans (e.g. *Carcinus*

*maenas*, *Polybius* spp.), crinoids, and occasional fish (Gobidae) recorded across several transects. Infaunal indicators such as burrow openings and sediment disturbance features were also observed at multiple stations. No notable species or protected features were observed within any DDV transect.

Anthropogenic features were evident on the seabed at several locations, consistent with the nature of an operational port basin. These included scattered pieces of debris and occasional evidence of historic sediment disturbance likely linked to previous dredging operations. Some of these features (*e.g.* cobbles and quay wall interfaces) supported limited biological colonisation, including hydroids and bryozoans, but did not form ecologically significant habitat structures.

The DDV survey therefore, provides a coherent visual confirmation of a low-complexity, fine-sediment benthic habitat throughout the surveyed area. All stations were assigned to the JNCC biotope 'SS.SSA.CMuSa Circalittoral muddy sand' (EUNIS A5.26), indicating a high degree of habitat uniformity across the basin despite minor localised variation in substrate composition. The seabed conditions observed are consistent with those documented in previous assessments and complement the benthic infaunal and sediment data produced from the grab sampling survey. The DDV findings indicate that the benthic habitat within Alexandra Basin West and the adjoining sections of the navigational channel continues to reflect a stable, organically enriched, soft-sediment system typical of sheltered, intensively used port environments.

#### 7.4.2.3.4 ROV Survey

A targeted ROV survey was undertaken in 2026 within the Berths 52/53 basin to provide updated seabed information for the proposed infill area, as this location had not been surveyed since the 2013 ABR Project benthic assessment. The ROV survey was commissioned to confirm the current substrate conditions and to verify that no changes of ecological relevance had occurred since the earlier baseline (see **Appendix 7-1**). The video footage generated during the survey shows that the seabed within Berths 52/53 continues to be characterised by soft, fine sediments consistent with muddy sand, mirroring the environment documented in the 2013 survey. The substrate appeared smooth and largely featureless, with intermittent light silt deposition visible across broad areas of the basin floor. No coarse material, consolidated natural reef features, or structural habitat elements were present in any transects, reflecting the enclosed and low-energy nature of this part of the port.

The ROV footage indicated generally low levels of visible biological activity on the seabed surface. Only isolated mobile fauna, such as occasional small crustaceans, were observed, and no conspicuous epifaunal assemblages or dense sessile communities were recorded. Infaunal burrows were observed at a limited number of locations within the survey imagery, indicating the presence of benthic infaunal activity; however, these features were sparse and did not form extensive or structurally complex assemblages. The overall low level of observable epifaunal colonisation and limited occurrence of surface features is consistent with the fine-sediment conditions and periodic disturbance associated with the operational history of the basin, including historic dredging and its use as a deposition area for treated material.

Anthropogenic features were present in several sections of the ROV transects, including isolated pieces of debris of unknown origin. These elements appear largely inert and do not provide meaningful habitat for colonisation, although limited incidental colonisation cannot be ruled out at the scale of observation. No

introduced or invasive species were detected on any recorded surfaces, and no features of conservation concern were identified. The sediment colour, texture and layering were in keeping with an environment characterised by long-term accumulation of fine material under low hydrodynamic forcing.

Overall, the ROV survey confirmed that the substrate and visible benthic conditions within the Berths 52/53 basin remain consistent with those documented in 2013, with no evidence of the development of sensitive habitats, structural biogenic features or notable epifaunal communities. The findings reinforce the understanding that Berths 52/53 represent a stable, fine-sediment, low-complexity benthic environment typical of enclosed port basins within Dublin Port, where benthic communities are dominated by opportunistic, disturbance-tolerant infaunal species, with limited epifaunal expression at the sediment surface.

#### 7.4.2.4 Integrated Summary of Baseline Benthic Biodiversity and Fisheries

The ABR2 Project area is situated within a heavily modified section of the lower River Liffey, inside Dublin Port, where the marine environment reflects a long history of engineering, dredging and intensive port use. The physical setting is characterised by enclosed basins, quay walls, berths and navigation channels that together create a low-energy, depositional environment. Hydrodynamic conditions within Alexandra Basin West and the Berths 52/53 basin are constrained by harbour structures, resulting in reduced current speeds and a tendency for fine sediments to accumulate. Historic and contemporary data consistently describe these areas as dominated by muddy sand and sandy mud sediments with elevated organic content, typical of estuarine basins where fine material settles and is retained. Broadscale mapping from national marine datasets similarly shows fine sediments extending throughout the inner port, in contrast to the coarser and more structurally diverse seabed habitats located farther seaward in Dublin Bay.

The 2013 Alexandra Basin Redevelopment benthic survey, the 2020 Dublin Port maintenance dredging assessment and the more recent 2025 grab and DDV survey all show a strong degree of agreement in how the seabed is structured within Alexandra Basin West and the adjacent channel. Sediment particle size analysis from these studies consistently records muddy sand or gravelly muddy sand at the majority of stations, with the fine fraction (silt and clay) forming a substantial component of the substrate. The 2025 analysis confirms that this pattern persists, with no evidence of a shift toward coarser or more heterogeneous seabed types. Total organic carbon levels are elevated in all datasets, indicating a persistent state of organic enrichment derived from natural estuarine processes and port-related inputs. These conditions are characteristic of confined estuarine basins where tidal flushing is limited, and fine organic material accumulates over time.

Within the Berths 52/53 basin, the only historic benthic data prior to ABR2 originate from the 2013 ABR survey, which also described soft, fine-grained sediments. The 2026 ROV survey confirms that these conditions continue to prevail. The ROV footage shows a predominantly featureless seabed dominated by fine, unconsolidated sediment with localised surface silt, and no indication of coarse substrate, bedrock outcrops or biogenic structures. There is no visual evidence of reef-forming organisms, seagrass, macroalgal stands or other habitat-forming taxa. Limited infaunal indicators (e.g. burrows) and occasional mobile fauna were observed in the ROV imagery, indicating the continued presence of benthic biological activity despite the low structural complexity of the habitat. Taken together, the historic and recent data indicate that both Alexandra

Basin West and the Berths 52/53 basin are long-established fine-sediment environments with high sediment homogeneity and low physical habitat complexity.

The biological component of the baseline is equally consistent between survey years. The infaunal assemblages recorded in 2013, 2020 and 2025 are dominated by opportunistic and disturbance-tolerant species typical of organically enriched, low-energy estuarine sediments. The 2025 grab survey identified 104 taxa across eight phyla and 576 individuals within the infaunal fraction, with polychaete annelids making up the largest taxonomic group. Characteristic species include Capitella spp., *Scalibregma inflatum, Peringia ulvae*, cirratulid polychaetes, *Chaetozone gibber, Tharyx* sp., *Abra alba and Abra nitida*. These taxa are well documented in the literature as species that thrive under conditions of excess organic loading, periodic disturbance and fine, reduced sediments. Their dominance in the community reflects environmental conditions within the basin rather than any recent, acute change.

Univariate diversity metrics for the 2025 survey show moderate species richness and abundance, with some spatial variation between stations but an overall pattern consistent with earlier surveys. Stations with very high numbers of individuals, such as Station 1, exhibit lower evenness and diversity due to the dominance of a small number of opportunistic taxa, while stations such as 9 and 13 support a broader range of taxa with higher evenness. However, multivariate analysis demonstrates that all stations form a single cohesive faunal group, with no statistically distinct sub-communities across the survey area. This pattern suggests that the basin functions as a relatively uniform ecological unit, with local variations in abundance occurring within a broadly similar community type. The effective number of species (ENS) values and evenness indices recorded in 2025 fall within the range expected for organically enriched port basins and match the patterns observed in 2013 and 2020, indicating temporal stability in community structure over more than a decade.

When faunal composition and sediment characteristics are considered together, the benthic community within Alexandra Basin West and the related navigation channel aligns clearly with the JNCC biotope SS.SMu.ISaMu.Cap – *Capitella capitata* in enriched sublittoral muddy sediments (EUNIS MB6246). This biotope is typically associated with disturbed, organically enriched marine sediments in sheltered conditions, including estuaries, docks and dredged channels. The repeated identification of this biotope across multiple survey years and datasets demonstrates a consistent long-term ecological state. No Annex I habitats under the EU Habitats Directive, such as sandbanks, estuarine reefs or seagrass beds, are recorded within the project footprint in any dataset, and none are evident from the 2026 ROV or 2025 DDV imagery. Sensitive or structurally complex habitats are instead located outside the inner port, in areas of Dublin Bay with more natural seabed conditions.

The epifaunal component of the benthic system is limited but not absent. Both the 2025 DDV survey in Alexandra Basin West and the 2026 ROV survey in Berths 52/53 indicate that the seabed is largely devoid of epifaunal assemblages, with only occasional mobile individuals such as small crustaceans observed. Anthropogenic material such as scattered debris is visible in places, but these features do not support substantial biological colonisation and appear of limited ecological significance in their current state. The predominance of fine sediment, combined with periodic disturbance and low light levels, is consistent with the generally low abundance and diversity of epifaunal communities and contributes to the overall impression of a simple, low-relief seabed environment.

No species of conservation concern, protected benthic species, or Annex II or Annex V species are recorded in any of the benthic surveys. The taxa recorded are widely distributed, common species that are characteristic of disturbed estuarine environments. The discussion and conclusion of the benthic ecology report emphasise that the assemblages observed in 2025 and verified visually in 2026 are fully consistent with those previously documented, and that there is no evidence of any emerging sensitive features or unusual species within the footprint of the ABR2 works. The lack of rare or specialist taxa, combined with the ubiquity of opportunistic polychaetes and other disturbance-tolerant species, underlines the long-term continuity of the benthic environment in this part of the port.

From a fisheries perspective, the project area sits within the broader context of the lower Liffey Estuary, which supports a typical estuarine fish community. Site-specific fisheries survey data from the Aquatic Services Unit (ASU) 2020 Dublin Port maintenance dredging assessment recorded a total of 13 fish species within Dublin Port and the adjacent navigation channel, with assemblages dominated by demersal and benthic-associated species such as plaice, dab and gobies, alongside less frequently recorded species including flounder, whiting, cod and thornback ray. Species richness was generally low within the inner port and increased towards the outer estuary, reflecting salinity gradients and marine influence. These species utilise transitional waters for feeding and juvenile development but are not associated with the enclosed port basins as critical spawning or nursery areas. The fisheries assemblage is therefore composed primarily of common, mobile and disturbance-tolerant species typical of estuarine and coastal environments, with no evidence of critical habitat functions within the enclosed basins. Commercial fishing activity does not occur within the basins due to navigation constraints and the operational nature of the port, and commercially valuable fishing grounds are located elsewhere in Dublin Bay.

The Liffey Estuary also serves as an important migratory corridor for diadromous species, including Atlantic salmon, European eel, sea lamprey and river lamprey. These species migrate through the estuary during specific seasons, using the main channel as a transit route between freshwater spawning or rearing areas upstream and marine feeding grounds offshore. None of the materials referenced in the preparation of this assessment indicate that Alexandra Basin West, Berths 52/53 or Berth 49 support spawning, juvenile rearing or holding areas for these species. The role of the Project Area in relation to these fish isas part of the broader estuarine corridor, rather than as a discrete ecological receptor in its own right.

Ports are recognised as high-risk environments for the introduction and spread of marine invasive species, primarily through vessel hull fouling. Ballast water discharge is not permitted within the basins or approach waters to Dublin Port and therefore does not represent a relevant pathway for invasive species introduction within the Project area. No invasive species were recorded in benthic samples or observed in the DDV and ROV imagery associated with the ABR2 Project baseline. Continued vigilance remains appropriate given the nature of port operations; however, the current baseline does not include any invasive benthic species of concern.

Taken together, the desk-based review and the series of benthic surveys undertaken over more than a decade show a consistent picture of the ABR2 Project area as a long-established, fine-sediment, organically enriched port environment. The seabed is physically simple and dominated by muddy sands, the benthic communities are composed of widely distributed disturbance-tolerant species, and no sensitive or protected habitats or

species occur within the Project footprint. The wider estuarine context provides nursery and feeding functions for common estuarine fish and acts as a migration corridor for diadromous species, but the enclosed basins and dredged berths associated with the ABR2 Project do not constitute critical habitat features for these receptors. This integrated baseline forms the ecological context for the subsequent assessment of potential effects on benthic biodiversity and fisheries.

The benthic environment of Dublin Port and the lower River Liffey has been shaped by decades of dredging, port operations and hydromorphological modification, resulting in a stable and long-established fine-sediment system dominated by organically enriched muddy sands. The existing physical pressures, including maintenance dredging, vessel movements and restricted hydrodynamic circulation, are expected to continue at current levels, and the soft-sediment habitats documented in Alexandra Basin West, Berths 52/53 and the surrounding dock waters are not anticipated to undergo significant natural changes over the assessment timeframe.

The benthic communities present within the Project Area are composed of opportunistic, disturbance-tolerant species that are well adapted to the prevailing sediment conditions. These assemblages have exhibited strong temporal consistency across historic datasets, including the 2013, 2020 and 2025 benthic surveys, with no indication of emerging sensitive species or shifts toward more complex habitat structures.

The fisheries baseline is likewise expected to remain stable. Estuarine resident fish species such as flounder, mullet, gobies and sand smelt will continue to utilise the lower estuary for feeding and nursery functions, but the enclosed basins and operational berths within the ABR2 footprint will not undergo natural transitions that would alter their suitability for these species. The Liffey Estuary will continue to function as a migratory corridor for Atlantic salmon, European eel and lamprey species, with migratory movements concentrated in the main channel outside the enclosed basins. No natural habitat changes are anticipated within the Project area that would materially enhance or diminish this migratory function.

Climate-driven changes in salinity regimes, temperature or water quality may occur at an estuary-wide scale over much longer timescales; however, such changes are not predicted to alter the character of the fully modified basin habitats within the ABR2 Project footprint in the short to medium term. Similarly, no natural processes are predicted to cause shifts toward more ecologically sensitive habitat types, such as biogenic reefs or seagrass beds, within the dredged basins, as the physical constraints and operational activities of the port remain the dominant structuring forces.

## 7.4.3 Description of Likely Significant Effects

### 7.4.3.1 Assessment of Construction Effects

This section provides an assessment of the likely significant effects on benthic habitats, benthic communities, estuarine fisheries and diadromous species arising from the construction activities associated with the ABR2 Project. The assessment considers all components of the construction phase, including capital dredging within Alexandra Basin West, the treatment and management of dredged sediments, the infilling of the Berths 52/53 basin, and associated marine construction works. The assessment has been undertaken using an approach to

account for flexibility in the location and configuration of sediment treatment and handling activities. As set out in detail in Chapter 5 of the EIAR, treatment operations may occur at North Wall Quay Extension, Berth 49, or Berth 52 West, and may take place at more than one location concurrently, with associated variations in material handling pathways and spatial extent of construction activities. The assessment also considers the partial dewatering of the Berths 52/53 basin, the progressive infilling of the basin with treated and recovered sediments, and the management and discharge of process water and dewatering effluent in accordance with the relevant Industrial Emissions licence. Potential effects are evaluated with reference to the baseline conditions described in **Section 7.4.2** and in accordance with the impact assessment methodology set out in **Section 7.2.**

The assessment focuses on pathways that could give rise to significant changes to benthic or fisheries receptors, including physical disturbance, changes in sediment dynamics, water quality alterations, habitat loss or modification, and the potential for interference with established migratory routes. The findings from historic and contemporary benthic surveys, visual seabed assessments, and fisheries datasets are used to determine the sensitivity of receptors and the likely magnitude of effects. Where relevant, embedded mitigation measures included as part of the Project design are taken into account when defining the likely significance of effects.

The effects listed in the following subsections are those considered to have the potential to result in significant environmental effects during the construction phase and therefore require detailed assessment within this EIAR.

#### 7.4.3.1.1 Loss and Disturbance of Benthic Habitats and Communities due to Capital Dredging

Capital dredging within Alexandra Basin West will result in the direct removal and disturbance of benthic habitats and associated infaunal communities within the dredging footprint. Baseline characterisation indicates that the seabed is dominated by fine, muddy sand with elevated organic content, supporting assemblages composed largely of opportunistic and disturbance-tolerant species. These organisms inhabit the upper sediment layers and are therefore unavoidably removed during dredging. The use of an environmental bucket for dredging will minimise sediment loss to the water column but does not avoid direct extraction of the benthic community. The scale of impact is proportional to the dredge footprint required to achieve the design depth of –10m CD, resulting in a temporary but complete loss of benthic habitat within the excavated area.

The benthic assemblages recorded are typical of long-established estuarine port environments subject to periodic disturbance and organic enrichment. Communities are dominated by first- and second-order opportunistic polychaete species, including Capitella spp., *Tharyx* sp. and cirratulids, which exhibit high tolerance to disturbance. Such soft-sediment assemblages are known to recover relatively rapidly where sediment characteristics remain consistent. Recolonisation within Alexandra Basin West is predicted to occur from adjacent undisturbed areas and through larval settlement via tidal exchange following cessation of dredging activities.

Adjacent benthic areas may experience limited, temporary disturbance due to localised sediment movement during excavation. While mitigation measures such as the use of a closed environmental bucket and controls on barge loading will reduce sediment escape, some minor peripheral disturbance may still occur. This is predicted to be spatially confined and short-term.

In addition to dredging, minor indirect disturbance may arise from sediment handling and treatment activities within the Port, including storage, transfer and processing operations. These do not involve direct seabed removal but may contribute to localised disturbance through increased vessel activity and sediment movement.

No Annex I habitats, sensitive benthic features or conservation-notable species occur within the area subject to capital dredging, and the habitats affected are limited to soft-sediment communities that reflect long-term port modification. The predicted effects therefore concern the temporary loss of a ubiquitous and resilience-based benthic assemblage within an environment already characterised by routine disturbance. The magnitude of impact is assessed as **Medium**, reflecting the complete but spatially limited removal of benthic habitat within the dredge footprint. Receptor sensitivity is **Low,** as the benthic community is dominated by opportunistic, disturbance-tolerant species. Based on the combination of Medium magnitude and Low sensitivity, the effect is assessed as **Minor-Moderate**.

#### 7.4.3.1.2 Sediment Resuspension, Deposition and Smothering of Adjacent Benthic Habitats

Capital dredging within Alexandra Basin West will generate increases in suspended sediment concentrations and associated deposition on nearby seabed areas. Although dredging will occur within an enclosed basin, the action of the environmental bucket for dredging inevitably disturbs the upper sediment layers, releasing fine particles into the water column. These sediments may be transported short distances before settling, particularly given the low hydrodynamic energy and limited flushing characteristics of the basin. The baseline sediment profile, dominated by muddy sands with a high proportion of silt and clay, indicates that fine material is readily resuspended and slow to disperse, increasing the likelihood of localised deposition in the vicinity of the dredge footprint.

Additional sediment resuspension may occur during the handling, transfer and treatment of dredged material within the Port. Processes such as screening, soil washing and sediment separation generate finer sediment fractions, while mechanical handling, including transfer between barges, stockpiling and movement via pipeline or haulage, may contribute to localised increases in suspended sediment concentrations. Where multiple treatment locations operate concurrently, these activities may give rise to several localised sources of resuspension within the Port environment.

The extent of deposition is predicted to be limited, with most material settling within tens of metres of the source. Observations from similar fine-sediment port environments indicate that deposition typically forms thin surface layers. These may temporarily smother benthic organisms, particularly surface-dwelling or small-bodied species. However, the benthic assemblages recorded in the baseline surveys are dominated by opportunistic, disturbance-tolerant infauna adapted to periodically resuspended sediments. As such, while deposition may temporarily affect feeding or respiration, the community is predicted to tolerate these conditions and recover following cessation of construction activities.

Sediment-laden water generated during dewatering and treatment processes may also contribute to suspended sediment loads; however, such water will be collected and treated prior to discharge, limiting its influence on the receiving environment.

Smothering effects are confined to the upper biological sediment layers and do not alter the underlying habitat, which remains characterised by soft, fine sediments with high organic content. No complex benthic structures or sensitive habitats are present, and therefore no receptor is at risk of permanent degradation. The most pronounced effects are predicted closest to the dredging zone, where short-term increases in deposition may influence local infaunal abundance or community composition. These effects will persist only for the duration of construction, after which natural sediment processes and biological reworking will re-establish pre-existing conditions.

Limited additional resuspension may arise from propeller wash generated by construction support vessels; however, these effects are highly localised and short-lived.

Although the predicted resuspension and deposition effects are constrained in extent by the physical characteristics of the basin, they represent a temporary, construction-phase disturbance capable of altering benthic conditions at a localised scale. The magnitude of impact is considered **Low**, as sediment plumes are predicted to be localised and short-lived, arising from multiple concurrent construction activities within the port environment. Sensitivity of the affected benthic community is **Low**, owing to the tolerance of infaunal assemblages to periodic deposition. Overall significance is therefore assessed as **Minor**, with temporary, reversible effects confined to areas immediately adjacent to the dredging zone.

#### 7.4.3.1.3 Temporary Degradation of Water Quality Affecting Estuarine and Migratory Fish Species

Construction activities associated with the ABR2 Project, including capital dredging within Alexandra Basin West and the handling and treatment of dredged sediments, will result in temporary increases in suspended sediment concentrations (SSC) within the water column. Dredging operations disturb fine sediments and release silt and clay particles into suspension, while additional contributions may arise from sediment screening, soil washing, dewatering and transfer processes. Given the low-energy, enclosed nature of the basin, these effects are predicted to remain largely localised.

Increased turbidity may temporarily influence fish behaviour, including reduced feeding efficiency for visual predators, avoidance of turbid plumes and short-term displacement from affected areas. Estuarine species such as flatfish, mullet, gobies and smelt are generally tolerant of fluctuating turbidity conditions; however, temporary avoidance of the basin during peak construction activity is likely. For diadromous species including Atlantic salmon, European eel and lamprey, elevated turbidity may result in short-term behavioural disruption where works coincide with migration periods, although the main migratory corridor within the River Liffey is not directly affected.

Water quality may also be influenced by the management and discharge of process water generated during sediment treatment and basin dewatering. These waters will be treated prior to discharge in accordance with Industrial Emissions licence conditions, limiting the potential for significant effects. Any residual changes in suspended solids or dissolved constituents are predicted to be minor and controlled.

Disturbance of organic-rich sediments may also result in short-term reductions in dissolved oxygen within the immediate dredging area. These effects are predicted to be spatially limited and temporary, with rapid recovery following cessation of activities.

The magnitude is assessed as **Low**, reflecting short-term increases in turbidity and potential reductions in dissolved oxygen during active dredging. Migratory fish species exhibit **Medium** sensitivity to turbidity and water quality fluctuations during certain life stages. The combined effect is assessed as **Minor to Moderate**, depending on seasonal timing and proximity to the main migratory corridor.

#### 7.4.3.1.4 Disturbance to Migratory Pathways for Diadromous Species (Salmon, Eel and Lamprey)

The lower River Liffey functions as an established migratory corridor for several diadromous species, including Atlantic salmon, European eel, sea lamprey and river lamprey. These species transit through Dublin Port during upstream and downstream migrations. While the project footprint, including Alexandra Basin West and the Berths 52/53 basin, is located outside the main channel used for active migration, construction-phase activities nevertheless have the potential to cause temporary disturbance to fish in transit through adjacent waters.

Construction-phase activities, including capital dredging, sediment handling and treatment, and associated vessel movements, may result in localised increases in suspended sediment concentrations and underwater noise. Elevated turbidity can induce behavioural avoidance responses, with salmonids in particular potentially altering swimming paths or reducing movement rates when encountering turbid plumes. Dredging within Alexandra Basin West is spatially confined and largely hydrodynamically isolated from the main navigation channel, meaning sediment plumes are predicted to remain contained. However, under certain tidal conditions, limited dispersion toward adjacent berths or outer basin areas may occur, resulting in temporary and localised disturbance.

Underwater noise associated with the operation of the dredger, barges, and ancillary construction vessels may also contribute to short-term disturbance. Diadromous species generally exhibit sensitivity to low-frequency sound and may divert from areas of elevated noise where alternative passage routes are available. While noise associated with dredging is not predicted to exceed levels produced by normal shipping activities within Dublin Port, the combination of noise and physical disturbance occurring over a defined period may result in temporary displacement or short-term delay during peak migration windows. These effects would be transient and reversible and would not prevent overall passage, but they nonetheless constitute a potential interaction requiring assessment.

No long-term barrier to migration is predicted as construction activities will not introduce any permanent physical obstruction within the estuary's migratory corridor. However, the temporary disturbance associated with dredging and associated marine works has the potential to temporarily influence movement behaviour in sensitive diadromous species, particularly during periods of peak migration. The magnitude of impact is **Low,** as dredging occurs outside the primary migration channel and plumes are predicted to remain largely contained. Sensitivity is **Medium**, reflecting species' behavioural responses to turbidity and underwater noise. The effect

is assessed as **Minor to Moderate**, recognising the potential for temporary migration delays if works coincide with peak migratory windows.

#### 7.4.3.1.5 Habitat Loss and Seabed Alteration Resulting from the Infilling of the Berths 52/53 Basin

The infilling of the Berths 52/53 basin will result in the permanent loss of the existing subtidal benthic habitat within the footprint of the infill area. Baseline data, comprising the 2013 benthic survey and the 2026 ROV assessment, confirm that the seabed within the basin is characterised by soft, fine muddy sand with no physical structures, biogenic reef features or sensitive habitats. The benthic assemblage recorded historically and confirmed through recent visual surveys is composed of opportunistic, disturbance-tolerant taxa typical of confined port basins, with no species of conservation concern or ecological features of elevated importance. The permanent removal of this habitat, therefore constitutes the loss of a low-diversity, homogenised benthic environment that reflects long-term port activity rather than a naturally functioning estuarine habitat.

Although this represents a permanent change, the habitat being removed is not unique within the wider port environment. Comparable muddy sand ecosystems are widespread throughout the inner harbour, and the basin does not support any habitat types of conservation interest as defined under Annex I of the Habitats Directive or the OSPAR threatened/declining habitat list. Given that the habitat supports a faunal assemblage adapted to high disturbance and periodically dredged conditions, its ecological value is considered very limited in a wider estuarine context. As such, the effect represents the replacement of an already heavily modified environment with a land-based structure rather than the loss of a naturally occurring, functionally significant ecosystem.

The infill activity, comprising the placement of treated and recovered sediments within the basin, will remove the existing infaunal community entirely within the basin. Adjacent areas may experience incidental disturbance during construction, although this will be temporary in nature and is predicted to be confined to the immediate vicinity of infilling operations. The infilling will take place within a contained and engineered basin environment, limiting the potential for wider sediment redistribution or indirect effects on adjacent marine habitats. No indirect pathways leading to broader habitat degradation (*e.g.* hydromorphological change or sedimentation stress beyond the basin) have been identified in relation to the infilling works, owing to the localised and contained nature of the basin. Similarly, the process will not affect the main Liffey channel and will therefore not alter any areas identified as relevant to migratory fish or wider estuarine ecological function.

The magnitude of impact is assessed as **Medium**, reflecting the permanent removal of benthic habitat within the infilled basin footprint. Sensitivity of the receptor is **Low**, as the habitat is highly modified, supports disturbance-tolerant fauna and is of limited ecological value. The resulting effect is assessed as **Minor-Moderate**, given the low ecological importance of the habitat and the spatially confined nature of the permanent loss.

#### 7.4.3.1.6 Underwater Noise and Vibration Effects on Fish During Construction Activities

Construction activities associated with the ABR2 Project, including capital dredging, sediment handling and treatment operations, vessel movements, and demolition works within the port, will generate underwater noise

and vibration capable of interacting with estuarine and migratory fish species. Underwater noise is an established pressure in port environments where vessel traffic and routine dredging already contribute to an elevated acoustic baseline; however, construction activities represent a temporary increase above existing conditions.

The principal noise source will be the operation of the dredger, which produces low-frequency sounds associated with bucket impact, substrate contact and mechanical operation. Additional contributions will arise from barges, support vessels and treatment-related activities. These frequencies fall within the hearing range of estuarine species and diadromous fish, including Atlantic salmon, sea trout, European eel and lamprey species. Potential effects are limited to behavioural responses such as startle reactions, altered swimming behaviour or short-term avoidance. These effects are transient and may result in minor delays for migrating individuals if construction coincides with peak migration periods.

The spatial extent of underwater noise is predicted to be limited due to the enclosed nature of Alexandra Basin West and attenuation by surrounding port infrastructure. Evidence from comparable environments indicates that dredging-related noise diminishes rapidly with distance in confined dock systems. As such, noise levels are unlikely to propagate into the main Liffey channel at levels that would impede migration, although fish in the vicinity of the basin entrance may experience temporary disturbance.

No physical injury, barotrauma or lethal effects are anticipated, as the construction activities do not involve impulsive noise sources such as impact piling or explosives. Effects are therefore restricted to temporary behavioural disturbance. Given the elevated baseline noise environment within Dublin Port, fish populations are likely to exhibit some degree of habituation; however, localised and short-term disruption may still occur within the immediate work area.

The magnitude of impact is assessed as **Low**, reflecting the short-term, non-injurious elevation in underwater noise within an already acoustically active port environment. Receptor sensitivity is **Medium**, as diadromous species may exhibit behavioural responses during key migratory periods. The resulting effect is assessed as **Minor-Moderate**, given the limited spatial extent, the temporary nature of the disturbance, and the absence of pathways for long-term effects.

#### 7.4.3.1.7 Potential for Mobilisation of Sediment-Bound Contaminants During Dredging and Handling

Capital dredging within Alexandra Basin West will disturb fine sediments containing residual concentrations of contaminants associated with historical port activities. While previous phases of the ABR Project have removed the most contaminated material, trace metals and organic pollutants remain present within some sediment layers. Mechanical excavation may mobilise fine particulate material into the water column, resulting in the temporary release of sediment-bound contaminants through both adsorption to suspended particles and limited desorption into the water column.

Additional pathways for contaminant mobilisation may arise during sediment handling and treatment processes, including screening, soil washing and dewatering. These processes can transfer contaminants from the solid to the liquid phase, generating process water that may contain dissolved or fine particulate contaminants.

However, such water will be collected and treated prior to discharge, limiting the extent of contaminant release to the receiving environment.

Given the enclosed and low-energy nature of Alexandra Basin West, any mobilised contaminants are predicted to remain localised, with suspended material settling rapidly in proximity to the dredging area. Sediment characterisation data indicate that contaminant concentrations in the material to be dredged are substantially lower than those encountered during earlier ABR Project phases and are not predicted to pose a significant risk to aquatic organisms at the concentrations likely to be released. While short-term increases in contaminant availability may occur during active works, exposure is predicted to be limited in both duration and extent.

For benthic infauna, exposure may occur through contact with recently deposited sediments. However, the baseline community is dominated by opportunistic, disturbance-tolerant taxa commonly associated with organically enriched or moderately contaminated environments and is therefore considered resilient to such fluctuations. Similarly, estuarine and migratory fish species are unlikely to encounter contaminant concentrations above those typically experienced within port environments.

No long-term changes to sediment quality or contaminant pathways are anticipated, as dredged material will be removed from the marine environment for treatment and reuse or disposal. Overall, contaminant mobilisation is predicted to be temporary and spatially confined.

The magnitude of impact is assessed as **Low**, reflecting the limited extent and short duration of contaminant mobilisation within an enclosed basin. Sensitivity is **Low to Medium**, as benthic fauna are tolerant of disturbance, while fish species exhibit moderate sensitivity to short-term water quality changes. The resulting effect is assessed as **Minor**, given the restricted spatial footprint, temporary duration and low ecological sensitivity of the affected habitats.

#### 7.4.3.2 Assessment of Operational Effects

This section assesses the likely significant effects on benthic communities, benthic habitats, estuarine fish populations, and diadromous migratory species arising during the operational phase of the ABR2 Project. The operational phase introduces long-term changes linked to the completed deepened basin, increased navigational access for vessels of greater draught, and the presence of treated infill material within the Berths 52/53 basin. Unlike the construction phase, which involves direct disturbance of the seabed, operational effects relate to ongoing vessel activity, altered sediment dynamics, changes in hydrodynamic conditions within Alexandra Basin West, and the long-term stability of the infilled basin area.

Assessment of operational-phase effects is undertaken in accordance with the methodology set out in **Section 7.4.1.5** and reflects the baseline conditions detailed in **Section 7.4.2**. Effects are examined in relation to receptor sensitivity, impact magnitude, and the predicted longevity and spatial extent of each process. Embedded mitigation measures, including those integral to port operational management and environmental protection protocols, are considered when determining the significance of effects.

#### 7.4.3.2.1 Long-Term Behaviour and Stability of S/S-Treated Sediments within the Berths 52/53 Infill Area

During the operational phase, the material placed within the Berths 52/53 infill area will remain in situ as a consolidated mass forming a permanent substructure beneath the reclaimed land. This material will comprise a combination of treated sediments, including stabilised/solidified (S/S) fractions, and other recovered sediments suitable for reuse following screening, separation or treatment. The S/S process is designed to immobilise contaminants through chemical binding and physical encapsulation, thereby reducing leachability and limiting long-term contaminant migration pathways. Experience from earlier phases of the ABR Project has demonstrated that S/S-treated sediments maintain structural integrity and exhibit very low leachate generation under tidal loading and long-term settlement conditions. The material proposed for the ABR2 Project is characterised by lower and more variable contamination levels than earlier phases, further reducing the potential for long-term contaminant release.

Following placement, the infill will be subject to surcharge and consolidation, reducing permeability and limiting interaction with surrounding water. The infill area is engineered as a contained system, incorporating barrier layers and controlled drainage pathways that restrict hydraulic connectivity between the infill material and the marine environment. Any water generated within the infill structure will be collected and directed to a wastewater treatment system operating under the EPA Industrial Emissions Licence, ensuring that discharges meet established emission limit values.

The long-term stability of treated material depends on resistance to physical degradation, chemical breakdown and contaminant mobilisation. The S/S methodology has demonstrated robust long-term performance in previous ABR phases, and there is no evidence from material characterisation, binder design or operational experience to indicate that degradation is likely under the proposed conditions. In addition, the encapsulated and contained nature of the infill prevents exposure to erosion, scouring or direct seawater interaction, further reducing potential exposure pathways.

As the infill material is permanently isolated from the aquatic environment and no operational disturbance of the infill will occur, there is no credible pathway for benthic communities or fish species to be exposed to contaminants during operation. Any leachate generated will be captured and treated prior to discharge. The only potential interaction relates to long-term material stability, which is well understood and controlled through established engineering design and regulatory oversight.

The magnitude of impact is assessed as **Negligible**, given the isolation of the treated sediment mass and absence of operational-phase disturbance. The sensitivity of ecological receptors (benthic fauna and fish) is assessed as **Low,** due to the lack of a viable exposure pathway. The resulting effect is assessed as **Negligible,** reflecting the negligible magnitude and low receptor sensitivity during operational conditions.

#### 7.4.3.2.2 Ongoing Disturbance to Benthic Habitats from Operational Vessel Traffic and Propeller Wash

During the operational phase of the ABR2 Project, increases in vessel activity associated with the deepened basin may give rise to recurring, low-level seabed disturbance driven by propeller wash and vessel manoeuvring. Such effects are typical of active port basins, particularly where vessels routinely berth, depart and turn within confined areas. Propeller-generated turbulence can resuspend surface sediments, alter the uppermost sediment layers and potentially contribute to minor redistribution of fine material within the basin. These disturbances occur primarily during vessel acceleration, turning and berthing events, where propeller-induced shear stresses are sufficient to lift fine sediment fractions into the water column.

The substrate within the Project area is characterised by muddy sands with elevated organic content, is inherently susceptible to disturbance by propeller wash. However, the resulting effects remain confined to surface layers and do not result in structural alteration of the underlying habitat. The basin already experiences regular sediment movement due to routine port operations, and the benthic community present, dominated by opportunistic and disturbance-tolerant taxa, is adapted to such episodic resuspension. As a result, operational vessel movements are predicted to cause only temporary and spatially limited increases in turbidity and shallow sediment turnover, with the seabed recovering naturally between events.

Operational vessel traffic will not extend disturbance into areas beyond the basin footprint, as hydrodynamic containment within the harbour limits the offshore transport of resuspended sediments. No changes to bathymetry, sediment composition or physical habitat complexity are anticipated as a result of operational wash. Similarly, long-term modification of benthic community structure is not predicted, as the habitat type itself, a fine-sediment dominated, low-energy dock basin, will remain unchanged and continue to support the same opportunistic faunal assemblages documented in the baseline surveys.

While operational activity contributes to cumulative sediment mobilisation within the port system, the scale and frequency of disturbance generated by vessel movements within Alexandra Basin West are consistent with pre-existing conditions and represent a continuation of long-term port dynamics rather than a new or intensified pressure. The predicted effects, therefore relate to minor, reversible sediment disturbance events restricted to the immediate operational areas of the basin.

The magnitude of impact is assessed as **Low**, reflecting the shallow, localised nature of sediment disturbance during routine vessel manoeuvring. Sensitivity of the benthic communities is **Low**, as they are composed of disturbance-tolerant species already adapted to periodic turbidity events. The effect is therefore assessed as **Minor**, given the limited spatial extent, transient nature and established resilience of the benthic receptors.

#### 7.4.3.2.3 Operational Water Quality Effects and Implications for Estuarine and Marine Fish Species

During the operational phase of the ABR2 Project, routine vessel movements within Alexandra Basin West may contribute to periodic, short-lived fluctuations in local water quality parameters, most notably turbidity and dissolved oxygen (DO). These changes arise primarily from propeller-induced resuspension of fine sediments,

particularly when vessels manoeuvre in confined spaces or operate at higher thrust levels during berthing or departure. While the magnitude of these effects is predicted to be lower than during construction-phase dredging, operational activities may still generate brief increases in suspended sediment concentrations immediately adjacent to vessel tracks.

For estuarine and marine fish species frequently occurring within the lower River Liffey, such as flounder, mullet, smelt and various goby species, short-term increases in turbidity are a normal component of estuarine dynamics. These species possess behavioural and physiological tolerances that allow them to function effectively under variable visibility and sediment loads. As a result, operational turbidity changes are unlikely to affect feeding success, distribution patterns or overall ecological function. Occasional avoidance behaviour may occur in response to intense, localised turbidity plumes generated by large vessel movements, but these behavioural adjustments are transient and spatially limited.

Operational vessel activity may also induce short-term reductions in dissolved oxygen within the highly localised area where sediments are disturbed, and organic-rich material is brought into suspension. However, the enclosed nature of Alexandra Basin West results in rapid settling of suspended particles and allows DO levels to stabilise quickly following the passage of vessels. No long-term changes to DO or water quality are anticipated, as there are no operational activities that continuously disturb the seabed or introduce dissolved contaminants into the water column.

The operational environment within the basin is therefore predicted to mirror current port conditions, where fluctuating turbidity is a routine part of vessel traffic and does not exert lasting ecological pressure. Fish species using the basin or adjacent waters are already habituated to these disturbance patterns, and the operational phase of ABR2 will not alter the fundamental hydrological or sedimentary regime of the estuary. Consequently, operational water quality effects are predicted to be limited to localised, temporary events that do not interfere with long-term habitat function or population-level processes.

The magnitude of impact is assessed as **Low**, reflecting the temporary and highly localised nature of turbidity and DO fluctuations associated with vessel movements. Sensitivity of estuarine and marine fish species is assessed as **Low** to **Medium**, as these species are adapted to natural variability but may show short-term behavioural responses. The effect is assessed as **Minor**, given the brief duration, restricted spatial footprint and lack of long-term ecological consequences.

#### 7.4.3.2.4 Potential Operational Disturbance to Migratory Pathways of Diadromous Species

During the operational phase, the continued use of Alexandra Basin West by commercial vessels, including ships with deeper draughts enabled by the capital dredging works, has the potential to influence the movement behaviour of diadromous fish species migrating through the lower River Liffey. The Liffey serves as a migratory corridor for species such as Atlantic salmon, European eel, river lamprey and sea lamprey, all of which must transit through the estuary to complete their life cycles. The operational environment will include routine vessel movements, underwater noise, and episodic increases in turbidity within or immediately adjacent to the navigation channel used by these species.

Migratory fish may exhibit temporary avoidance behaviour when encountering increased turbidity or localised underwater noise associated with vessel passage. Such behavioural displacement is typically transient and does not prevent overall movement through the estuary; however, it may result in short-term alterations in swimming paths or speeds. Given that the basin itself does not form part of the principal migratory route and the majority of operational activity remains contained within the basin, the potential interactions with migrating fish are predicted to occur mainly at points where vessels enter or exit the basin into the main navigation channel.

Operational noise levels associated with vessel engines and propeller activity are not predicted to exceed those currently present within the port. Migratory species present within the Liffey are already subject to long-term exposure to normal port operations and vessel traffic and exhibit behavioural adaptations allowing them to successfully transit through this environment. The deepening of Alexandra Basin West does not alter the physical configuration of the main migratory corridor, nor does it introduce any new obstructions or change hydrodynamic conditions in areas critical to migration.

Although the potential exists for momentary behavioural disturbance, particularly if vessel traffic increases during key migratory windows, these effects remain localised, short-lived and reversible. No long-term population-level consequences are anticipated, as the overall functionality of the estuarine migration route remains unchanged. Thus, operational-phase interactions relate primarily to localised behavioural disturbance rather than barriers to migration or substantive ecological change.

The magnitude of impact is assessed as **Low**, reflecting the transient and localised nature of behavioural interactions with vessel activity. Sensitivity of diadromous species is assessed as **Medium**, given their reliance on safe migratory passage at key life stages. The effect is assessed as **Minor** to **Moderate**, depending on seasonal timing and vessel traffic frequency near the migration corridor.

#### 7.4.3.2.5 Risk of Introductions or Spread of Invasive Marine Species Through Long-Term Port Operations

During the operational phase, the ABR2 Project will contribute to the wider pattern of vessel activity within Dublin Port, which inherently carries a risk of introducing or facilitating the spread of invasive marine species (INNS). Vessel hull fouling is recognised as a primary pathway for the transfer of non-native species, and ports, because of their high levels of international traffic, function as ecological nodes where introductions may occur. Ballast water discharge is not permitted within the basins or approach waters to Dublin Port and therefore does not represent a relevant pathway for INNS introduction within the Project area. While the benthic surveys undertaken for the ABR2 baseline did not identify any invasive taxa within Alexandra Basin West or the Berths 52/53 basin, the broader Dublin Bay environment does contain non-native fouling species, meaning operational activities must consider this risk pathway.

The operational use of Alexandra Basin West by deeper-draught vessels, once dredging is complete, may marginally increase the number or size of ships calling at the basin. Even if vessel numbers remain comparable to current levels, the operational lifetime of the facility presents a prolonged temporal window during which INNS transfer could theoretically occur. The continued use of the basin by larger and potentially more frequent

international vessels may marginally increase the likelihood of introduction via established pathways such as hull fouling. If fouling organisms or propagules are introduced on vessel hulls, they may attempt to colonise available hard surfaces such as quay walls or piles. However, the suitability of habitat within the ABR2 Project area is generally poor for most invasive fouling species, which prefer complex hard substrates with stable hydrodynamic exposure. The seabed is dominated entirely by soft sediments, and the confined basin geometry further reduces the likelihood of successful establishment.

Soft-sediment invasive species (*e.g.*, some polychaetes or bivalves) could theoretically establish in disturbed mud habitats; however, the benthic community is already composed of opportunistic species with rapid colonisation dynamics that outcompete many potential invasive taxa. Furthermore, the absence of sensitive habitats within the operational footprint means that any future INNS colonisation would have limited ecological consequences relative to more natural estuarine environments. It is important to note that any INNS introduction associated with ABR2 operations would be indistinguishable from the general invasive species pressure associated with routine port traffic in Dublin Port, rather than specific to the ABR2 development itself.

Overall, while the operational phase does give rise to a potential pathway for invasive species introduction or spread, the physical and biological characteristics of the project area greatly limit the likelihood of establishment, and no significant changes in ecological functioning are anticipated as a result.

The magnitude of impact is assessed as **Negligible to Low**, reflecting the limited suitability of the basin for INNS colonisation and the absence of sensitive habitats. Sensitivity of receptors is assessed as **Low**, given the existing disturbed soft-sediment community and highly modified port environment. The effect is assessed as **Negligible**, acknowledging a theoretical pathway but a very low likelihood of meaningful ecological impact.

### 7.4.4 Inter-relationships

The potential effects identified for benthic habitats, benthic communities and fisheries during both the construction and operational phases have the potential to interact with several other environmental topics assessed within the EIAR. These interactions primarily relate to shared environmental pathways within Dublin Port and the lower River Liffey, including water quality, underwater noise, vessel activity, sediment disturbance and ecological connectivity between aquatic and coastal receptors.

The following receptors and effects are considered in relevant topic-specific chapters:

- **Water Quality and Flood Risk Assessment (Chapter 9)**
    - Effects of dredging, sediment handling, treatment and infilling on suspended sediment concentrations, turbidity and sediment deposition;
    - Effects of potential mobilisation of sediment-bound contaminants and treated water discharges on receiving waters; and
    - Secondary effects of water quality changes on benthic communities, estuarine fish and migratory species.

The principal inter-relationship for this chapter is with the Water Quality and Flood Risk Assessment, as changes in suspended sediment concentrations, sediment deposition, contaminant mobilisation and treated water discharge provide the main pathways through which benthic habitats and fisheries receptors could be affected. These pathways are assessed in **Chapter 9** and have been considered in this chapter in relation to smothering, temporary water quality degradation and potential effects on fish behaviour. With the implementation of mitigation measures relating to dredging methodology, sediment management and water quality protection, these effects are predicted to remain localised, temporary and not significant.

- **Underwater Noise and Vibration (Chapter 13)**
    - Effects of underwater noise and vibration from demolition, dredging-related activities and construction vessel movements; and
    - Secondary effects of underwater noise on fish behaviour, including potential temporary disturbance or avoidance by estuarine and diadromous species.

There is also an inter-relationship with the Underwater Noise and Vibration chapter. Underwater noise generated during construction has the potential to affect both fish and marine mammals. In this chapter, underwater noise has been considered in relation to temporary behavioural disturbance of estuarine fish and diadromous species. **Chapter 13** provides the technical assessment of underwater noise generation and propagation, and its findings support the conclusion that effects on fish receptors would be temporary, localised and not significant.

- **Marine Mammals**
    - Effects of underwater noise, vessel activity and marine construction disturbance on marine mammals using Dublin Port and Dublin Bay; and
    - Potential indirect effects associated with temporary changes in prey availability or fish distribution, where relevant.

The Marine Mammals Section of **Chapter 7 (Section 7.5)** overlaps with this section through shared use of the estuarine and marine environment and through potential responses to underwater noise, vessel activity and changes in fish distribution. However, benthic habitats within the ABR2 Project footprint support low-complexity, disturbance-tolerant communities and do not represent a key prey-supporting habitat of wider ecological importance. As such, temporary benthic disturbance or localised fish displacement is not predicted to give rise to significant secondary effects on marine mammals.

- **Terrestrial Biodiversity and Ornithology**
    - Effects on coastal and terrestrial biodiversity receptors associated with the port estate, including otter and birds; and
    - Potential interactions through shared aquatic or intertidal pathways, including water quality, fish availability and disturbance within the lower Liffey and Dublin Port.

Interactions with Terrestrial Biodiversity are limited but may occur through shared ecological pathways involving otter, coastal birds, water quality and fish availability. These receptors are assessed in **Chapter 7 (Section 7.2)**.

The aquatic habitats affected by the ABR2 Project are highly modified port basins and dredged channels, and the effects identified in this chapter are not predicted to materially alter the availability or function of aquatic resources for terrestrial or coastal biodiversity receptors.

Overall, the assessment of inter-relationships indicates that the main shared pathways have been addressed within the relevant topic-specific chapters. The implementation of the mitigation measures identified for water quality, underwater noise, marine mammals, terrestrial biodiversity, benthic biodiversity and fisheries will ensure that interacting effects remain temporary, localised and not significant in EIAR terms.

## 7.4.5 Mitigation and Monitoring

### 7.4.5.1 Construction Mitigation

The ABR2 Project incorporates a range of embedded mitigation measures designed to avoid or minimise potential effects on benthic habitats, benthic communities, fisheries resources and migratory fish species within Dublin Port and the lower River Liffey. These measures are integrated into the design of the project, the proposed dredging methodology and the environmental management procedures governing construction and operational activities.

The mitigation measures described below address the key pathways identified during the assessment, including seabed disturbance, sediment resuspension, water quality changes, disturbance to fish species and the management of treated dredged material. Measures are designed to ensure that impacts remain localised, temporary where possible, and within the tolerance limits of the ecological receptors identified in the baseline assessment.

#### 7.4.5.1.1 Dredging Methodology and Sediment Disturbance Control

Dredging activities represent the primary source of potential disturbance to benthic habitats and sediment stability during the construction phase. The following mitigation measures are designed to minimise sediment resuspension, reduce the extent of seabed disturbance, and control the release of fine material into the water column during excavation and handling operations.

- Capital dredging will be undertaken using a closed environmental bucket dredger, to minimise sediment loss during excavation and lifting.
- Dredging operations shall be carried out in a controlled manner, including:
    - minimising overfilling of the bucket
    - avoiding rapid lifting through the water column
    - maintaining vertical alignment during excavation
- Barge loading procedures will be implemented to prevent overtopping and spillage, including maintaining freeboard and controlled loading rates.

- Where dredging occurs in areas of finer or more contaminated sediments, silt curtains or equivalent containment measures will be deployed, subject to navigation and safety constraints, to reduce lateral dispersion of suspended sediments.

#### 7.4.5.1.2 Sediment Handling, Treatment and Storage

Sediment handling and treatment activities have the potential to generate localised sediment disturbance and runoff if not appropriately controlled. The following mitigation measures shall be implemented and have been designed to ensure that dredged material is managed in a contained and controlled manner throughout processing, storage and transfer, thereby minimising the risk of sediment release and protecting water quality within the receiving environment.

- All sediment handling, including screening, soil washing, separation and dewatering, will be undertaken within designated treatment areas at North Wall Quay Extension, Berth 49 and/or Berth 52 West, as defined in the CEMP.
- Sediment processing areas shall be bunded and graded to contain runoff;
- All process water is directed to the wastewater treatment system
- Temporary stockpiling of dredged material will be managed to minimise exposure to rainfall and runoff, including:
    - use of contained storage areas
    - minimisation of stockpile duration
- Transfer of sediment between dredging, treatment and infill areas (via barge, pipeline or haulage) will be managed to prevent spillage or leakage, including:
    - use of sealed pipelines where applicable
    - controlled transfer points
    - immediate clean-up procedures in the event of accidental release

#### 7.4.5.1.3 Water Quality Protection

Construction activities, particularly dredging, sediment treatment and basin dewatering, have the potential to affect water quality through increased suspended sediments and associated contaminants. The following mitigation measures are designed to ensure that all water arising from construction processes is appropriately contained, treated and discharged in a controlled manner, thereby preventing deterioration of water quality within the River Liffey and Dublin Bay.

- All water generated during dredging, sediment treatment and basin dewatering will be collected and treated prior to discharge via an on-site water treatment system prior to discharge.

- The WWTP will be designed and operated to ensure compliance with EPA IE licence emission limit values (ELVs) at all times.
- The following measures shall be implemented:
    - controlled discharge points
    - flow regulation to prevent surcharging of the treatment system
- No untreated process water will be discharged directly to the River Liffey or Dublin Bay.
- Stop/start sequences will be programmed to minimise emissions. A stop procedure will also be developed to minimise emissions to the environment during malfunctions, breakdowns and momentary stoppages.

#### 7.4.5.1.4 Protection of Fish and Migratory Species

Construction activities within Dublin Port have the potential to cause temporary disturbance to estuarine fish and diadromous migratory species through underwater noise, increased turbidity and vessel movements. The following mitigation measures are designed to minimise disturbance to fish, maintain access to established migratory pathways, and reduce the risk of behavioural disruption during the construction phase.

- Dredging and marine construction activities will be undertaken using non-percussive methods, thereby avoiding high-intensity impulsive noise that could cause injury to fish.
- No physical barriers will be introduced within the main Liffey navigation channel
- Vessel movements will be managed to maintain navigational access at all times
- Where practicable, the construction programme will be managed to avoid peak migration periods for key diadromous species, informed by available fisheries data and regulatory guidance.
- Vessel movements associated with construction will be controlled to minimise unnecessary manoeuvring and reduce disturbance to fish within and adjacent to the basin.

#### 7.4.5.1.5 Dewatering and Infill Management

Dewatering of the Berths 52/53 basin and the placement of infill material have the potential to influence water quality and sediment stability if not appropriately controlled. The following mitigation measures are designed to ensure that dewatering and infilling activities are undertaken in a controlled and contained manner, minimising the release of suspended sediments and preventing indirect effects on the surrounding aquatic environment.

- Partial dewatering of the Berths 52/53 basin will be undertaken in a controlled and staged manner to prevent uncontrolled release of suspended sediments.
- All water removed from the basin will be directed to the on-site treatment system for treatment prior to discharge, in accordance with the IE licence.
- Placement of treated and recovered sediments within the infill area will be managed to:

- minimise disturbance to surrounding waters
- prevent overflow or uncontrolled discharge

- The infill area will be constructed as a contained system, including engineered barrier layers and drainage infrastructure.

### 7.4.5.2 Operational Mitigation

No additional operational-phase mitigation measures are required specifically for Benthic Biodiversity and Fisheries, as the operational effects identified in **Section 7.4.3.2** are assessed as not significant, and the completed ABR2 Project will form part of the existing operational port environment.

Operational activities within Dublin Port, including any future maintenance dredging and general port operations, will continue to be managed through Dublin Port Company's established environmental management and licensing controls. These measures provide ongoing protection for water quality, benthic habitats and fisheries receptors during the operational phase.

- Future maintenance dredging required within the operational port will be undertaken as part of DPC's regular maintenance dredging programme and in accordance with the relevant maintenance dredging licence and associated environmental controls.
- Maintenance dredging will be undertaken using appropriate dredging plant, such as a backhoe dredger or trailing suction hopper dredger, depending on the location and operational requirements.
- No over-spilling from dredging vessels will be permitted while dredging is being carried out within the inner Liffey Channel.
- Where a trailing suction hopper dredger is used, pumps will be switched off while the drag head is being lifted and returned to the seabed as the dredger turns between successive dredging lines, in order to minimise the risk of fish entrainment.
- The dredger will work on one half of the channel at a time within the inner Liffey Channel to avoid the formation of a silt curtain across the River Liffey and to maintain a clear passage for fish movement.
- Where maintenance dredging is scheduled within 500m of power station intakes, relevant stakeholders will be notified in advance so that precautionary measures can be taken where required.
- A documented Accident Prevention Procedure and Emergency Response Procedure will be implemented prior to maintenance dredging activities.
- A full record of dredging, loading and disposal activities will be maintained for each dredging campaign, in accordance with licence requirements.
- The completed ABR2 Project will be managed under DPC's existing Environmental Management System, which is accredited to the Port Environmental Review System. The EMS identifies environmental aspects and impacts associated with port operations and includes Standard Operating Procedures for relevant operational risks, including oil and chemical spill response, hazardous

material handling, waste handling, surface water management, fuelling, bunkering and ship discharges.

- The EMS will allow any ABR2 Project-specific operational environmental issues to be incorporated into routine port environmental management, if required.

With the continued implementation of DPC's existing maintenance dredging controls, environmental licensing requirements and Environmental Management System, operational effects on benthic biodiversity and fisheries are predicted to remain negligible to minor and not significant.

### 7.4.5.3 Monitoring

Monitoring will be undertaken during the construction phase of the ABR2 Project to verify the effectiveness of mitigation measures and to ensure that potential effects on benthic habitats, water quality and fisheries receptors remain within predicted levels.

No specific monitoring is required during the operational phase, as no significant effects or ongoing impact pathways have been identified, and the completed development does not give rise to measurable environmental pressures beyond those associated with existing port operations.

#### 7.4.5.3.1 Water Quality Monitoring

- Water quality monitoring will be undertaken during dredging, sediment treatment and dewatering activities to ensure that suspended sediment concentrations and associated parameters remain within acceptable limits.
- Turbidity monitoring will be carried out at locations within and immediately outside the dredging area:
    - at a minimum frequency of daily during active dredging
    - using in-situ turbidity meters or equivalent
- Visual monitoring of sediment plumes will be undertaken continuously by site personnel during dredging operations to identify any abnormal dispersion of sediments.
- Trigger levels for turbidity will be established in advance, and if exceeded, dredging operations will be reviewed and modified, under the direction of the Environmental Facilities Manager..

#### 7.4.5.3.2 Wastewater Discharge Monitoring

- All treated water discharged from the site will be monitored to ensure compliance with the IE licence requirements.
- Sampling of treated effluent from the wastewater treatment system shall be undertaken at frequencies specified in the IE licence (typically daily to weekly, depending on the parameter).
- Monitoring parameters will include, as a minimum:

- suspended solids
- turbidity
- relevant contaminants (e.g. metals, hydrocarbons where applicable)

- All monitoring results will be:
  - reviewed by the Environmental Facilities Manager
  - reported to the EPA in accordance with licence conditions
- In the event of exceedance of emission limit values:
  - discharge will be halted
  - corrective actions will be implemented prior to resumption

#### 7.4.5.3.3 Dredging and Sediment Management Compliance Monitoring

- Monitoring of dredging and sediment handling activities will be undertaken to ensure compliance with approved methodologies and mitigation measures.
- The Contractor, under the supervision of the Environmental Facilities Manager, will carry out:
  - regular site inspections (daily during active works)
  - checks on dredging techniques, barge loading and sediment transfer operations
- Any deviations from approved procedures will be:
  - recorded
  - corrected immediately

#### 7.4.5.3.4 Fisheries and Environmental Incident Monitoring

- While no significant impacts on fisheries are predicted, monitoring will ensure that any unforeseen effects are identified and addressed.
- The Contractor will maintain daily visual observations of fish presence and behaviour within the works area
- Any fish mortality or unusual behaviour will be:
  - recorded
  - investigated and appropriate corrective measures implemented

#### 7.4.5.3.5 Reporting and Environmental Management

- All monitoring data will compiled and subsequently reviewed by the Environmental Facilities Manager

- Regular environmental reports will be prepared (typically weekly or monthly) and made available to regulatory authorities as required
- Monitoring results will be used to:
    - inform adaptive management
    - ensure continued compliance with mitigation measures and licence conditions

### 7.4.6 Potential Cumulative Effects

**Chapter 21 Cumulative Effects and Environmental Interactions** outlines the methodology used to complete the assessment of cumulative effects, which may arise from adjacent or nearby development, together with those predicted for the Project. The projects which have been considered within the assessment of cumulative effects are outlined in **Chapter 21 Cumulative Effects and Environmental Interactions**.

A review of the cumulative impact schedules for the ABR2 Project boundary and the wider South Liffey Channel identified a number of projects of relevance to benthic biodiversity and fisheries. Only those projects with potential in-water or estuarine interactions have been considered further in this section.

#### 7.4.6.1 Port and Estuarine Dredging and Marine Infrastructure Projects

Relevant projects include:

- MP2 Project (including works at Berths 49, 52 and 53)
- 3FM Project (proposed capital dredging within Dublin Port)
- Dublin Harbour Capital and Maintenance Dredging campaigns
- Point Bridge / Tom Clarke Bridge widening project
- North Wall to Poolbeg electrical cable project
- Subsea fibre optic cable landfall within Dublin Port

These projects have potential for cumulative interaction with the ABR2 Project as they involve in-water works within Dublin Port and the lower River Liffey Estuary. The principal cumulative pathways relate to additive seabed disturbance, sediment resuspension, temporary smothering of benthic habitats, and short-term increases in turbidity and underwater noise.

MP2 Project

The MP2 Project and ABR2 Project will spatially overlap at the Berth 52/53 basin, however works within the basin will not be sequential and not concurrent. The basin will be closed off as a result of construction of the new riverside berth as permitted under the MP2 Project. Once closed off, the basin will be infilled as proposed under the ABR2 Project. While sequential works may increase the temporal extent of disturbance within the port, these effects are expected to remain localised and confined to the basin. Through implementation of mitigation measures proposed for the spatially discrete dredging activities at Alexandra Basin West, cumulative impacts are not predicted.

3FM Project

The 3FM Project is focused on the south side of the approach channel and the proposed works associated with the ABRB2 Project are spatially discrete within Alexandra Basin West and the basin of Berths 52 and 53. In the context of benthic habitats, all identified works occur within a highly modified port environment dominated by soft-sediment communities characterised by opportunistic and disturbance-tolerant species. While concurrent or sequential works may increase the spatial or temporal extent of disturbance within the port, these effects are expected to remain localised and temporary, with no cumulative loss of sensitive or Annex I habitats. Recovery processes are likely to be rapid and consistent with baseline conditions. For fisheries and diadromous species, cumulative effects may arise through overlapping turbidity plumes and vessel disturbance particularly where works coincide spatially or temporally. Given the spatially discrete nature of the ABR2 Project works and through implementation of identified mitigation measures, cumulative effects are expected to be limited to short-term behavioural disturbance and are not considered significant.

Dublin Harbour Capital and Maintenance Dredging campaigns

Capital dredging of the navigation channel between the entrance to Alexandra Basin West and the Western Oil Jetty has already been completed under the Dublin Harbour Capital Dredging Project. Furthermore, as the dredged material from the ABR2 Project is also treated rather than dumped at sea. This removes any potential for cumulative effects between the Dublin Harbour Capital Dredging Project and ABR2 Project.

With regard to maintenance dredging, dredging at Alexandra Basin West within Area 3 (closest sector to the entrance of the basin) will be avoided during periods when maintenance dredging is taking place along the northern portion of the Liffey, upstream of the western Oil Jetty (Oil Berth 1). This minor restriction will avoid any potential cumulative impact of elevated suspended solids within the Liffey and thus impacts to benthic biodiversity and fisheries. Furthermore, as the dredged material from the ABR2 Project is also treated rather than dumped at sea. This removes any potential for cumulative effects between the Dublin Port Maintenance Dredging Programme and ABR2 Project with the adherence to the above restriction at Area 3.

The Point Bridge / Tom Clarke Bridge widening project

The Point Bridge / Tom Clarke Bridge widening project is currently at the preliminary design stage, and the proposed development consists of the construction of a circa 150m long pedestrian and cyclist bridge known as Point Bridge, and improvement and widening works to the Tom Clarke Bridge. The construction programme for the proposed development is anticipated to be approximately 15 months. The current project programme shows construction commencing on site in Q1 2027. The EIAR for the Point Bridge Project is required to consider cumulative effects with other projects, including the ABR2 Project, with which it may overlap temporally. Given the spatially discrete nature of the works proposed under the ABR2 Project and through the implementation of standard best practice and mitigation during the construction phase of both projects, there is no risk of significant cumulative effects.

North Wall to Poolbeg electrical cable project

The proposed installation method for the North Wall to Poolbeg underground cable to cross the River Liffey is underground tunnelling. As such, there is no potential for cumulative effects in regard to suspended solids and subsequent impacts to benthic biodiversity and fisheries. In addition, a silt curtain will be deployed during dredge

operations for the ABR2 Project to limit the dispersion of sediment. To underpin the effectiveness of this silt curtain, a dredge management protocol will also be implemented. Therefore, no significant cumulative impacts are likely.

Subsea fibre optic cable landfall within Dublin Port

Microsoft applied to MARA for a Marine Usage Licence, which was approved in 2024 for geophysical surveys and site investigations for a proposed subsea fibre optic cable having a landfall in Dublin Port and to evaluate options for the route traversing Dublin Bay, across the Irish Sea to Anglesey, Wales. The surveys include non-invasive geophysical surveys and invasive tests, including cone penetration tests and vibrocores. Since the ABR2 Project will not be using the offshore licenced dump site to dispose of dredge spoil and has been determined not to have any significant impacts on Dublin Bay, there is no risk of significant cumulative effects, particularly given the nature of the surveys proposed under the MUL, which will have a limited extent in terms of seabed disturbance. . It is also likely the site investigation will be completed by the time (as per current LIC230016 license conditions) ABR2 commences construction. As such, there is no potential for cumulative effects in regard to suspended solids and subsequent impacts on benthic biodiversity and fisheries.

#### 7.4.6.2 Wastewater and Water-Quality Related Projects

Relevant projects include:

- Ringsend Wastewater Treatment Plant Upgrade

The Ringsend Wastewater Treatment Plant Upgrade has been completed and is therefore considered to form part of the existing water quality baseline rather than a future or concurrent project for cumulative assessment. It has therefore not been assessed further as a cumulative project.

#### 7.4.6.3 Offshore Wind and Marine Site Investigation Projects

Relevant projects include:

- Codling Wind Park
- Dublin Array Offshore Wind Project
- Bray/Kish Offshore Wind projects
- Sea Stacks Offshore Wind Project
- Mac Lir Offshore Wind Project
- Banba Offshore Wind Project
- Réalt na Mara Offshore Wind Project
- North Irish Sea Array Offshore Wind Project

These projects are located within Dublin Bay and the wider Irish Sea and are therefore geographically removed from the confined basin environments affected by the ABR2 Project. Potential cumulative pathways are limited to far-field effects, including regional increases in underwater noise, vessel traffic and temporary disturbance to mobile fish species.

Given the distance from the ABR2 Project area and the localised nature of construction and operational activities within Dublin Port, no direct or indirect cumulative effects on benthic habitats within Alexandra Basin West or the Berths 52/53 basin are predicted. For fisheries receptors, any cumulative effects would be limited to transient behavioural responses at a regional scale and are not considered significant.

Overall, while a number of projects have been identified within Dublin Port and the wider Dublin Bay area, the potential for cumulative effects on benthic biodiversity and fisheries is limited by the highly modified nature of the receiving environment, the spatial separation of projects, and the temporary nature of construction-related disturbance. There are no potential cumulative effects arising from adjacent or nearby development, together with those predicted for the Project.

### 7.4.7 Residual Impacts

In circumstances where the mitigation measures are fully implemented during the construction and operational phases, as outlined in **Section 7.4.57.4.5**, the Residual Effects of the ABR2 Project on the Benthic Biodiversity and Fisheries will consist of localised and temporary disturbance to benthic habitats and communities, short-term behavioural disturbance to estuarine and migratory fish species, and the permanent but spatially limited loss of low-sensitivity benthic habitat within the infill footprint, all of which are assessed as Minor adverse and not significant in EIAR terms.

During the construction phase, residual effects will primarily relate to the direct loss of benthic habitat within the dredging footprint and the infilled Berths 52/53 basin, together with short-term disturbance arising from sediment resuspension, temporary changes in water quality, and localised underwater noise. These effects will be confined to the immediate project footprint and surrounding areas within Alexandra Basin West and will occur for the duration of the construction period only. Given the low ecological sensitivity of the affected benthic communities, their tolerance to disturbance, and their capacity for natural recovery, these residual effects are considered to be of **Minor adverse significance and not significant**.

For fisheries and diadromous species, residual effects will be limited to temporary behavioural responses to localised increases in turbidity and underwater noise during construction. These effects will be short-term, reversible and restricted to the vicinity of the works, with no long-term disruption to migratory pathways or population-level effects. Residual impacts on fisheries receptors are therefore assessed as **Minor adverse and not significant**.

During the operational phase, no significant residual effects are predicted. The proposed development does not introduce ongoing impact pathways that would affect benthic habitats, water quality or fisheries receptors beyond those associated with existing port operations. The infilled basin will function as a contained and stable structure, and the remaining port environment will continue to support benthic communities typical of a modified estuarine setting. Operational residual effects are therefore assessed as **Negligible to Minor and not significant**.

Overall, taking account of the embedded and additional mitigation measures, the Project will not give rise to any significant residual effects on benthic biodiversity or fisheries.

### 7.4.8 Summary of Effects and Conclusions

The assessment has concluded that the potential effects of the ABR2 Project on benthic biodiversity and fisheries are primarily confined to the construction phase and are localised to the project footprint within Alexandra Basin West and the Berths 52/53 basin. These effects relate mainly to temporary disturbance of benthic habitats, sediment resuspension, short-term changes in water quality, and localised behavioural disturbance to estuarine and migratory fish species. The only permanent effect is the loss of a small area of low-value, modified benthic habitat within the infill footprint. All impacts are limited in spatial extent and duration, with no significant effects predicted beyond the immediate project area.

Following the implementation of mitigation measures, all residual effects are assessed as Minor adverse or Negligible and not significant. No significant impacts on benthic habitats, fisheries receptors or diadromous migratory pathways are predicted, either alone or in combination with other projects. Overall, the Project is not predicted to result in any significant adverse effects on benthic biodiversity or fisheries. A summary of the impact assessment is provided in **Table 7-15**.

**Table 7-15: Summary of Effects relating to Benthic Biodiversity and Fisheries**

| Potential Effect and Receptor | Phase[2] | | Magnitude of Effects | Sensitivity of Receptor | Significance of Effect | Significant/Not Significant | Mitigation Measures | Residual Effects |
|---|---|---|---|---|---|---|---|---|
| | C | O | | | | | | |
| Loss and disturbance of benthic habitats and communities due to capital dredging | ✓ | | Medium | Low | Minor–Moderate | Not Significant | Dredging methodology and sediment management; controlled dredging footprint; environmental bucket dredger | Minor |
| Sediment Resuspension, Deposition and Smothering of Adjacent Benthic habitats | ✓ | | Low | Low | Minor | Not Significant | Dredging methodology and sediment management; sediment handling, treatment and storage; water quality protection | Negligible–Minor |
| Temporary Degradation of Water Quality Affecting Estuarine and Migratory Fish Species | ✓ | | Low | Medium | Minor–Moderate | Not Significant | Water quality protection; dredging controls; dewatering and infill management | Minor |
| Disturbance to Migratory Pathways for Diadromous Species (Salmon, Eel and Lamprey) | ✓ | | Low | Medium | Minor–Moderate | Not Significant | Protection of fish and migratory species; control of vessel activity; programming of works where practicable | Minor |
| Habitat Loss and Seabed Alteration Resulting from the Infilling of the Berths 52/53 Basin | ✓ | | Medium | Low | Minor–Moderate | Not Significant | Dewatering and infill management; contained placement of treated and recovered sediments | Minor |
| Underwater Noise and Vibration Effects on Fish | ✓ | | Low | Medium | Minor–Moderate | Not Significant | Protection of fish and migratory species; non-percussive construction methods; vessel management | Minor |

[2] C: Construction Phase; O: Operational Phase

| Potential Effect and Receptor | Phase[2] | | Magnitude of Effects | Sensitivity of Receptor | Significance of Effect | Significant/Not Significant | Mitigation Measures | Residual Effects |
|---|---|---|---|---|---|---|---|---|
| | C | O | | | | | | |
| During Construction Activities | | | | | | | | |
| Potential for Mobilisation of Sediment-Bound Contaminants During Dredging and Handling | ✓ | | Low | Low–Medium | Minor | Not Significant | Sediment handling, treatment and storage; water quality protection; controlled collection and treatment of water | Negligible–Minor |
| Long-Term Behaviour and Stability of S/S-Treated Sediments within the Berths 52/53 Infill Area | | ✓ | Negligible | Low | Negligible | Not Significant | Engineered containment; drainage controls; IE licence compliance | Negligible |
| Ongoing Disturbance to Benthic Habitats from Operational Vessel Traffic and Propeller Wash | | ✓ | Low | Low | Minor | Not Significant | Standard port navigation management; no additional project-specific mitigation required | Negligible–Minor |
| Operational Water Quality Effects and Implications for Estuarine and Marine Fish Species | | ✓ | Low | Low–Medium | Minor | Not Significant | Embedded operational controls; contained infill design; drainage management | Negligible |
| Potential Operational Disturbance to Migratory Pathways of Diadromous Species | | ✓ | Low | Medium | Minor–Moderate | Not Significant | Existing port traffic management; no physical obstruction to migratory corridor | Minor |
| Risk of Introduction or Spread of Invasive Marine Species Through Long-Term Port Operations | | ✓ | Negligible–Low | Low | Negligible | Not Significant | Existing ballast water, vessel management and biosecurity controls | Negligible |

### 7.4.9 Limitations of Assessment

The assessment of benthic biodiversity and fisheries is based on a combination of site-specific survey data, desktop information sources and professional judgement. While these provide a robust basis for the assessment, a number of limitations and associated uncertainties are recognised.

Site-specific benthic surveys represent a snapshot of environmental conditions at the time of sampling and do not capture short-term temporal variability in abundance, diversity indices or community metrics. However, the benthic assemblage identified is characteristic of a stable, disturbance-tolerant community typical of long-established port environments. The results show a consistent dominance of opportunistic taxa across all stations, with no significant differentiation in community structure. As such, while some variability in abundance may occur over time, significant temporal variation in overall community type is not predicted.

Fisheries data for the lower River Liffey and Dublin Bay are derived from regional datasets and published sources rather than site-specific surveys, and therefore may not fully capture fine-scale spatial or temporal variability in fish distribution or the precise timing of migratory movements. This introduces some uncertainty in predicting the exact timing and extent of interactions between construction activities and diadromous species. Nevertheless, key migratory pathways and species sensitivities are well established at a regional scale, allowing for a precautionary assessment of potential effects.

There is also inherent uncertainty in predicting the precise extent and behaviour of sediment plumes and associated water quality changes during dredging and sediment handling activities. While the assessment is informed by experience from comparable port environments and adopts a precautionary approach, actual plume behaviour may vary depending on operational practices and environmental conditions such as tidal state.

Notwithstanding these uncertainties, the assessment is considered robust. The affected habitats are of low ecological sensitivity, the works are spatially confined within a highly modified port environment, and the identified impact pathways are well understood. The level of uncertainty is therefore not considered sufficient to alter the overall conclusion that effects will be localised, temporary and not significant.

# 7.5 Marine Mammals

## 7.5.1 Scope of the Assessment

This section of the EIAR provides an examination, analysis and evaluation of the likely effects of the ABR2 Project on marine mammals during the construction and operational phases of the ABR2 Project. The assessment considers potential impacts arising from construction operations, including dredging and associated vessel activity. The assessment has been informed by the findings of the EIA Scoping Report, consultation responses and relevant legislative and policy requirements.

This section focuses on cetacean (porpoise, dolphin, whale) and pinniped (seal) species known to occur within Dublin Bay and the Irish Sea, all of which are protected under Irish and European legislation as discussed in **Section 7.5.1.1**.

### 7.5.1.1 Guidance and Legislation

The preparation of this chapter was informed by relevant guidance, including:

- EC (2013) *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment*
- National Parks and Wildlife Service (NPWS) (2014) *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters*
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) *Guidelines for Ecological Impact Assessment* and
- EPA (2022) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.

### 7.5.1.2 Study Area

For the purpose of the marine mammal assessment, the study area comprises the ABR2 Project area within Dublin Port, as illustrated in **Figure 7-8**, including Alexandra Basin West, the basin of Berths 52/53, and associated treatment areas.

The wider area over which potential effects may occur is referred to as the Zone of Influence (ZoI). No single fixed-distance ZoI has been defined for the marine mammal assessment, as the extent of potential effects varies depending on the effect pathway being assessed (e.g. underwater noise, vessel activity and suspended sediments). The ZoI extends beyond the immediate Project footprint into the wider Dublin Bay environment, depending on the effect pathway being assessed, reflecting the mobile nature of marine mammal receptors and the potential for temporary behavioural disturbance associated with the proposed works.

The ABR2 Project will comprise redevelopment works in two areas of Dublin Port, as noted within **Chapter 5**:

- Alexandra Basin West; and
- Berths 52/53.

In addition, dredged material treatment may take place at North Wall Quay, Berth 49 or Berth 52 West, subject to operational availability within Dublin Port at the time of construction.

The proposed development areas and IE licence boundary are illustrated below in **Figure 7-8**.

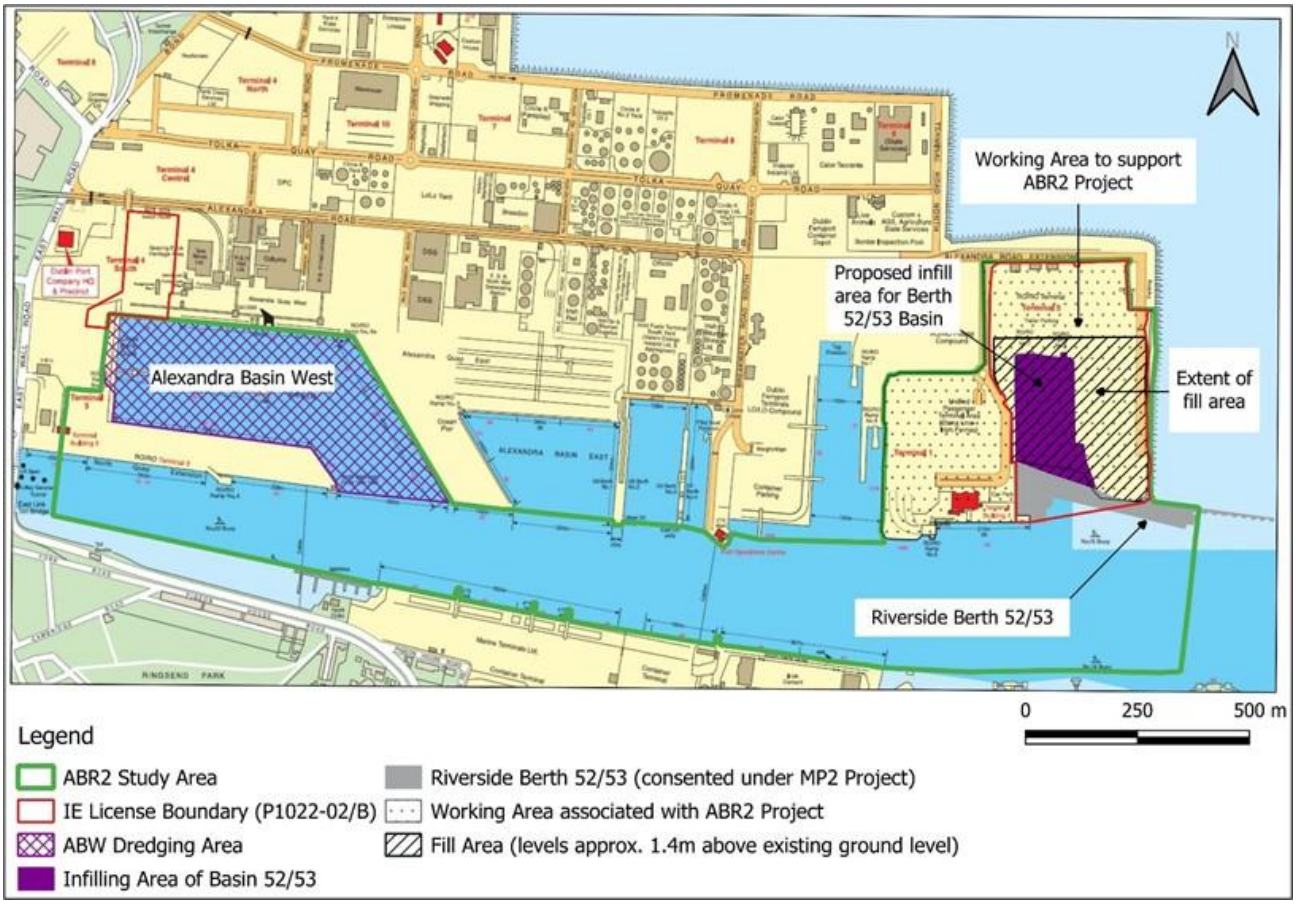



**Figure 7-8: Proposed development areas and IE licence boundary for the Project**

### 7.5.1.3 Baseline

The baseline marine mammal environment relevant to this assessment has been characterised through a comprehensive review of existing datasets and monitoring records. This includes long-term site-specific data collected within Dublin Port and Dublin Bay. The availability of extensive monitoring data associated with previous projects within Dublin Port provides a robust evidence base for characterising marine mammal occurrence, distribution and behaviour within the study area and wider Dublin Port and Dublin Bay area. No material data gaps were identified that would affect the conclusions of the assessment.

Static Acoustic Monitoring (SAM) data collected as part of previous port projects were reviewed as part of the desktop study. Cetacean detections within Alexandra Basin West are infrequent, with no detections recorded

within the basin in the available monitoring data. Seals are regularly recorded within the wider Dublin Port area, including waters adjacent to Berths 52/53. Based on existing evidence base, the likelihood of cetacean presence within the immediate dredging footprint is considered low, and the deployment of additional acoustic monitoring equipment was not considered necessary to inform the baseline for this Project.

In addition, real-time acoustic monitoring using the Listening to the Deep Ocean Environment (LIDO) system was undertaken at the North Bank Lighthouse in Dublin Port, providing supplementary data on marine mammal presence within the wider port environment. The monitoring equipment was removed in May 2026.

#### 7.5.1.3.1 Desktop Studies

Information on the baseline marine mammal environment was collected through a desktop review of existing reports and datasets relevant to Dublin Port and Dublin Bay.

IWDG Consulting has undertaken extensive marine mammal monitoring associated with construction and dredging activities within Dublin Port, including works related to the permitted ABR Project between 2016 and 2021 and the MP2 Project from 2022 to the present. This monitoring, which included marine mammal observations undertaken during dredging, piling, drilling and demolition activities, has significantly improved the understanding of marine mammal occurrence, distribution and behaviour within Dublin Port and the Dublin Bay area.

Data sources reviewed as part of the desktop study include long-term marine mammal monitoring records, SAM datasets and seal monitoring data collected by IWDG Consulting between May 2016 and April 2026 as part of the ABR and MP2 Projects. These records include individual construction-phase monitoring reports and annual marine mammal summary reports prepared by IWDG Consulting for regulatory and project oversight purposes. The existing body of data provides a robust baseline for assessing marine mammal presence and activity within the ABR2 area and informs this impact assessment.

The sources used to inform the baseline environment are provided in **Table 7-16**.

**Table 7-16: Summary of Key Desktop Data Sources for marine mammals**

| Data Title | Source/Author | Year |
|---|---|---|
| Marine Mammal Monitoring Records and Annual Summary Reports (ABR and MP2 Projects) | IWDG Consulting | May 2016 - April 2026 |
| Static Acoustic Monitoring (SAM) Datasets | IWDG Consulting | May 2016 - April 2026 |
| North Bull Island Seal Monitoring Records | IWDG Consulting | May 2016 - April 2026 |
| Dublin Bay and Adjacent Coastal Waters Seal Haul-out Site Survey | IWDG Consulting | June 2023 - January 2024 |

#### 7.5.1.3.2 Designated Sites Relevant to Marine Mammals

Dublin Bay extends approximately 10 km north to south, from Howth Head to Dalkey Island, and approximately 7km east to west from this outer bay to Dublin Port. The Burford Bank lies along the outer margin of the bay, and the licensed spoil grounds are located to the west of the bank.

Amongst the Natura 2000 network of sites in the wider Dublin Bay area, three SACs are considered relevant in terms of marine mammals.

The Rockabill to Dalkey Island SAC, designated for harbour porpoise, extends southwards from Rockabill for approximately 40 km in a strip about 7 km wide, crossing the mouth of Dublin Bay and extending a short distance into the bay. The SAC covers approximately 273 $km^2$. The licensed dredged material disposal site is located within this SAC but comprises less than 1% of the SAC area.

Lambay Island SAC, located north of Dublin Bay, is designated for harbour porpoise, harbour and grey seals. Although located more than 15 km from Dublin Port, seals are highly mobile and individuals associated with Lambay Island are likely to forage in Dublin Bay and Dublin Port.

Codling Fault Zone SAC, also designated for harbour porpoise, is located approximately 24 km east of Howth Head, Co. Dublin, within the Irish Sea. The site extends approximately 7 km in length and up to 5 km in width at its greatest extent.

These designated sites are located within the wider regional context of the Project, however the ABR2 Project footprint is located within a highly modified and industrialised port environment and does not directly overlap with any designated marine mammal SAC. regional context of the Project;regional context of the ProjectProject

Grey and harbour seals are listed in Annex II of the EU Habitats Directive (species of Community interest whose conservation requires the designation of special areas of conservation), and whales, dolphins and porpoises are listed in Annex IV (species of community interest in need of strict protection). Accordingly, the potential implications of the ABR2 Project for marine mammals require full consideration as part of the assessment.

In 1981, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) recognised the importance of Dublin Bay by designating North Bull Island as a Biosphere because of its rare and internationally important habitats and species of wildlife. To support sustainable development, UNESCO's concept of a Biosphere has evolved to include not just areas of ecological value but also the areas around them and the communities that live and work within these areas. There have since been additional international and national designations, covering much of Dublin Bay, to ensure the protection of its water quality and biodiversity. To fulfil these broader management aims for the ecosystem, the Biosphere was expanded in 2015. The Biosphere now covers Dublin Bay, reflecting its significant environmental, economic, cultural and tourism importance, and extends to over 300 $km^2$.

#### 7.5.1.3.3 Site-Specific Surveys

No new site-specific surveys have been undertaken to inform the EIAR for marine mammals, as a substantial body of site-specific data already exists for the ABR2 study area and wider Dublin Port and Dublin Bay vicinity. This includes long-term observational and acoustic monitoring data collected under standardised survey protocols during previous underwater noise-generating activities associated with the ABR Project and MP2 Projects since May 2016, with the most recent site-specific marine mammal monitoring undertaken during the MP2 marine site investigation works between April and May 2026.

Observations were undertaken by the Project Marine Mammal Ecologist (MME) and IWDG Consulting Marine Mammal Observers (MMOs) and have been submitted to the NPWS as part of regulatory reporting requirements. Based on the extent, duration and quality of the existing datasets, additional surveys were not considered necessary to characterise the baseline marine mammal environment for this assessment.

### 7.5.1.4 Consultation

Following completion of the EIA Scoping Report, consultation was undertaken to obtain opinions regarding the Project and its potential for significant effects. Dublin City Council (DCC) considered the EIA Scoping Report to be comprehensive in its description of the Project and the proposed EIA methodology. No specific issues relating to marine mammals were raised beyond the requirement that the EIAR have regard to relevant policy and guidance. Specific comments relating to marine mammals are set out in Table 7-17, together with details of where the relevant information is addressed in the EIAR.

**Table 7-17: ABR2 EIA Scoping Report Comments relating to marine mammals**

| Organisation | Comment / Issue Raised | Response |
|---|---|---|
| Dublin City Council | EIA Scoping Report considered comprehensive; EIAR should have regard to Dublin City Development Plan 2022-2028 and relevant EIA guidance | Relevant policy context is provided in **Section 7.5.1.1**, and the assessment methodology has been informed by relevant EPA and EU EIA guidance |

### 7.5.1.5 Assessment Criteria and Assessment of Significance

Determining the significance of potential effects on marine mammals involves defining both the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms applied are based on standard EIA practice and are informed by EPA (2022) guidance and CIEEM (2018), together with topic-specific best practice for marine mammal assessment. EPA (2022) provides the framework for characterising effects, while CIEEM (2018) provides a framework for determining ecological significance based on the interaction between receptor sensitivity and impact magnitude, supported by professional judgement.

#### 7.5.1.5.1 Magnitude Criteria

In accordance with EPA (2022), magnitude has been determined by considering the spatial extent, duration, frequency and reversibility of each impact arising from the construction and operational phases of the ABR2 Project, where applicable.

These criteria are defined below and are adapted from EPA (2022) for application to the marine environment and marine mammals. The overall magnitude of impact has been assigned by professional judgement based on a combined consideration of these factors and reflects the likely scale of effect on marine mammals.

**Table 7-18: Definition of spatial extent, duration, frequency and reversibility when defining the magnitude of an impact (adapted from EPA, 2022)**

| Term | Definition |
|---|---|
| Spatial extent | The geographical area over which an impact may occur, including the footprint of the activity and the relevant ZoI for the effect being assessed. |
| Duration | The length of time over which an impact occurs, typically described as short-term, medium-term or long-term and as temporary or permanent. |
| Frequency | The rate at which an impact occurs over the relevant project phase or lifetime, for example, continuous, intermittent or occasional. |
| Reversibility | The degree to which an impact can be undone through natural recovery or management measures (reversible) or results in permanent loss of environmental characteristics or ecological function (irreversible). |

The magnitude of impact on marine mammals has been classified as Negligible, Low, Medium or High. Magnitude has been determined through consideration of the spatial extent, duration, frequency and reversibility of impacts, in line with EPA (2022) and reflects the likely scale of change experienced by individuals or populations.

**Table 7-19: Magnitude of impact criteria for marine mammals (adapted from EPA (2022); CIEEM (2018))**

| Magnitude | Description |
|---|---|
| Negligible | No discernible change to marine mammal behaviour, distribution or habitat use. Effects, if any, are extremely localised, short-term and fully reversible. |
| Low | Minor, temporary and localised effects such as short-term behavioural disturbance or brief displacement of individuals. Effects are infrequent and fully reversible, with no lasting consequences for individuals or populations. |
| Medium | Noticeable effects at a local or regional scale, including repeated disturbance, temporary habitat exclusion, or displacement of individuals over a wider area or longer duration. Effects remain reversible but may affect multiple individuals and require recovery time. |
| High | Major effects over a large spatial extent and/or prolonged duration, including sustained disturbance, long-term habitat loss, or impacts with the potential to affect survival or reproductive success. Effects may be partially or wholly irreversible and may have the potential to influence population-level processes. |

Magnitude assignments are based on professional judgement, informed by project characteristics, the predicted ZoI, species ecology. Within the ZoI, consideration is given to potential effects on marine mammal behaviour, movement patterns, habitat use and access to important areas such as feeding or breeding grounds.

#### 7.5.1.5.2 Sensitivity Criteria

Sensitivity reflects the ability of marine mammals to tolerate or adapt to change without experiencing adverse effects, considering ecological importance, conservation status and species-specific traits. A range of sensitivity categories is presented in **Table 7-20**. All cetacean and pinniped species are protected under Irish and European legislation.

**Table 7-20: Sensitivity criteria relating to marine mammals (adapted from EPA (2022); CIEEM (2018))**

| Sensitivity | Definition |
|---|---|
| Low | Species or individuals with high tolerance to disturbance, wide ranging behaviour, and low dependence on the affected area. Typically associated with adaptable species or those not reliant on specific habitats within the study area. |
| Medium | Species or individuals with moderate sensitivity to disturbance and some reliance on the affected area for foraging or transit. |
| High | Species or individuals that are highly sensitive to disturbance and/or strongly dependent on the affected area (e.g. important feeding or movement corridors), or with unfavourable conservation status. |

Sensitivity assignments consider species-specific traits, including mobility, hearing range, behavioural responses to vessel traffic and underwater noise, conservation status and the availability of alternative habitat. Species with broad habitat use and low dependence on the affected area may be considered of lower sensitivity to temporary disturbance, whereas species reliant on specific areas, exhibiting strong avoidance responses or with an unfavourable conservation status are considered more sensitive.

#### 7.5.1.5.3 Significance of Effects

The significance of effects refers to the importance of an effect on marine mammals in EIA terms. Significance of an effect is determined through the combination of impact magnitude and receptor sensitivity. Significance categories used in this assessment are presented in **Table 7-21**.

The final assessment of significance for each effect is based on professional judgement, following the approach outlined in EPA (2022) and CIEEM (2018). This process identifies whether predicted effects are Not Significant, Slight adverse, Moderate adverse or Significant adverse. In this assessment, all identified effects are considered adverse (i.e. negative), as no beneficial effects on marine mammals are anticipated.

In line with EPA (2022) guidance, effects assessed as Slight adverse or lower are generally not considered significant in EIA terms, although professional judgement is applied in all cases.

**Table 7-21: Definition of significance of effects (adapted from EPA (2022); CIEEM (2018))**

| Significance | Definition |
|---|---|
| Not Significant | Imperceptible or negligible effects that do not result in any ecologically meaningful change to individuals, populations or conservation status. |
| Slight adverse | Minor, short-term and reversible effects on individuals or small numbers of animals, with no implications for conservation status or population viability. |
| Moderate adverse | Noticeable effects on individuals or local populations, potentially involving repeated disturbance or displacement, with recovery required but no effect on overall population viability or conservation status. |
| Significant adverse | Effects of a scale or duration that may affect conservation status, population viability, reproductive success or long-term habitat use, and are considered significant in the context of the EIA. |

The significance matrix presented in **Table 7-22** has been developed in accordance with the general principles set out in EPA (2022) and CIEEM (2018), which require professional judgement to determine ecological significance based on receptor sensitivity and impact magnitude. The matrix provides a structured framework to ensure consistency and transparency in the assessment.

**Table 7-22: Significance matrix for marine mammals (developed in accordance with EPA (2022) and CIEEM (2018) guidance)**

| Sensitivity → Magnitude ↓ | Low | Medium | High |
|---|---|---|---|
| **Negligible** | Not Significant | Not Significant | Not Significant |
| **Low** | Not Significant | Slight adverse | Slight adverse |
| **Medium** | Slight adverse | Moderate adverse | Significant adverse |
| **High** | Moderate adverse | Significant adverse | Significant adverse |

## 7.5.2 Baseline Environment

This section provides an overview of the baseline marine mammal environment within the study area and the wider Dublin Port and Dublin Bay area. The baseline description is informed by long-term site-specific monitoring datasets together with existing information in relation to marine mammal occurrence within Dublin Port and Dublin Bay.

### 7.5.2.1 Marine Mammal Species

The principal species recorded in the wider study area include:

- Grey seal (*Halichoerus grypus*)
- Harbour seal (*Phoca vitulina*)
- Harbour porpoise (*Phocoena phocoena*)

Seal species have been recorded throughout the ABR2 ZoI and are regularly observed in Dublin Port and Dublin Bay. Cetacean sightings do occasionally occur within the breakwater areas of Dublin Port, however, no cetacean observations have been recorded within Alexandra Basin West itself, where the proposed dredging works will occur, reflecting the limited use of this enclosed basin by cetacean species.

All cetacean and pinniped species are protected under Irish and European Union legislation.

***Cetaceans, other than harbour porpoise***

Bottlenose dolphin and minke whale are frequently recorded in, or adjacent to, Dublin Bay. Bottlenose dolphins have been reported throughout the year, though mainly in the summer and from all along the coast, but mainly off Howth Head and especially from Dún Laoghaire and south to County Wicklow. Most sightings are of small groups, though occasionally large groups of greater than 20 dolphins occur, but usually only for short periods. A small group of three individual bottlenose dolphins frequented Killiney Bay from August 2010 to August 2012 but have not been recorded since. Bottlenose dolphins off County Dublin are part of the highly mobile coastal population, which has been recorded all around the Irish coast and some individuals reported off Scotland

(O'Brien *et al.* 2009; Robinson *et al.* 2012). This highly mobile Irish coastal population is thought to number between 200 and 400 individuals.

Minke whales occur seasonally, especially off north County Dublin from Howth Head to Lambay Island and on the Kish Bank. They are usually solitary, but up to five have been seen foraging in the same area at any one time.

Common dolphins have also been recorded in Dublin Bay and are thought to be more abundant in the Irish Sea in the summer and tend to occur further offshore than bottlenose or Risso's dolphins. They have been recorded from Rockabill to Dun Laoghaire, and two were recorded in the River Liffey in November 2018 upstream as far as Butt Bridge, and at Poolbeg in March 2022.

Risso's dolphins were regularly recorded to the south of Dublin Bay in the spring and early summer for several consecutive years from 1999 to 2006 but have only been recorded once off County Wicklow over the past 10 years. They were likely part of a wider Irish Sea population whose occurrence is associated with the presence of squid, which may be an unpredictable food source off the east coast.

Humpback whales were recorded in July for two consecutive years in 2010 and 2011 off north County Dublin. Killer whales were observed twice in 2011, off the Kish Bank and Ireland's Eye and off Rockabill in November 2018. In October 2019, a juvenile fin whale was recorded off Howth Head and in the River Liffey.

Although not a cetacean, basking sharks have been legally protected since October 2022 under the Irish Wildlife Act (Section 23). IWDG collaborates with the Irish Basking Shark Group and collates and validates basking shark sighting records from Irish waters. Basking shark sightings are rare in Dublin Bay, with only one recent validated sighting in 2020.

***Harbour porpoise***

Dedicated porpoise surveys off County Dublin were first carried out in 2008, prior to designation of the Rockabill to Dalkey SAC (Berrow *et al*. 2008). Surveys focused on two discrete areas, North County Dublin and in Dublin Bay. Density estimates off North County Dublin were among the highest recorded around the coast of Ireland, with an estimated density of 2.03 porpoises per $km^2$ and an abundance of 211 ± 47 individuals. Density estimates within Dublin Bay were lower but still elevated relative to several other Irish sites, with an estimated density of 1.19 porpoises per $km^2$ and an abundance estimate of 138 ± 33 individuals.

A dedicated survey of the newly designated Rockabill to Dalkey Island SAC was subsequently undertaken in 2013 (Berrow and O'Brien, 2013). Surveys undertaken between July and September recorded density estimates ranging from 1.13 to 2.61 porpoises per $km^2$, with an overall density of 1.44 porpoises per $km^2$ and an abundance estimate of 391 ± 25 individuals. The average density estimate from the earlier 2008 surveys (1.61 porpoises per $km^2$) was therefore broadly consistent with the 2013 SAC survey results.

Further surveys undertaken in 2016 recorded densities ranging from 1.37 to 1.87 porpoises per $km^2$, with an overall density estimate of 1.55 ± 0.17 porpoises per $km^2$ and an abundance estimate of 424 ± 46 individuals (O'Brien and Berrow, 2016). Density estimates from 2013 and 2016 were considered remarkably consistent, supporting the conclusion that Dublin Bay and adjacent waters, particularly North County Dublin, represent an important habitat for harbour porpoise in Ireland. During both surveys, mean group size was similar, while

juveniles and calves were regularly recorded within the Rockabill to Dalkey Island SAC, including during the calving and breeding season (April - May). Acoustic monitoring data also confirmed the year-round presence of harbour porpoise within the Rockabill to Dalkey Island SAC.

The most recent survey of the SAC was undertaken in 2021 (Berrow *et al*. 2021). Overall harbour porpoise density was estimated at 0.83 ± 0.14 porpoises per $km^2$, corresponding to an abundance estimate of 227 ± 39 individuals. This represented a 46% decline relative to 2016 and a 42% decline relative to 2013. Surveys were conducted in favourable sea conditions and the authors concluded that the decline represented the first significant reduction recorded since monitoring commenced in 2008. However, the decline was considered widespread and not restricted to Dublin Bay.

The trend of declining harbour porpoise density has also been reported in other Irish SACs designated for harbour porpoise, namely Roaringwater Bay and Islands SAC in County Cork and Blasket Islands SAC in County Kerry. O'Brien and Berrow (2020) reported a 70% decline in porpoise densities in the Roaringwater Bay and Islands SAC between 2016 and 2020, while O'Brien *et al*. (2022) reported a 44% decline in harbour porpoise densities within Blasket Islands SAC between 2018 and 2022. Results from the ObSERVE Programme similarly identified reduced harbour porpoise densities within the Irish Sea and Celtic Sea regions between Phase I (2015-2017) and Phase II (2021-2022) surveys (Paradell, 2024).

These findings suggest that drivers influencing harbour porpoise density are likely operating at a broader regional scale and may reflect changes in prey distribution, habitat use and localised porpoise distribution patterns, rather than a direct reduction in overall population size. Small changes in local porpoise distribution, potentially driven by the distribution of preferred prey species such as sandeels, gobies, whiting, herring and sprat, can significantly influence density estimates within relatively small SACs compared to the wider home ranges of individuals (Rogan, 2008; Berrow *et al*., 2021).

Since commencement of the ABR Project in 2016, extensive marine mammal monitoring has been undertaken within Dublin Port, Dublin Bay and the wider Rockabill to Dalkey Island SAC as part of DPC's dredging and marine infrastructure projects. Monitoring has included marine mammal observations during maintenance, capital and IED dredging campaigns (2017-2026), together with long-term SAM using an array of acoustic sensors deployed within Dublin Bay, Burford Bank and a control site off Scotsman's Bay. These monitoring programmes are ongoing and form part of the wider MP2 Project environmental monitoring programme.

In collaboration with DPC and Atlantic Technological University (ATU) Galway, a PhD research project has investigated the effects of dredged material disposal on harbour porpoise foraging behaviour within the Rockabill to Dalkey Island SAC during the ABR Project. Over 7.3 million tonnes of sediment disposed at the licensed spoil ground at Burford Bank were monitored acoustically using C-POD deployments across four monitoring sites. Analysis of echolocation activity and foraging behaviour using Generalised Additive Mixed Models (GAMMs), Before-After (BA) and Before-After Control-Impact (BACI) approaches found no evidence of negative impacts on harbour porpoise foraging activity. Foraging activity increased during three of the four dredging seasons, in some cases by up to 39%, potentially reflecting prey redistribution associated with dredging activity. A decline recorded during the final monitoring season was linked to a change in sediment characteristics from predominantly sandy material to finer silts.

The findings highlight the importance of sediment characteristics in influencing ecological response and demonstrate that dredged material disposal, when appropriately managed, can occur without adverse effects on harbour porpoise foraging activity or SAC conservation objectives.

***Dublin Port Marine Mammal Monitoring Programmes***

Long-term marine mammal monitoring has been undertaken within Dublin Port and Dublin Bay since the commencement of the ABR capital dredging campaigns in 2017. Monitoring has included vessel-based MMO surveys during dredging operations, supported by additional long-term acoustic monitoring programmes within Dublin Bay, the Burford Bank spoil ground and a control site of Scotsman's Bay. Since 2026, acoustic monitoring has also been extended to the port entrance area to support ongoing baseline characterisation.

A summary of cetacean sightings recorded during capital dredging campaigns between 2017 and 2026 is presented in **Table 7-23**. Harbour porpoise represented the most frequently recorded cetacean species throughout the monitoring period, while bottlenose dolphin and unidentified cetacean species were only occasionally recorded.

The majority of cetacean sightings were recorded outside Dublin Port Harbour, with increased sightings occurring further east within Dublin Bay and in the vicinity of the Burford Bank spoil grounds (**Table 7-23** and **Figure 7-16**). This distribution pattern is considered reflective of habitat preference and prey availability within the wider bay environment. Cetacean sightings within the inner harbour and Alexandra Basin West area were comparatively infrequent, although occasional harbour porpoise sightings have been recorded within the harbour walls during some dredging campaigns.

Some duplicate sightings may have occurred during periods where multiple dredging vessels were operating concurrently and observing the same individual animals. Nevertheless, the long-term dataset indicates that while harbour porpoise regularly occur within the wider Dublin Bay area, cetacean usage of the inner port environment remains relatively limited and transient in nature. This was further supported by the IED dredging monitoring programme undertaken within Alexandra Basin West between 2019 and 2022, during which no cetacean sightings were recorded.

**Table 7-23: Summary of cetacean sightings recorded for each capital dredging programme (2017-2026)**

| Species | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2022 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|
| Harbour porpoise | 77 | 44 | 84 | 51 | 26 | 4 | 4 | 7 |
| Bottlenose dolphin | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Unidentified cetacean species | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

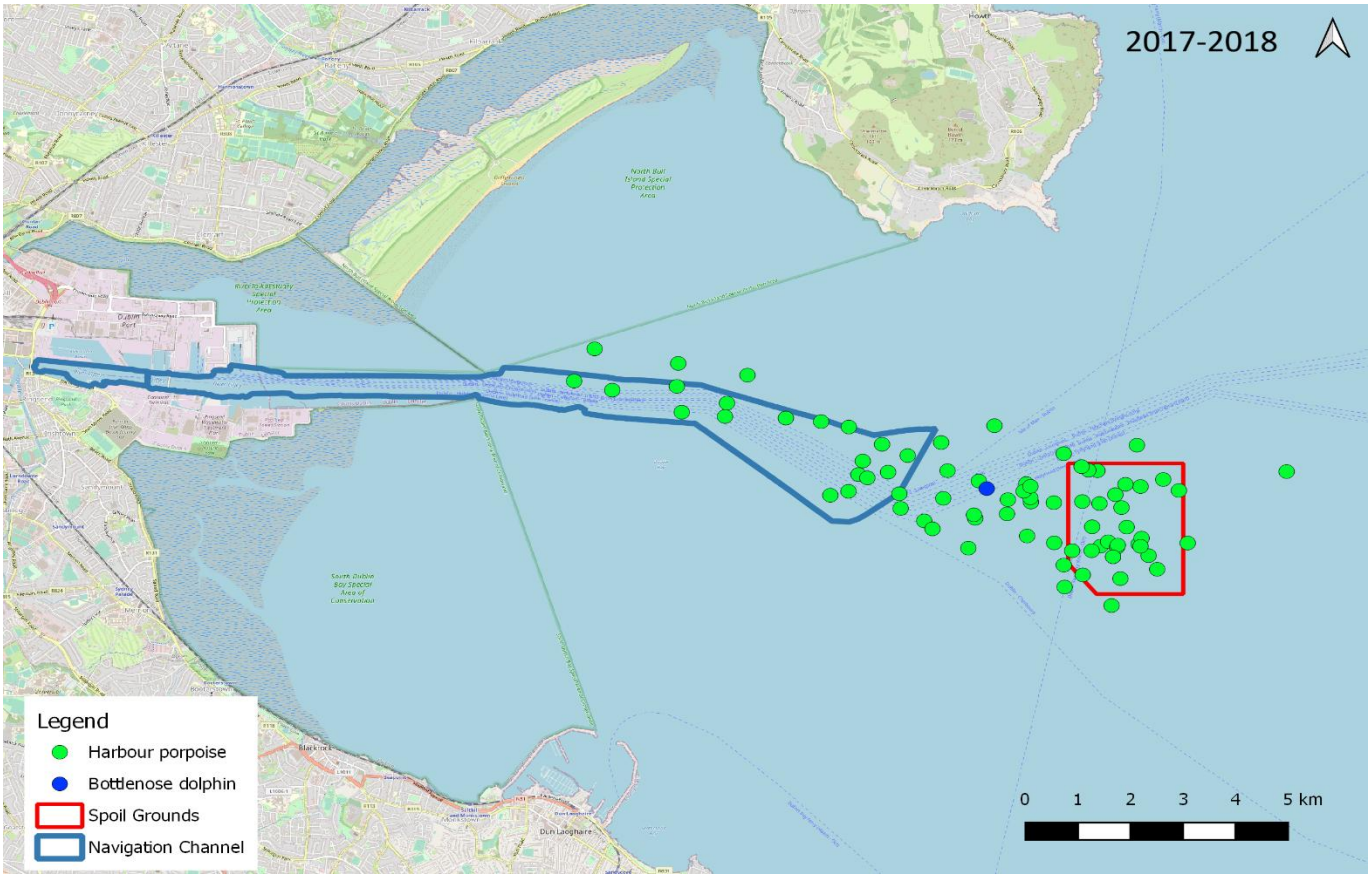



**Figure 7-9: Cetacean sightings during capital dredging operations (2017-2018)**

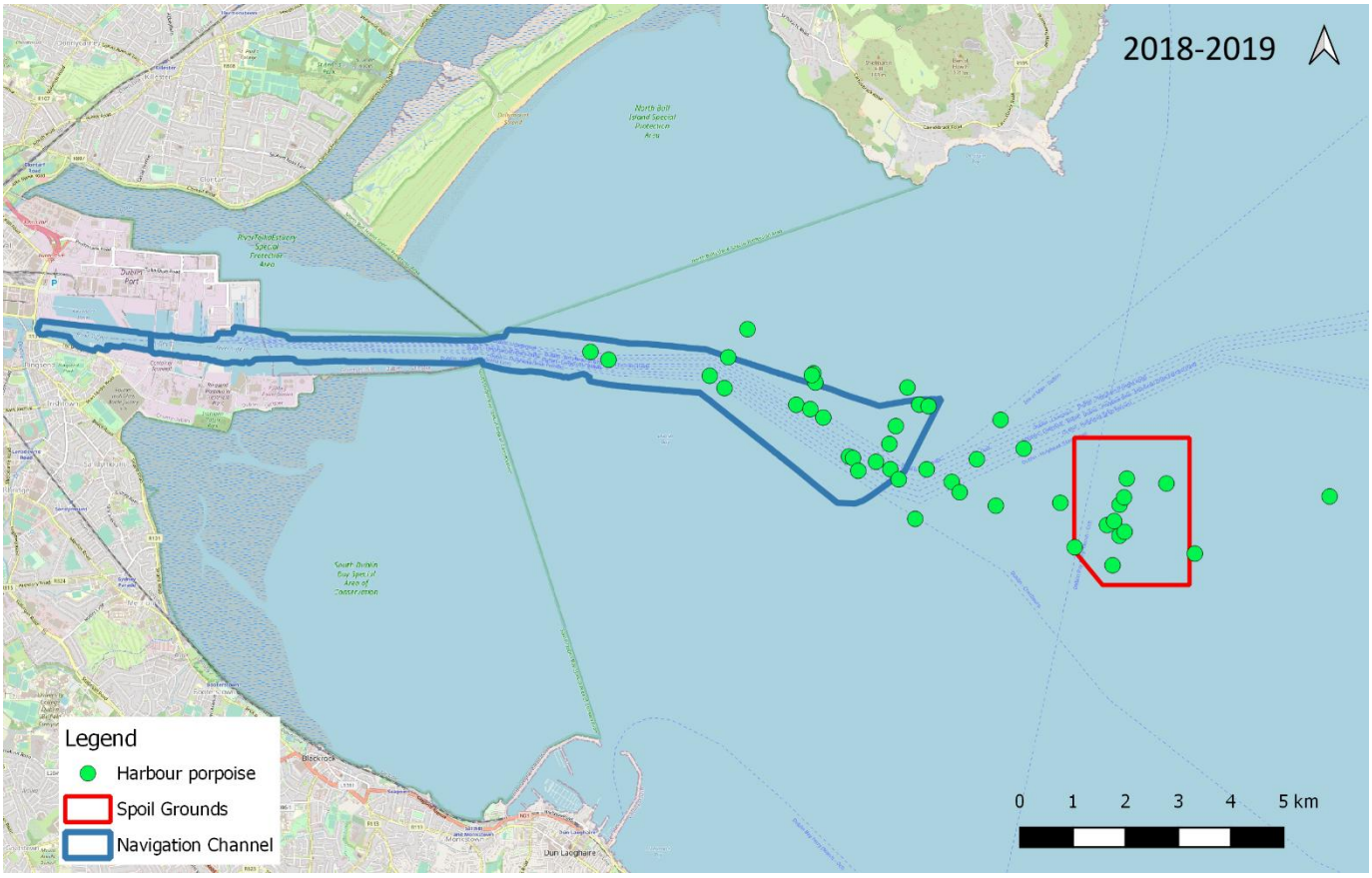



**Figure 7-10: Cetacean sightings during capital dredging operations (2018-2019)**

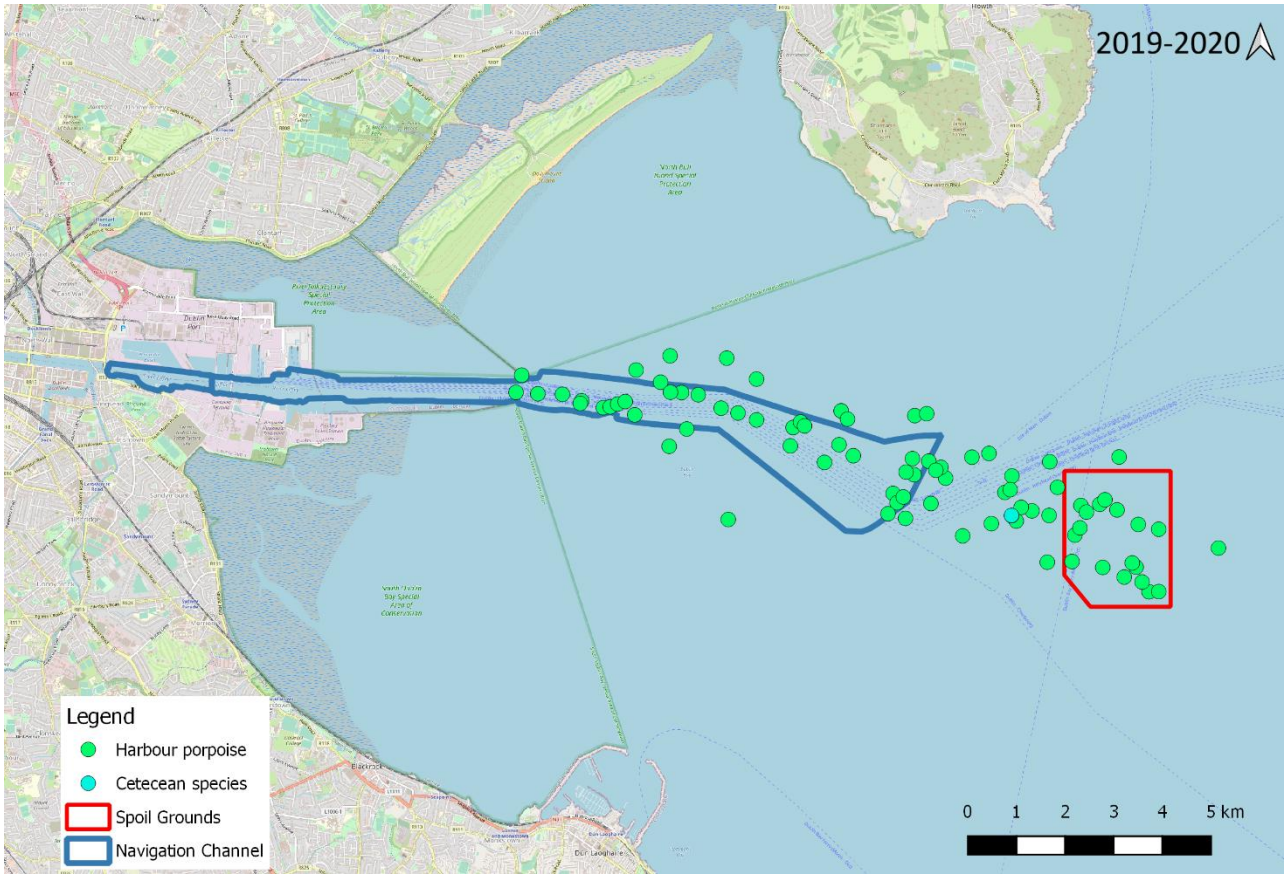



**Figure 7-11: Cetacean sightings during capital dredging operations (2019-2020)**

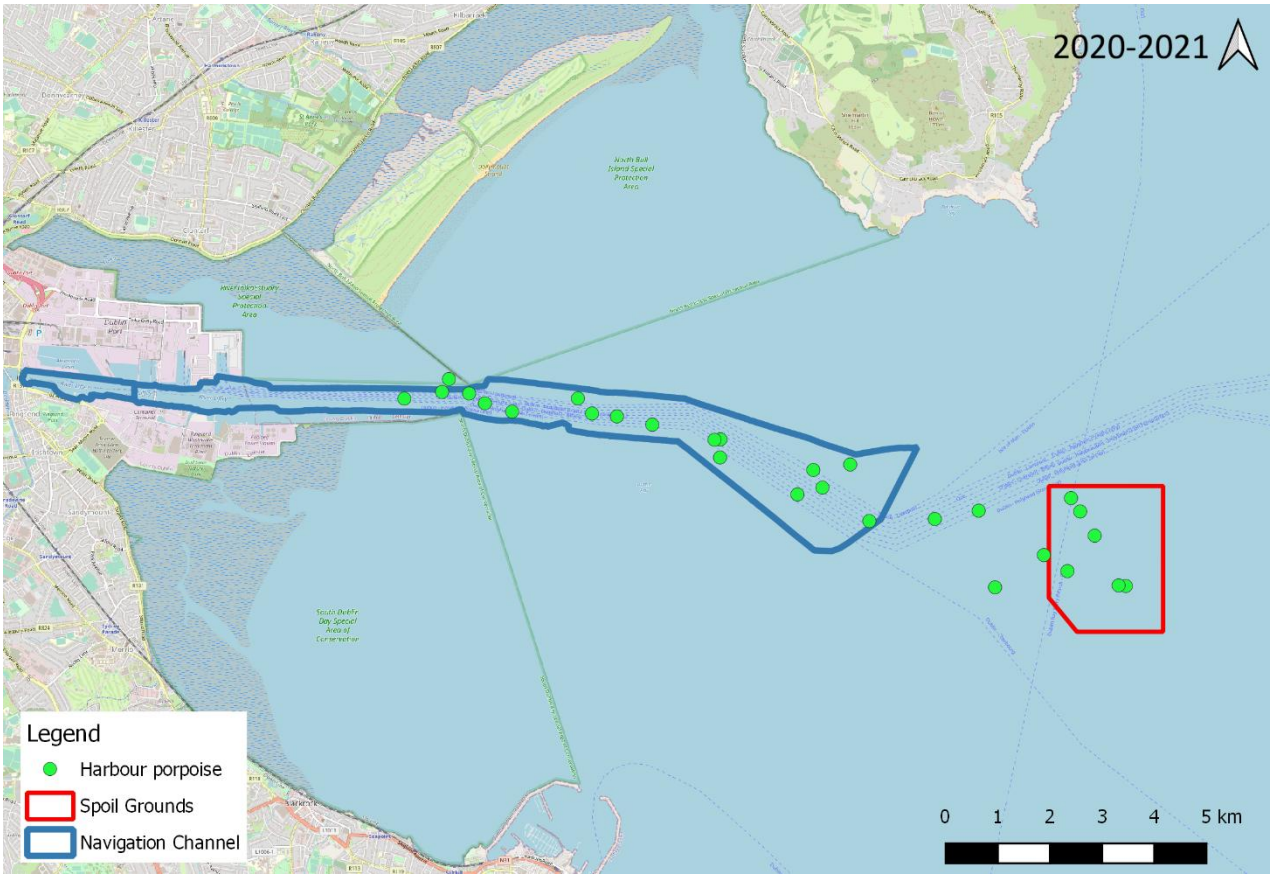



**Figure 7-12: Cetacean sightings during capital dredging operations (2020-2021)**

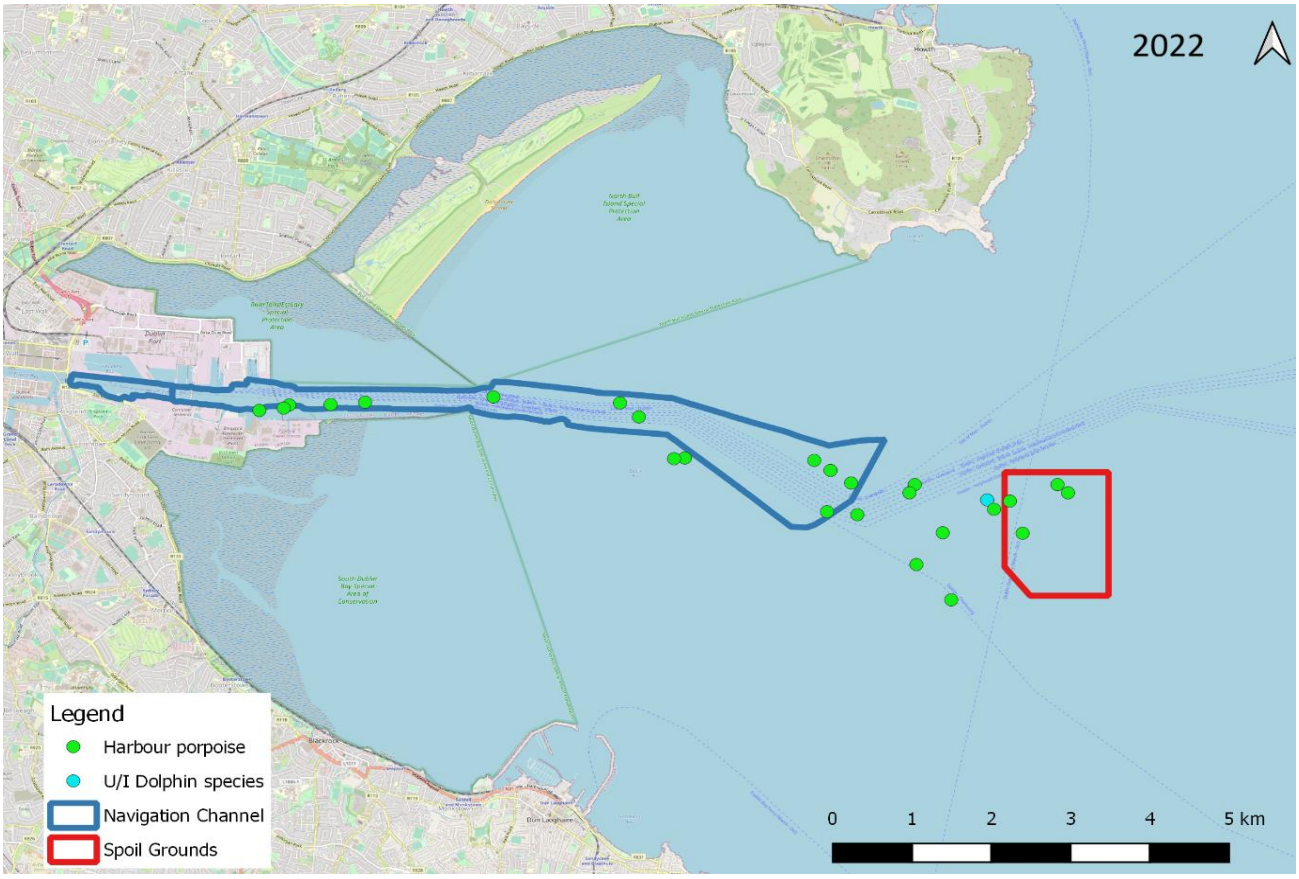



**Figure 7-13: Cetacean sightings during capital dredging operations (2022)**

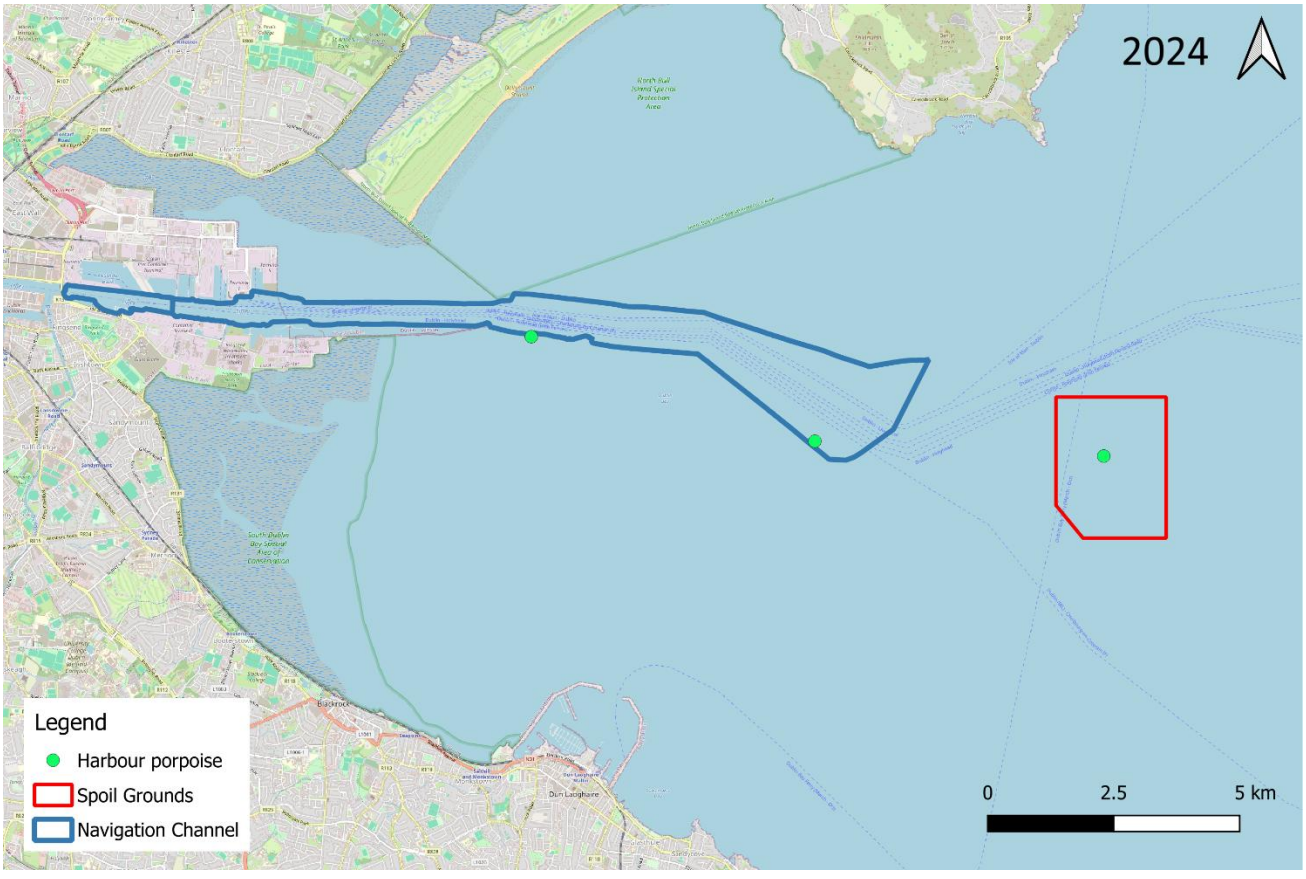



**Figure 7-14: Cetacean sightings during capital dredging operations (2024)**

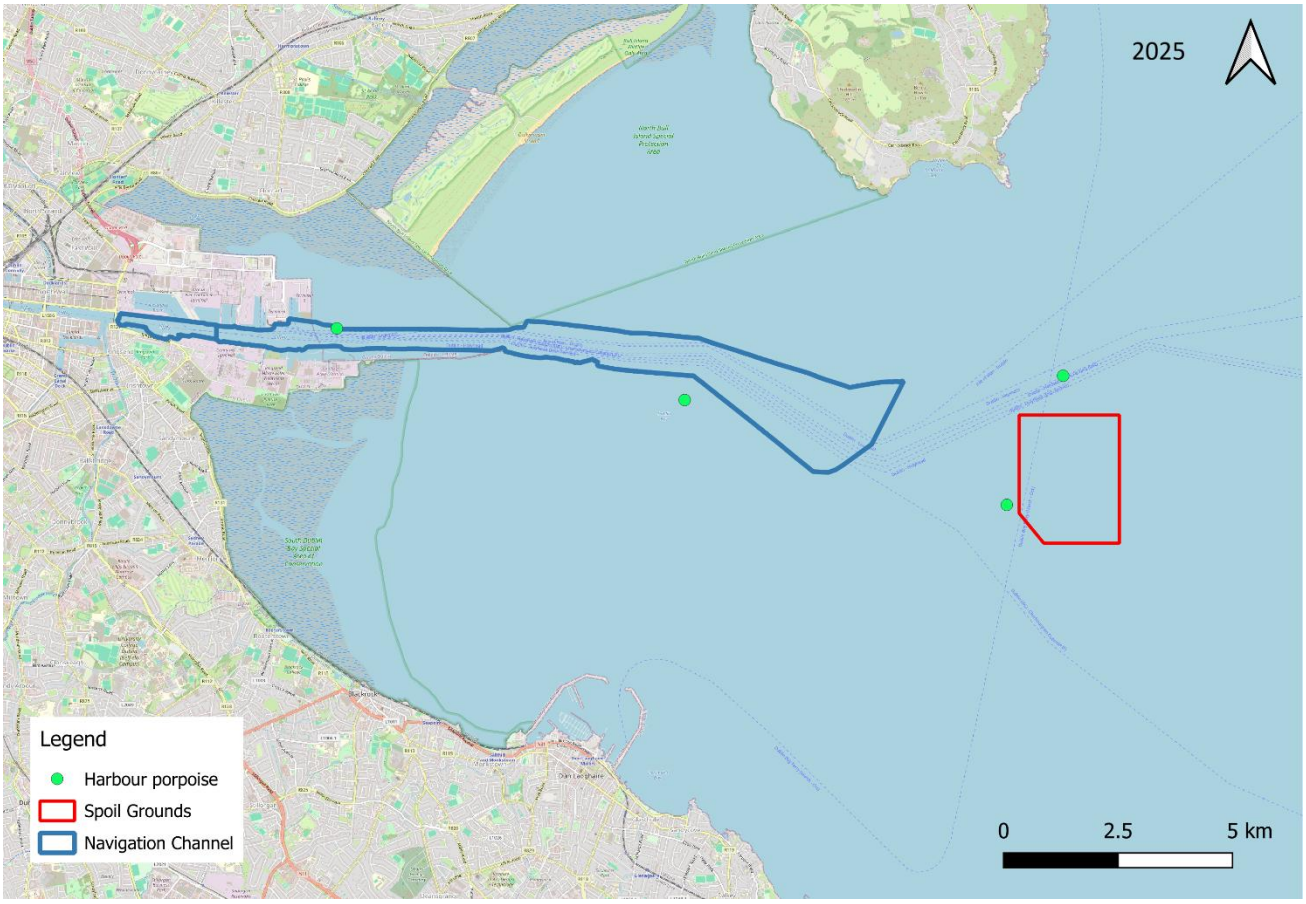



**Figure 7-15: Cetacean sightings during capital dredging operations (2025)**

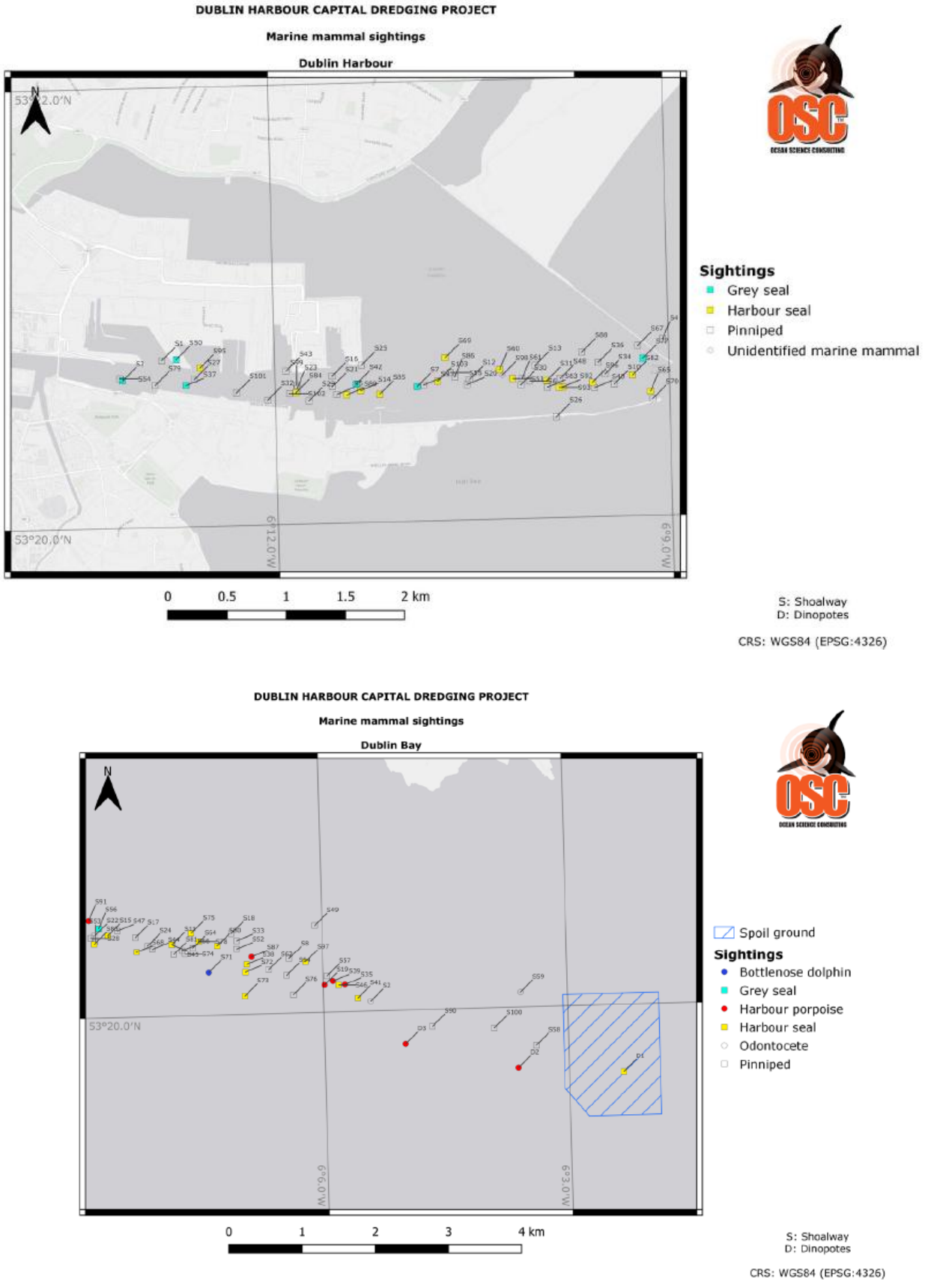



**Figure 7-16: Marine mammal sightings during capital dredging operations 2026 © OSC, 2026**

A summary of cetacean sightings recorded during maintenance dredging campaigns between 2017 and 2025 is presented in the table below. Harbour porpoise represented the most frequently recorded cetacean species throughout the monitoring period. Occasional sightings of bottlenose dolphin, unidentified dolphin species and unidentified whale species were also reported during more recent maintenance dredging campaigns, although these remained infrequent.

Similar to capital dredging monitoring programmes, the majority of harbour porpoise sightings were recorded outside Dublin Harbour, with comparatively fewer sightings within the inner port environment and inside the breakwater walls. This pattern is considered consistent with the wider distribution of cetaceans within Dublin Bay, where animals are more frequently recorded in coastal and offshore waters east of the port area.

While occasional harbour porpoise sightings were recorded within the harbour walls during maintenance dredging operations, cetacean activity within the inner port environment remained comparatively low relative to the wider Dublin Bay area. The available monitoring data suggests that the inner harbour is not regularly utilised by cetaceans and that any use of the area is generally intermittent in nature.

**Table 7-24: Summary of cetacean sightings recorded for each maintenance dredging programme (2017-2025)**

| Species | 2017 | 2018 | 2020 | 2021 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|
| Harbour porpoise | 29 | 35 | 37 | 3 | 16 | 61 | 9 |
| Bottlenose dolphin | 0 | 0 | 0 | 0 | 1 | 2 | 0 |
| Dolphin species | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| Whale species | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

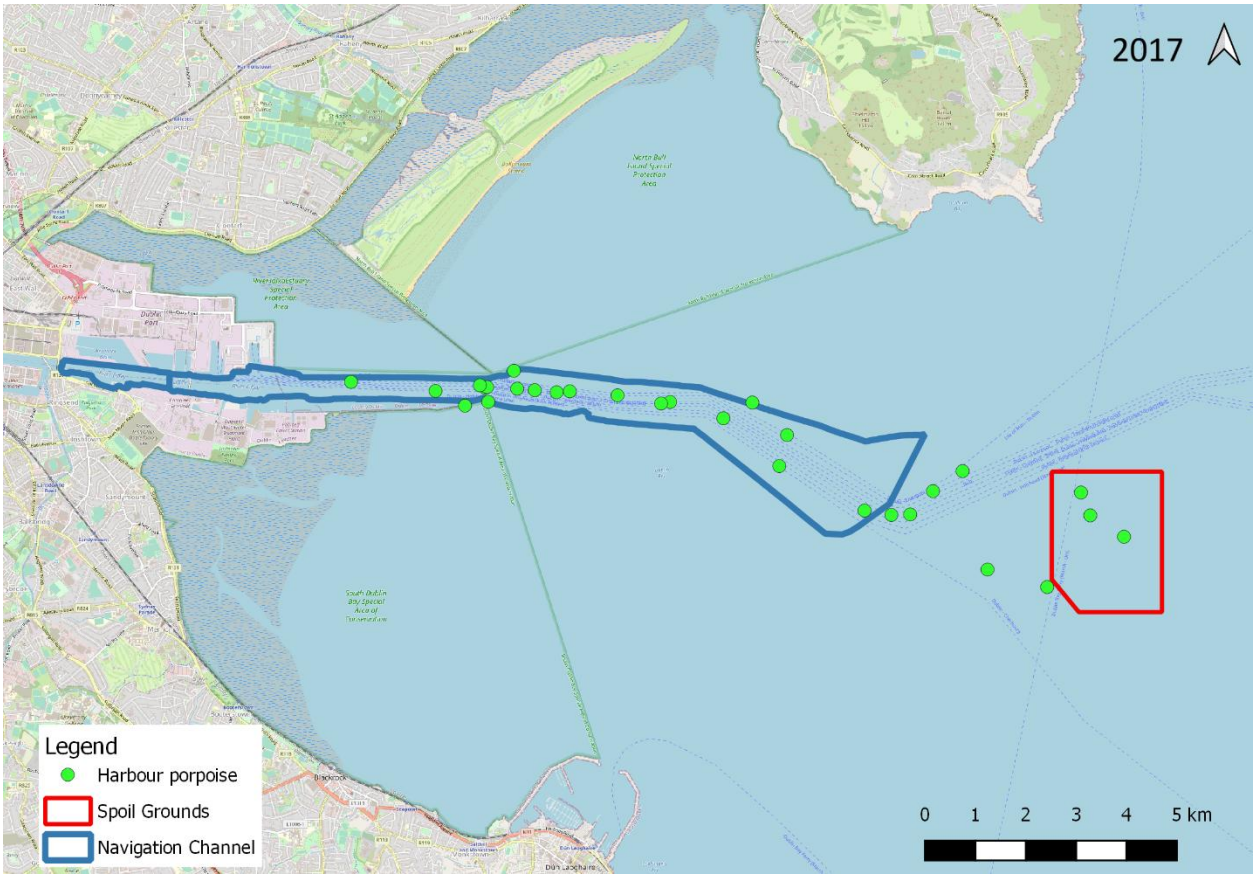



**Figure 7-17: Harbour porpoise sightings during the maintenance dredging programme (2017)**

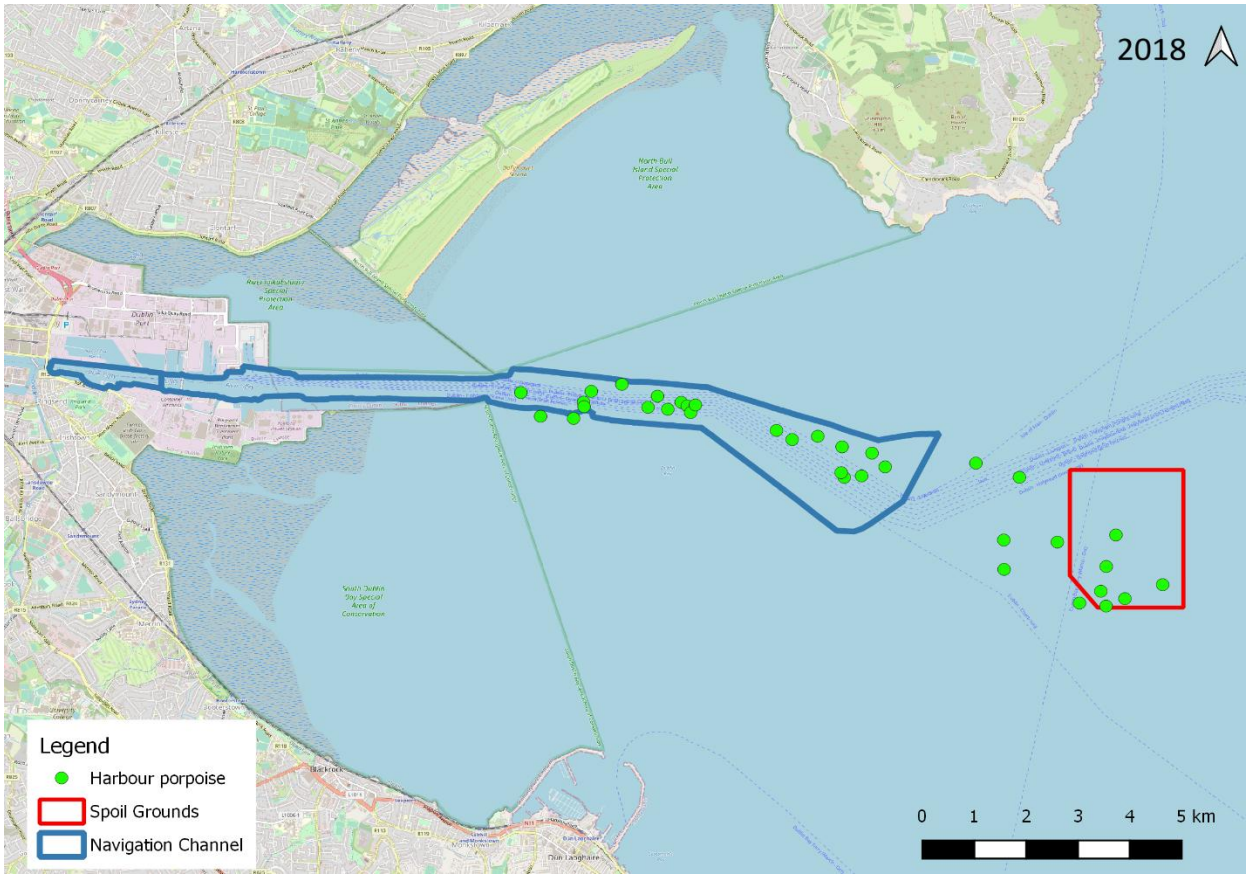



**Figure 7-18: Harbour porpoise sightings during the maintenance dredging programme (2018)**

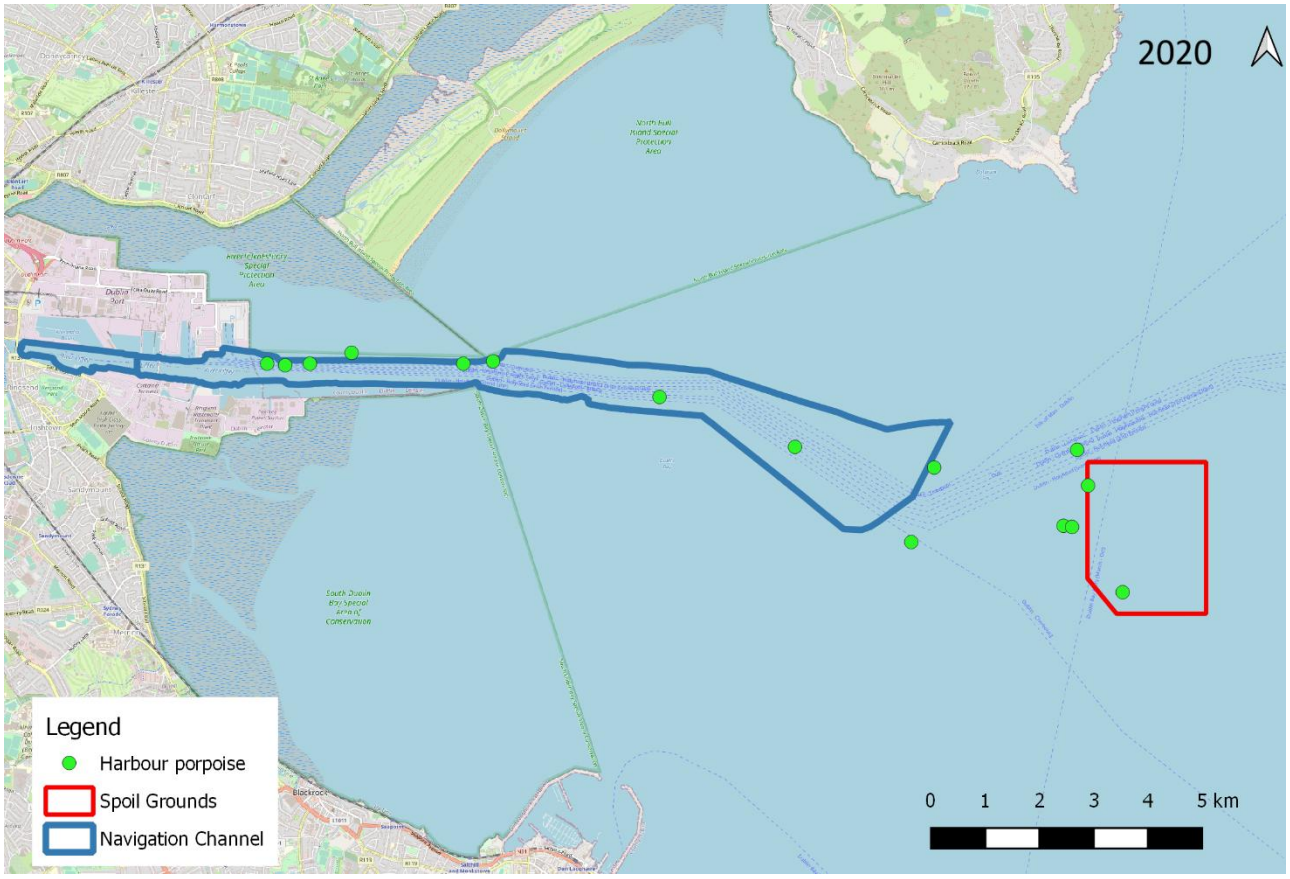



**Figure 7-19: Harbour porpoise sightings during the maintenance dredging programme (2020)**

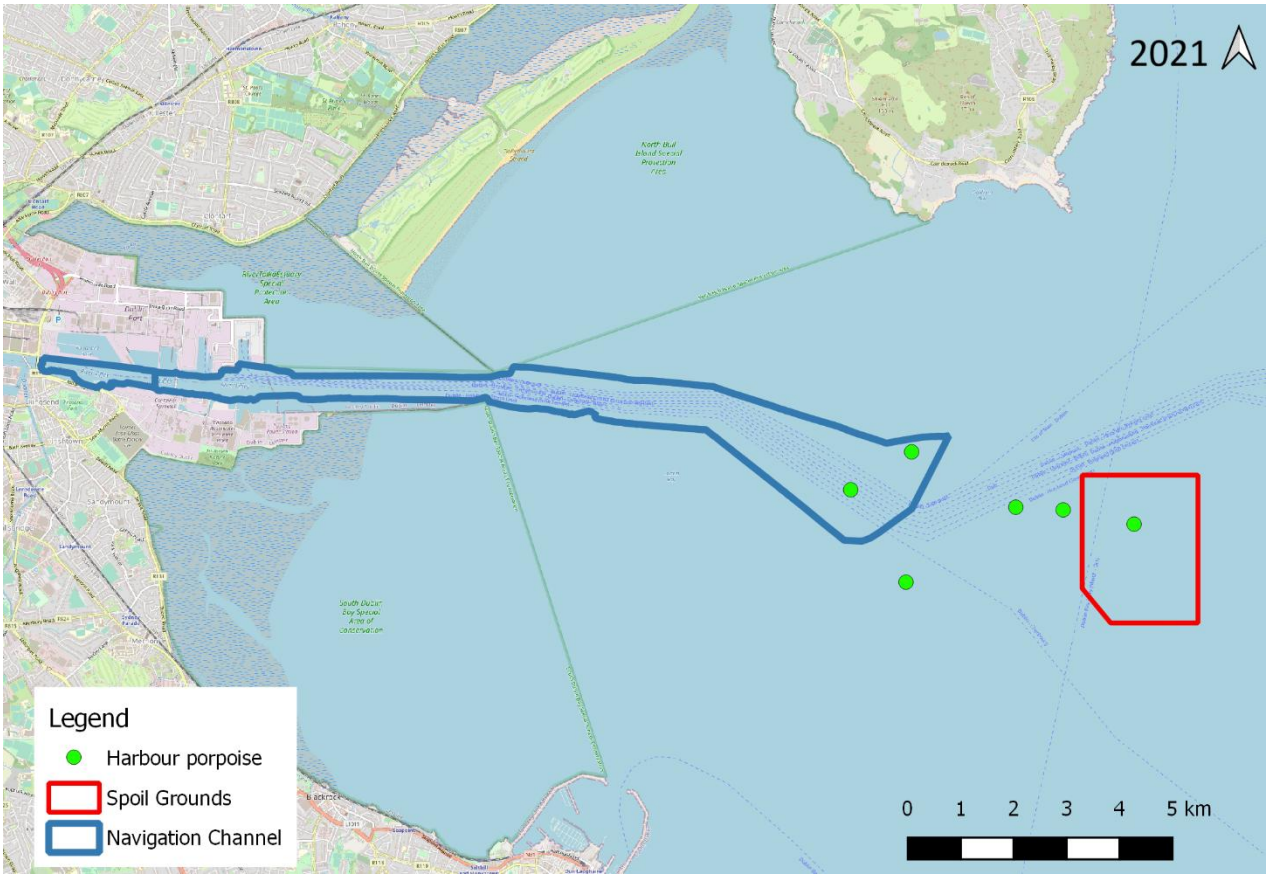



**Figure 7-20: Harbour porpoise sightings during the maintenance dredging programme (2021)**

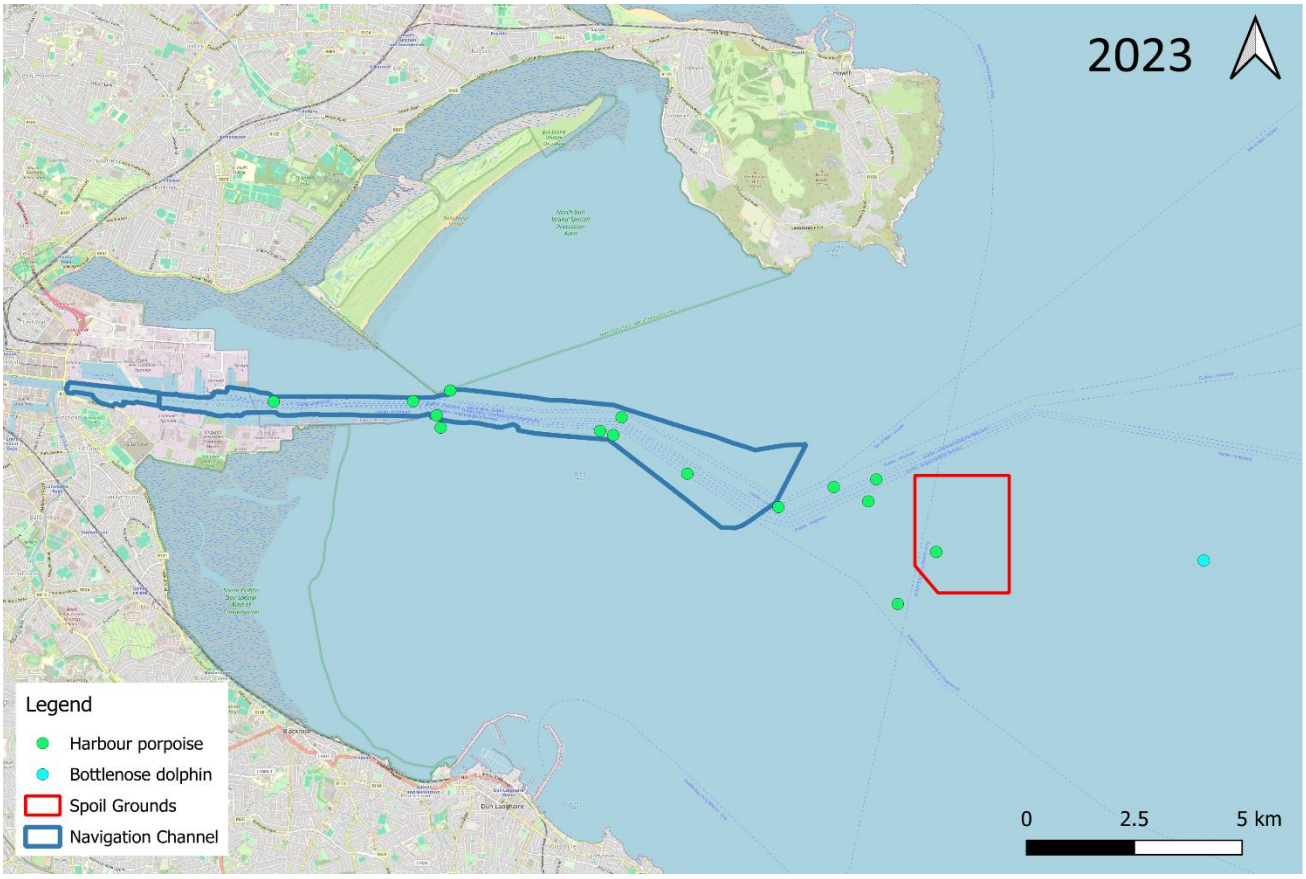



**Figure 7-21: Harbour porpoise sightings during the maintenance dredging programme (2023)**

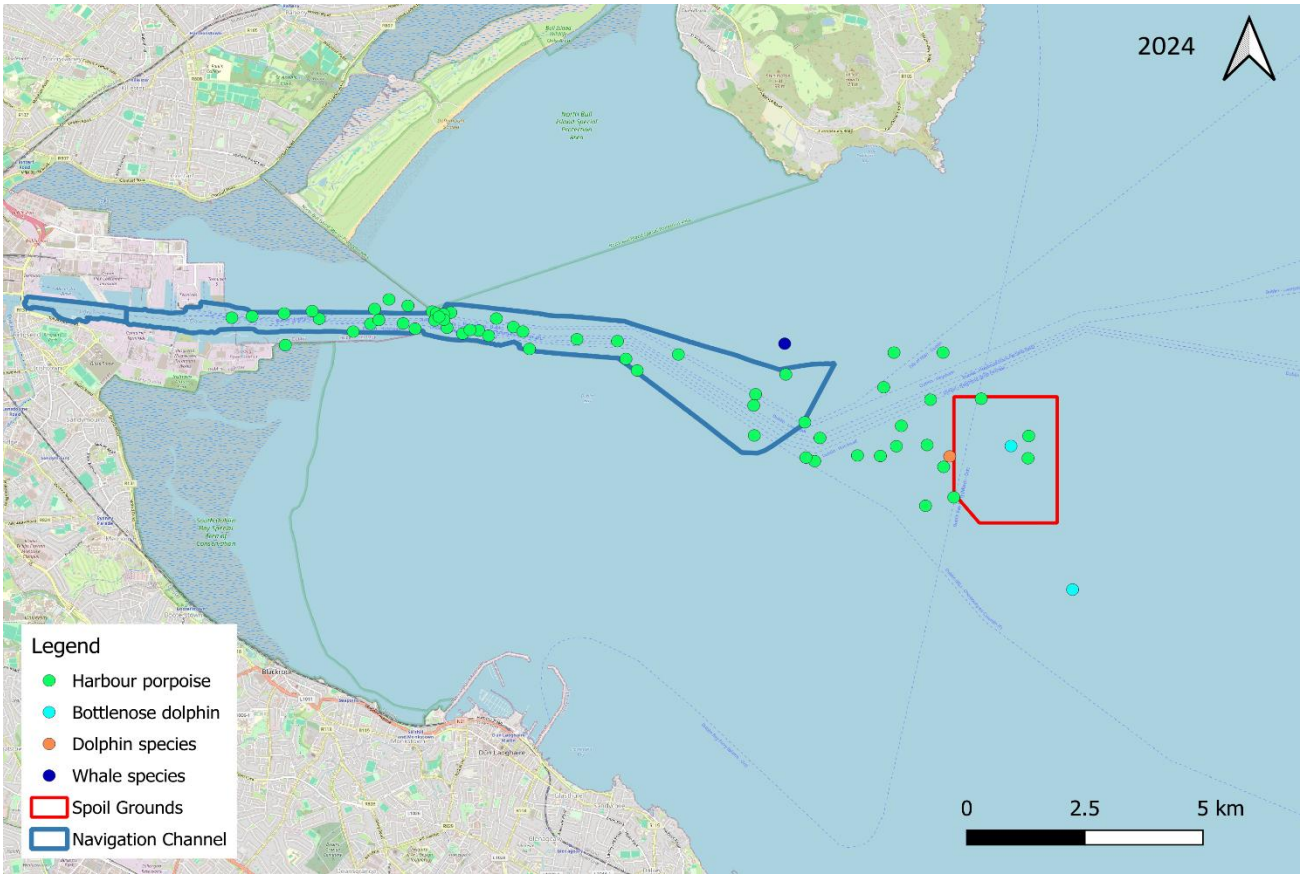



**Figure 7-22: Cetacean sightings during the maintenance dredging programme (2024)**

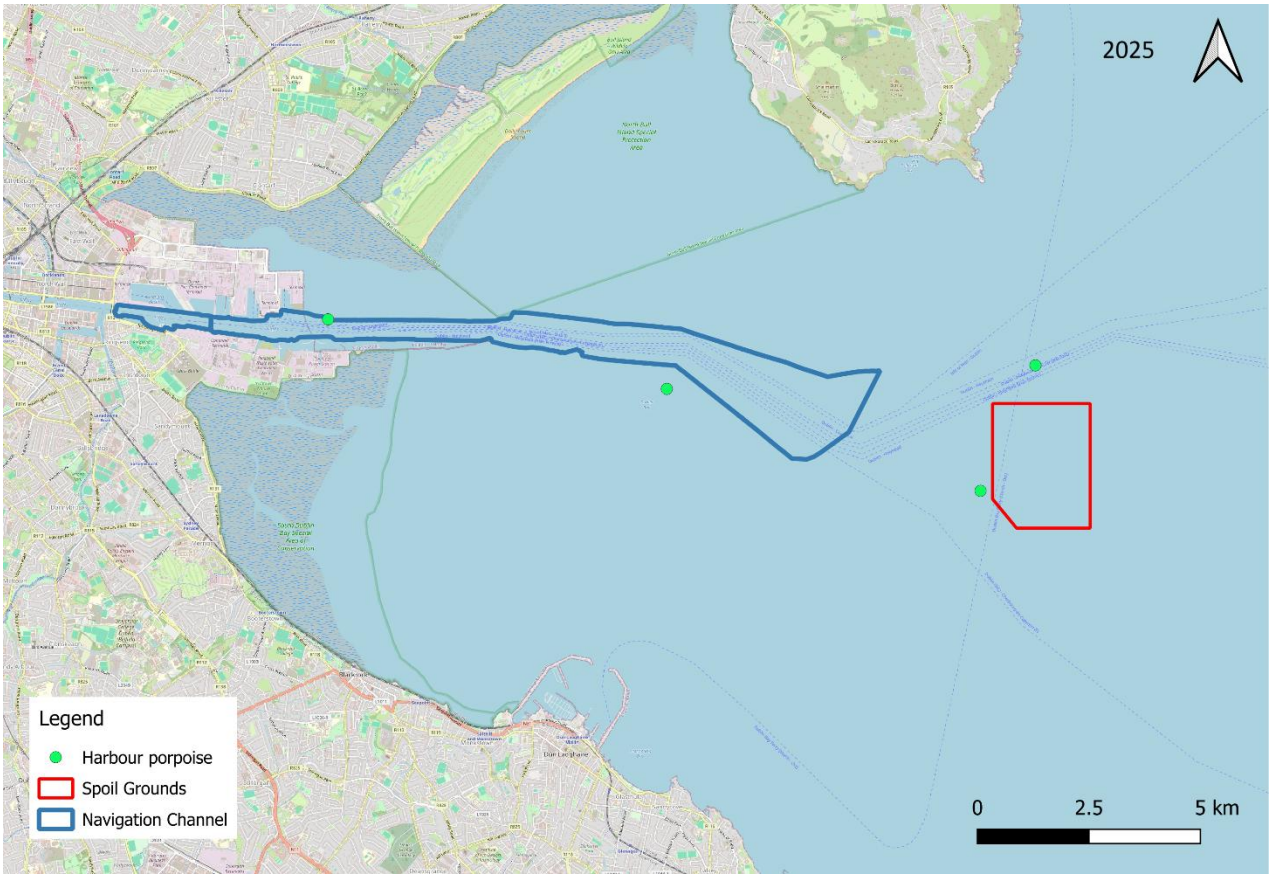



**Figure 7-23: Harbour porpoise sightings during the maintenance dredging programme (2025)**

***Acoustic Monitoring***

*Static Acoustic Monitoring*

Static Acoustic Monitoring (SAM) has been carried out in Dublin Bay as part of the ABR and MP2 Projects since 2017 to provide long-term baseline information on cetacean occurrence and activity within the wider Dublin Port area. Monitoring has been undertaken using a combination of C-PODs, F-PODs (the upgraded version of the C-POD) and SoundTrap acoustic recorders. These are fully automated passive acoustic monitoring systems capable of detecting and classifying echolocation click trains produced by harbour porpoise, dolphins and other toothed whales during navigation, foraging and social behaviour.

The SAM programme forms part of the wider marine mammal monitoring and mitigation programme implemented for Dublin port projects and complements vessel-based MMO surveys undertaken during dredging operations. The long-term acoustic data set provides valuable information on temporal and spatial patterns of cetacean occurrence within Dublin Bay, including areas surrounding the dredge spoil grounds.

Between 2017 and 2021, four monitoring stations were deployed as part of the ABR Project, comprising of three stations located within the Burford Bank spoil ground area (SAM1, SAM2 and SAM3) and one control site located off Scotsman's Bay (SAM4) (**Figure 7-24**). Following completion of the ABR capital dredging works, monitoring continued as part of the MP2 Project with three stations remaining operational from 2022 onwards, including North Burford (SAM1), Middle Burford (SAM2) and the control site off Scotsman's Bay (SAM4) (**Figure 7-25**).

This long-term SAM programme represents one the most extensive continuous passive acoustic monitoring datasets currently available for Dublin Bay and has been used to support ongoing assessment of harbour porpoise occurrence and broader marine mammal baseline characterisation within the study area.

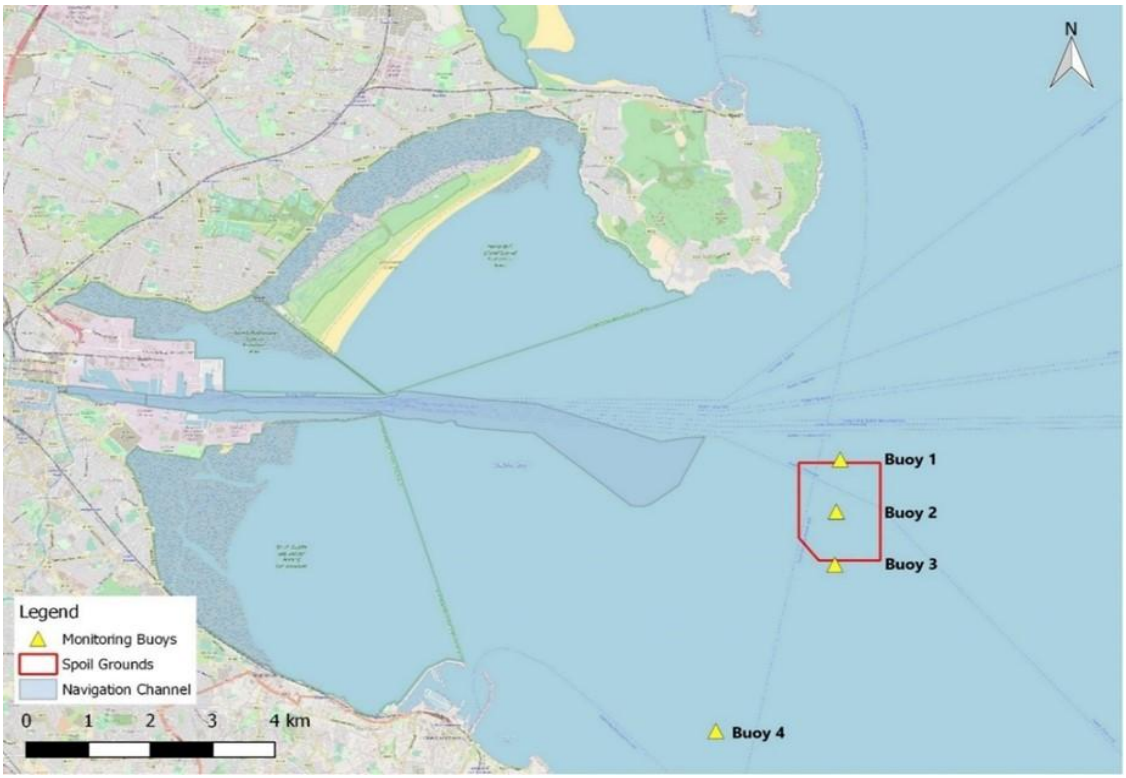



**Figure 7-24: SAM stations on monitoring buoy positions within the spoil grounds and Dublin Bay (Buoy 1: SAM1, Buoy 2: SAM2, Buoy 3: SAM3 and Buoy 4: SAM4) as part of the ABR Project, 2017-2021**

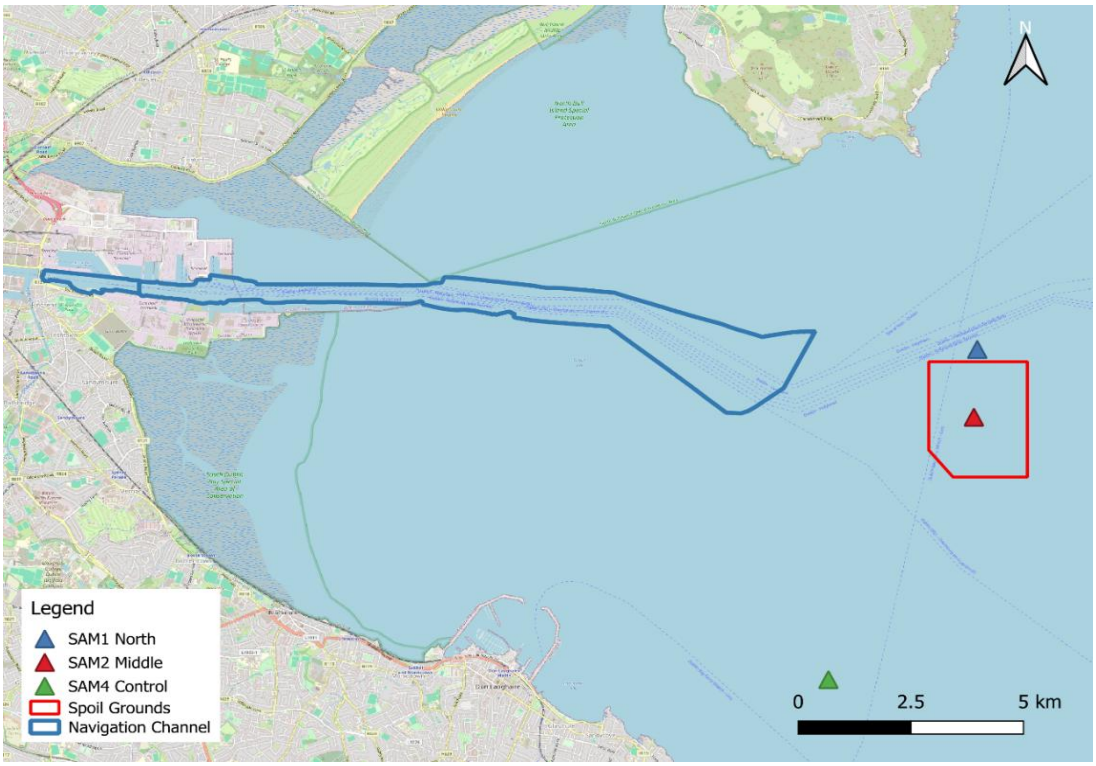



**Figure 7-25:SAM stations currently being monitored as part of the MP2 Project, since 2022**

*Results and Interpretation*

SAM monitoring undertaken as part of the ABR and MP2 Projects has provided a long-term dataset on harbour porpoise occurrence and habitat use within Dublin Bay and the Burford Bank spoil ground between 2017-2026. Acoustic detections have consistently demonstrated that harbour porpoise are present within the wider study area on a high proportion of monitored days, confirming the ecological importance of Dublin Bay for the species.

SAM data are presented as the number of porpoise detections per day at each monitoring station, providing an acoustic index of activity which enables assessment of temporal patterns in habitat use across seasonal, diel and tidal cycles. Previous studies have shown harbour porpoise occurrence and foraging behaviour vary seasonally and in response to tidal state and time of day (Carlstrom, 2005; Todd *et al*., 2009; O'Brien *et al*., 2013). Similar patterns were observed within Dublin Bay monitoring dataset, although some variability between years and monitoring locations was evident. Earlier monitoring periods generally recorded increased detections during winter months, while more recent datasets indicated elevated detections during spring periods. Increased detections during hours of darkness and around slack tides were also evident at some monitoring stations.

The long-term dataset indicates that harbour porpoise activity within the spoil ground area has remained relatively consistent throughout the maintenance, capital and IED dredging campaigns, with no evidence of significant displacement or sustained reduction in acoustic detections during dredging periods. Monitoring results from both C-POD and F-POD devices demonstrated similar overall temporal trends in site usage, although F-PODs consistently recorded higher detection rates due to their increased sensitivity and improved detection capability relative to legacy C-POD devices. As such, care is required when directly comparing absolute detection rates between monitoring technologies.

Analysis of the long-term dataset undertaken as part of a PhD research programme at ATU has provided additional insight into harbour porpoise behavioural responses to dredging activity within Dublin Bay. Cummins (2019) identified significant increases in harbour porpoise acoustic activity during dredging operations between 2017 and 2019, particularly within the spoil ground areas. Building on this work, Kootstra *et al*. (2025) investigated harbour porpoise foraging behaviour over a five-year period (2017-2021) using acoustic monitoring at both impact and control sites. This study found that foraging activity, measured using buzz:click ratios, increased during three of the four dredging seasons, with short-term increases occurring following dredging material disposal events. These findings suggest that dredging activity may have temporarily enhanced prey availability through sediment disturbance and associated ecological processes within the organically enriched benthic environment of Dublin Port and the Burford Bank spoil grounds. A reduction in foraging activity during the final monitoring season was linked to a change in dredged sediment type, with finer silts from the River Liffey considered less favourable in supporting similar ecological responses. Overall, the available research found no evidence of negative effects on harbour porpoise foraging behaviour or long-term habitat use within the monitoring in understanding behavioural responses to anthropogenic activities and supporting adaptive environmental management within Dublin Bay.

While SAM does not provide robust information on cetacean abundance or population size, it provides valuable information on habitat use and temporal trends, which cannot be determined through visual monitoring alone.

The monitoring results indicate that the waters east of Dublin Port, including the Burford Bank spoil ground area, represent an important foraging and transit area for harbour porpoise within Dublin Bay. Continued long-term acoustic monitoring therefore provides important evidence based for the assessment of future dredging and marine infrastructure projects within the wider Dublin Bay area.

**Figure 7-26** and **Figure 7-27** present the long-term harbour porpoise acoustic detections recorded at the SAM stations between 2017 and 2025. While temporal variation in detections is evident between the years and monitoring stations, harbour porpoise were consistently recorded throughout the monitoring period, including during maintenance, capital and IED dredging operations. No clear long-term decline in detections or evidence of sustained displacement from the monitored areas during dredging periods was identified. Variability in detection rates likely reflects a combination of seasonal patterns, environmental conditions, prey availability and differences in monitoring technology between C-POD and F-POD devices.

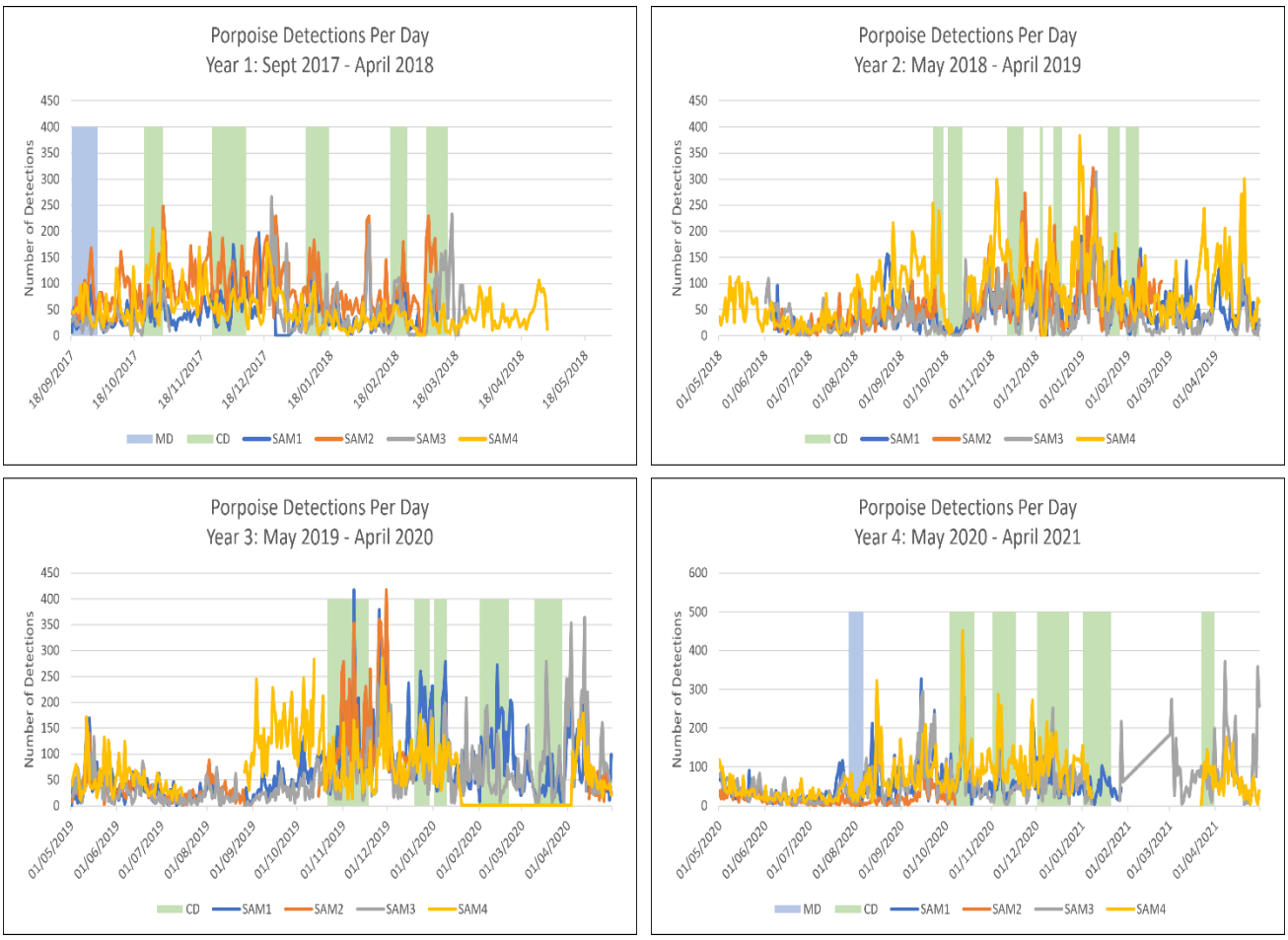



**Figure 7-26: Harbour porpoise detections per day recorded at SAM stations, since 2017. Data for Years 1 to 4 was collected as part of the ABR Project. *MD: Maintenance dredging, CD: Capital dredging periods.**

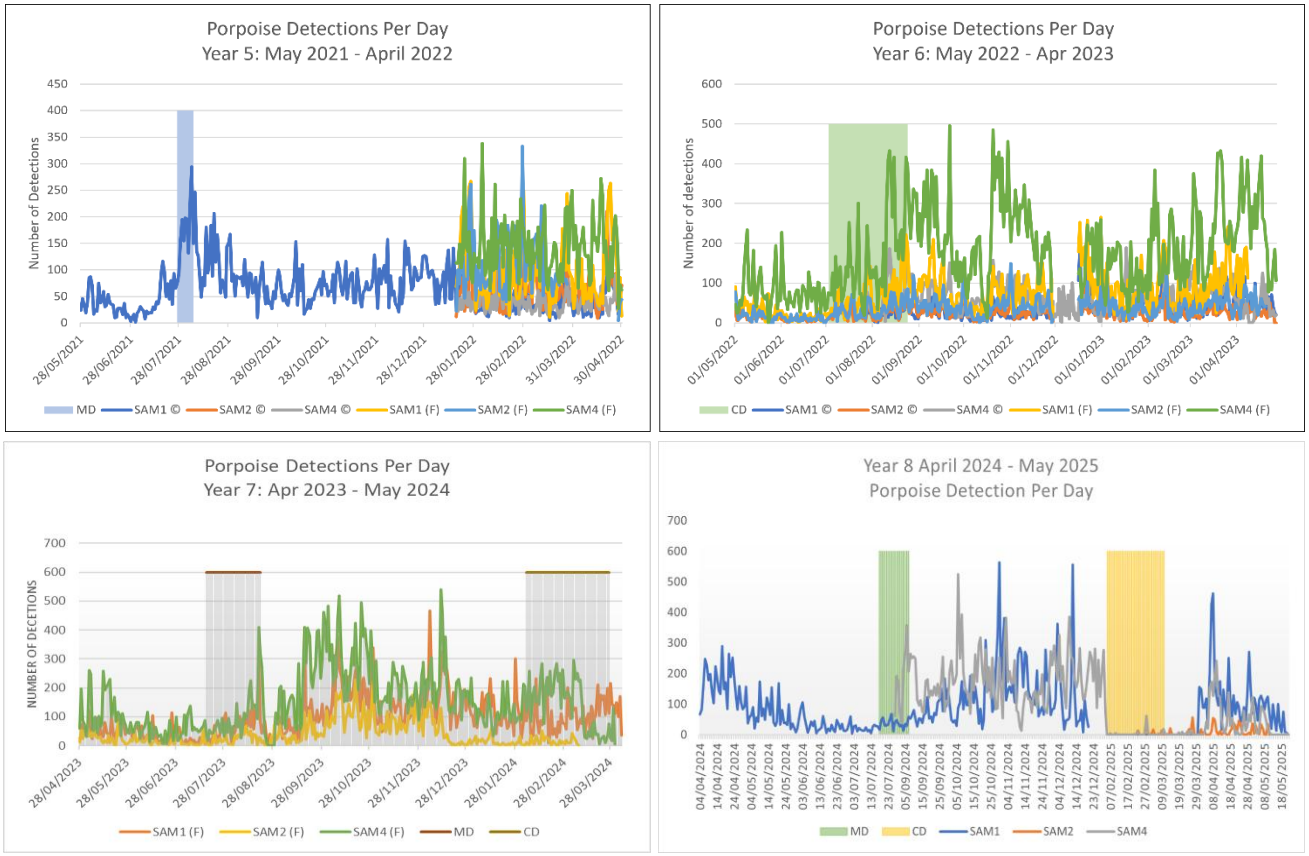



**Figure 7-27: Harbour porpoise detections per day recorded at SAM stations. Year 5 was collected as part of the ABR Project. Year 6 data onwards is from MP2 Project monitoring. Year 9 monitoring is currently ongoing, and data were not available at the time of assessment. *MD: Maintenance dredging, CD: Capital dredging periods.**

Since July 2022, an additional Passive Acoustic Monitoring (PAM) system known as LIDO has been deployed at the North Bank Lighthouse within the Dublin Port navigational channel (**Figure 7-28**). The system consisted of a fixed hydrophone installation connected to a real-time acoustic processing platform capable of detecting and classifying cetacean vocalisations and recording underwater noise data within the port environment.

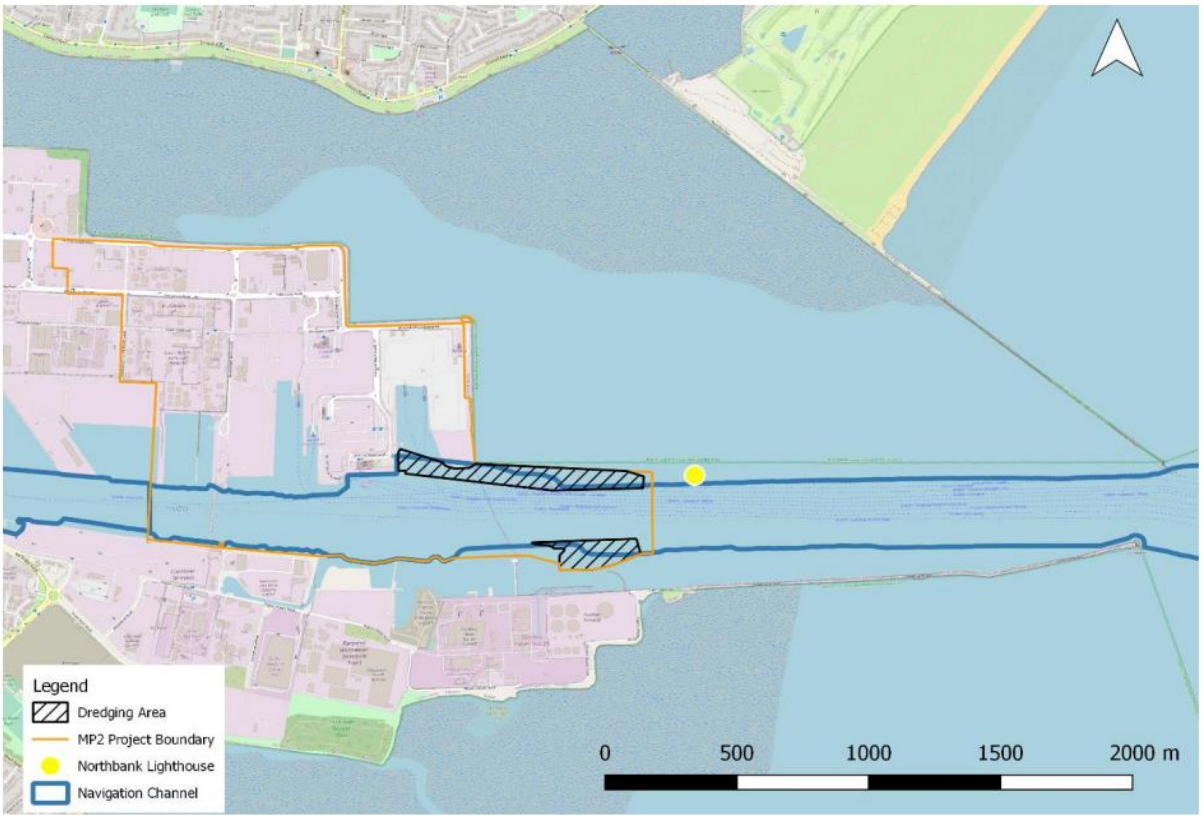



**Figure 7-28: Yellow dot shows the LIDO system installed at the North Bank Lighthouse in Dublin Harbour (Note: shown with MP2 Project information)**

The LIDO system formed part of the wider Dublin Port marine mammal monitoring programme and provided supplementary acoustic baseline information within the navigation channel and port entrance area. The system could detect harbour porpoise and dolphin vocalisations within the vicinity of the monitoring location and also supported broader underwater noise monitoring in line with Marine Strategy Framework Directive (MSFD) underwater noise objectives.

The LIDO system remained operational until May 2026, after which it was replaced with a C-POD and SoundTrap deployment at the North Bank Lighthouse location to support continued long-term acoustic monitoring within the port entrance area.

While long-term SAM monitoring using C-PODs, F-PODs and SoundTrap devices has remained the primary source of cetacean acoustic monitoring data for the ABR and MP2 Projects, the LIDO deployment provided an additional real-time acoustic monitoring capability within the inner harbour environment.

**Seals**

*Seals using Bull Island as a haul-out site*

North Bull Island represents the closest known haul-out site to Dublin Port and forms part of the wider Dublin Bay UNESCO Biosphere Reserve. The site supports regular usage by both harbour and grey seals and is considered an important haul-out location within Dublin Bay. Due to its proximity to the Port and ongoing marine

infrastructure works, long-term seal monitoring has been undertaken as part of the Dublin Port marine mammal monitoring programme.

Monthly seal surveys have been conducted at North Bull Island since 2016 to establish baseline information on seal haul-out usage before, during and after the works associated with the ABR and MP2 Projects. Surveys were undertaken around low water from a fixed vantage point at Sutton Strand with species, abundance, age class and behaviour recorded during each survey.

In 2023, a wider Dublin Bay seal survey to update regional population estimates for harbour and grey seals (Berrow *et al*., 2024). This study confirmed that North Bull Island is one of the most important harbour seal haul-out location after Rush Head. The study also confirmed regular grey seal usage of the site, with approximately 25-30 grey seals recorded during the summer months. Harbour seal counts at North Bull Island represented between approximately 22% and 43% of the local Dublin Bay harbour seal population.

The long-term monitoring data indicate that North Bull Island functions primarily as a resting haul-out site rather than a breeding or moulting site for either species. **Figure 7-29** illustrates clear seasonal patterns in seal haul-out usage, with reduced numbers recorded during known breeding and moulting periods, likely reflecting movement of animals to established breeding and moulting colonies elsewhere within the region, including Lambay Island and other offshore sites.

The haul-out site is located approximately 6km from the main Dublin Port dredging and construction areas. Existing monitoring has not identified evidence of displacement or long-term disturbance associated with the works from the ABR and/or MP2 Projects. Seals using North Bull Island are also regularly exposed to existing vessel traffic, recreational activity and other anthropogenic disturbance source within this highly modified urban estuarine environment. The available monitoring data therefore indicates continued regular use of the haul-out site throughout the ABR and MP2 Projects monitoring periods.

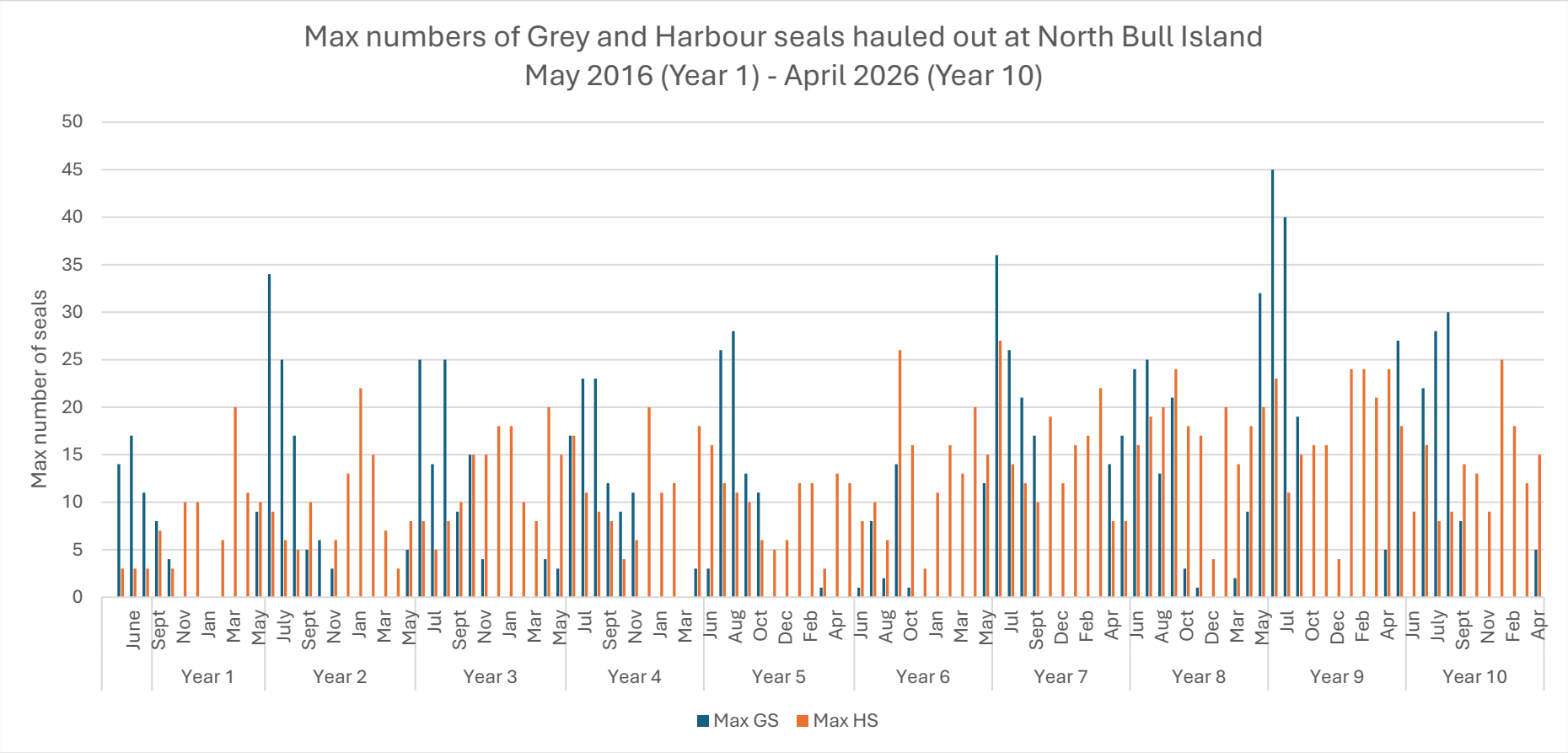



**Figure 7-29: Maximum number of grey seals (GS) and harbour seals (HS) recorded hauled out at North Bull Island between May 2016 and April 2026. Monitoring years run from May to April, with Year 1 commencing in May 2016.**



**Figure 7-30:Top: Grey and harbour seals hauled out at The Point at the northern end of Bull Island, Bottom: Grey and harbour seals resting on the sandbank, which is visible at low tide, opposite Sutton Dinghy Club (Images: C Russell/IWDG)**

*Seals in Dublin Port and Dublin Bay*

Both grey and harbour seals were observed regularly and year-round within Dublin Port and the wider Dublin Bay area. A summary of seal sightings recorded during the capital dredging campaigns between 2017 and 2026 is presented in the table below. The long-term monitoring dataset demonstrates that seals are regular and established users of Dublin Port and Dublin Bay despite the highly modified nature of the port environment and ongoing vessel activity. The continued occurrence of both harbour and grey seals throughout the dredging

campaigns indicates that seals remain habituated to existing background levels of anthropogenic activity within the Port area.

Interannual variation in the number of seal sightings should be interpreted with caution, as these data were collected during dedicated MMO watches associated with dredging operations rather than through a standardised sea survey programme. Differences between years may therefore reflect variation in monitoring effort, dredging activity and location, environmental conditions and detectability, as well as natural variation in seal occurrence within Dublin Port and Dublin Bay.

**Table 7-25: Summary of seal sightings recorded for each capital dredging programme (2017-2026)**

| Species | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2022 | 2024 | 2025 | 2026 |
|---|---|---|---|---|---|---|---|---|
| Grey seal | 209 | 80 | 202 | 29 | 49 | 11 | 29 | 29 |
| Harbour seal | 12 | 0 | 0 | 76 | 118 | 34 | 8 | 7 |
| Seal species | 0 | 11 | 26 | 5 | 20 | 2 | 0 | 60 |

Grey seals represented the most frequently recorded seal species during the earlier monitoring years, particularly between 2017 and 2020. In more recent years, increased numbers of harbour seal sightings were recorded, reflecting the regular use of Dublin Bay and Port area by both species. Seal sightings were recorded throughout the year and across the wider Dublin Port area. Several sightings were recorded as unidentified seal species where species-level identification was not possible due to distance, sea-state or observation conditions. The spatial distribution of seal sightings recorded during the capital dredging campaigns is presented in **Figure 7-31- Figure 7-38.**

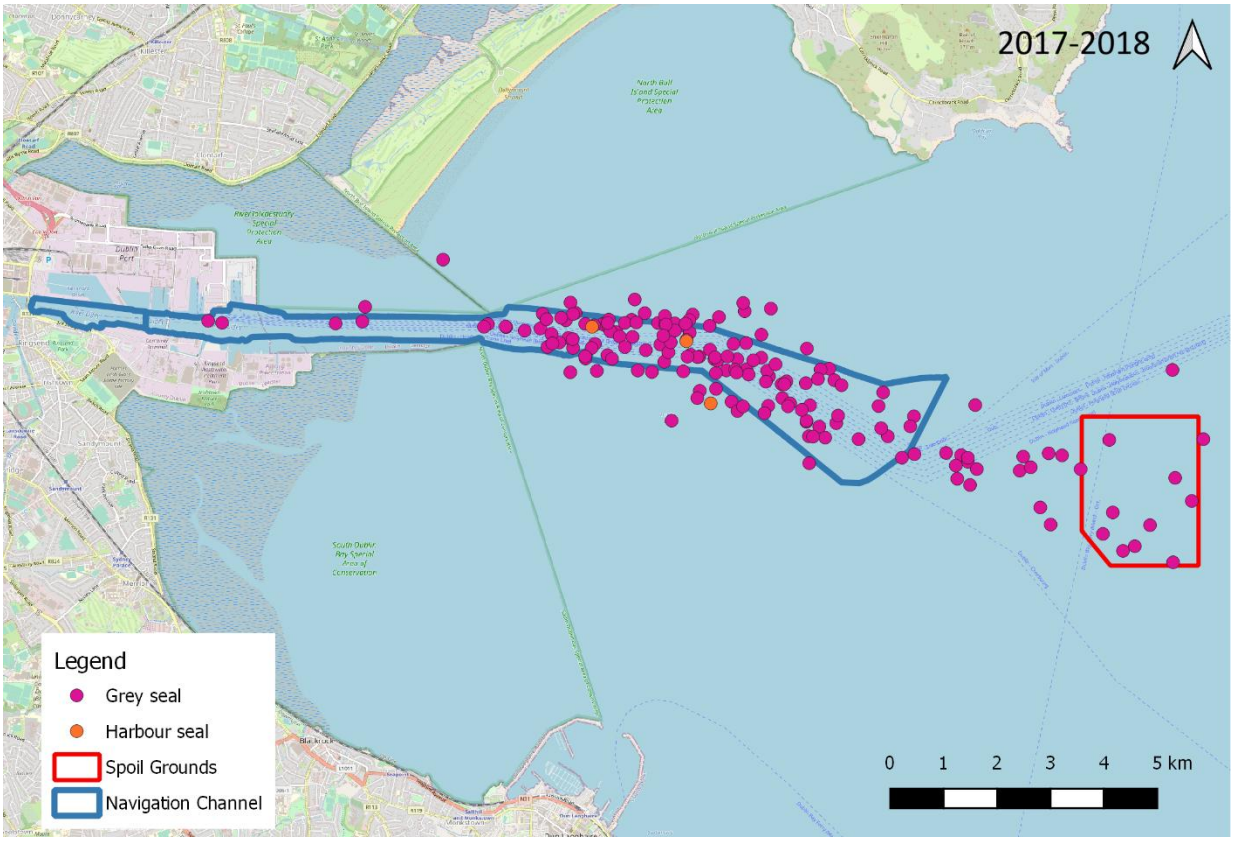



**Figure 7-31: Seal sightings during the ABR capital dredging programme (2017-2018)**

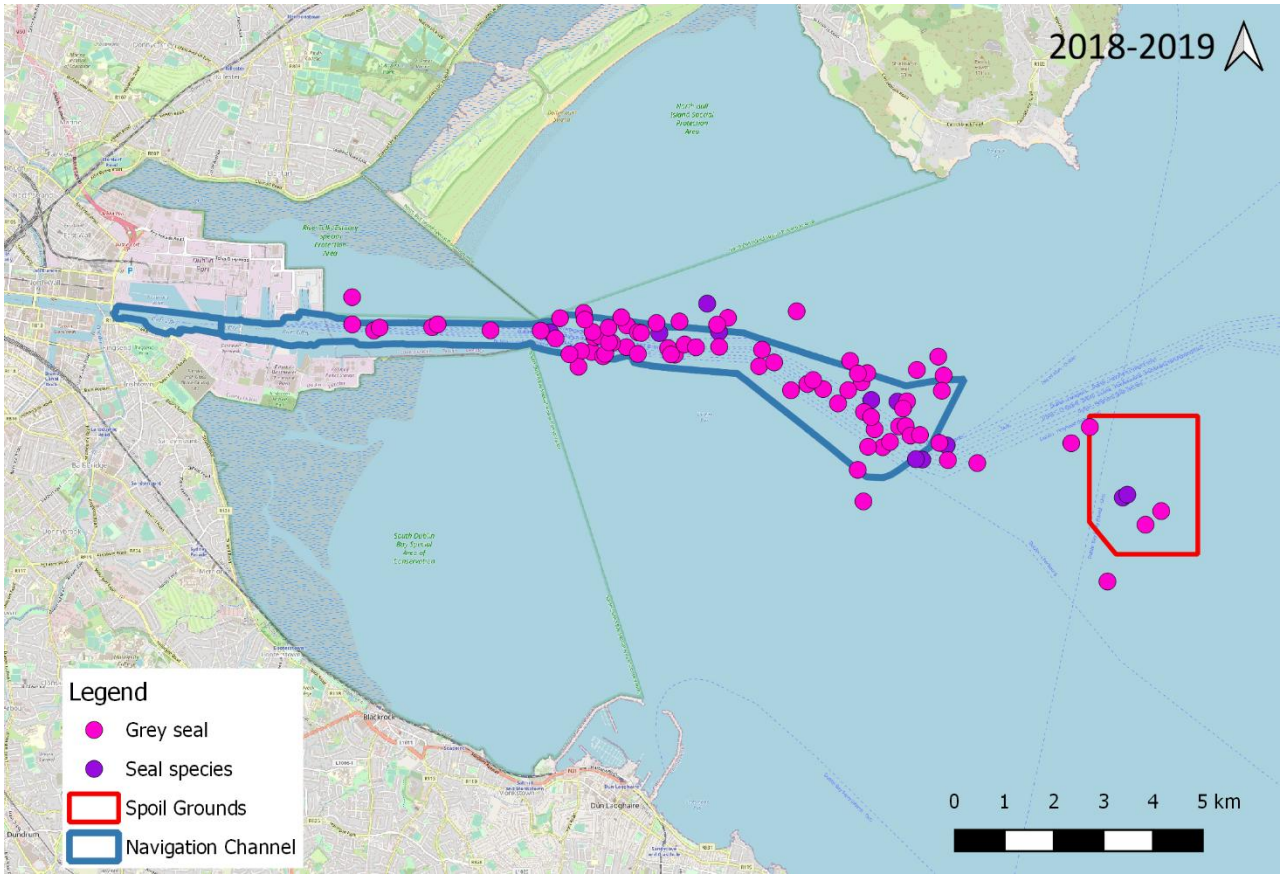



**Figure 7-32: Seal sightings during the ABR capital dredging programme (2018-2019)**

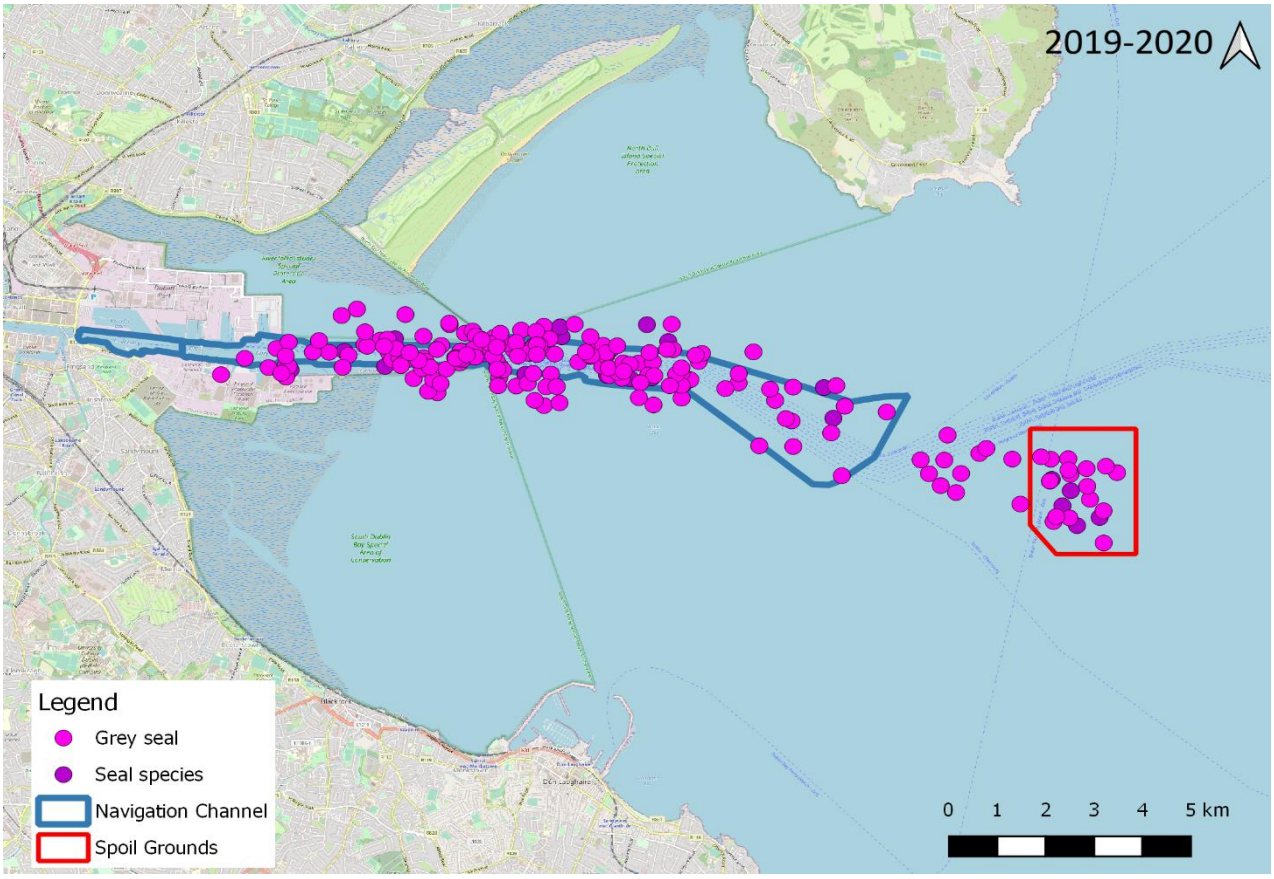



**Figure 7-33: Seal sightings during the ABR capital dredging programme (2019-2020)**

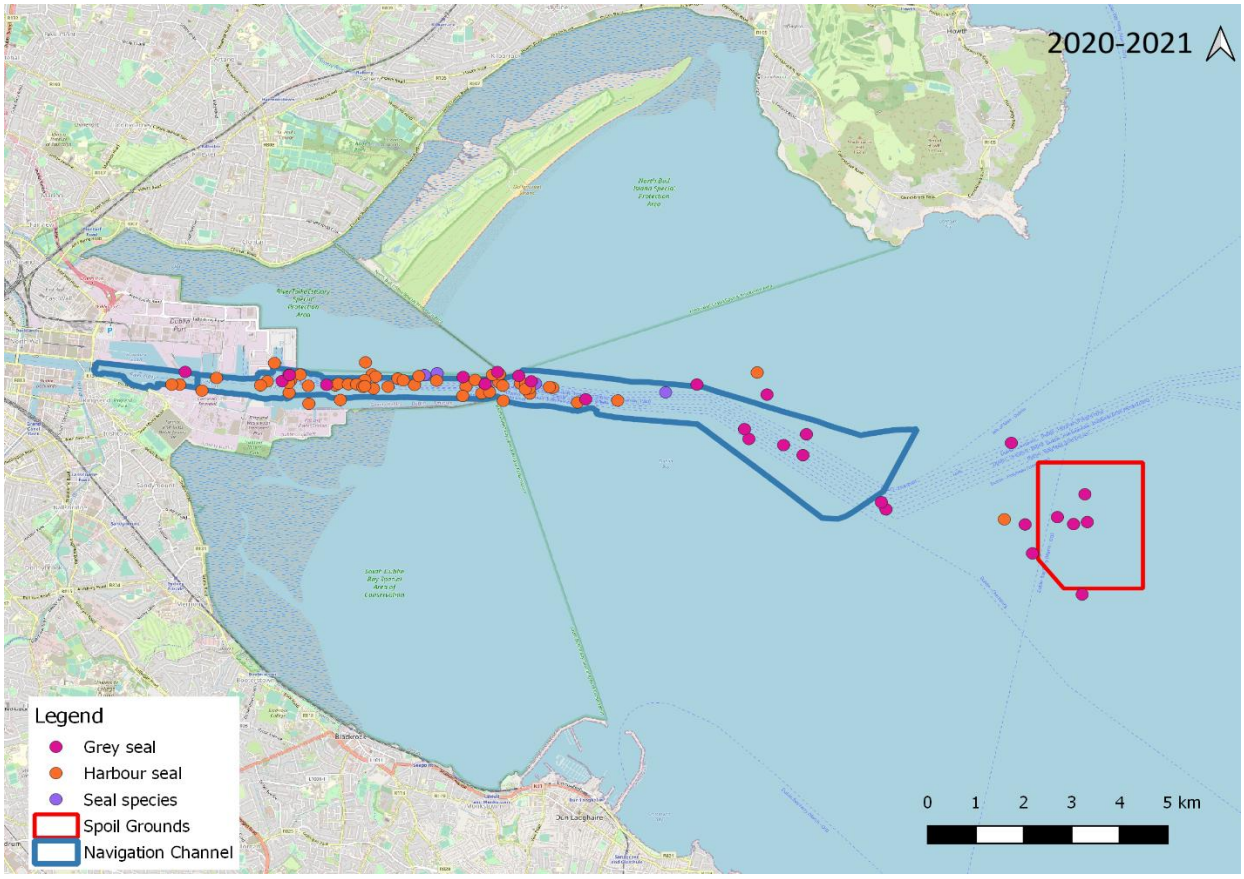



**Figure 7-34: Seal sightings during the ABR capital dredging programme (2020-2021)**

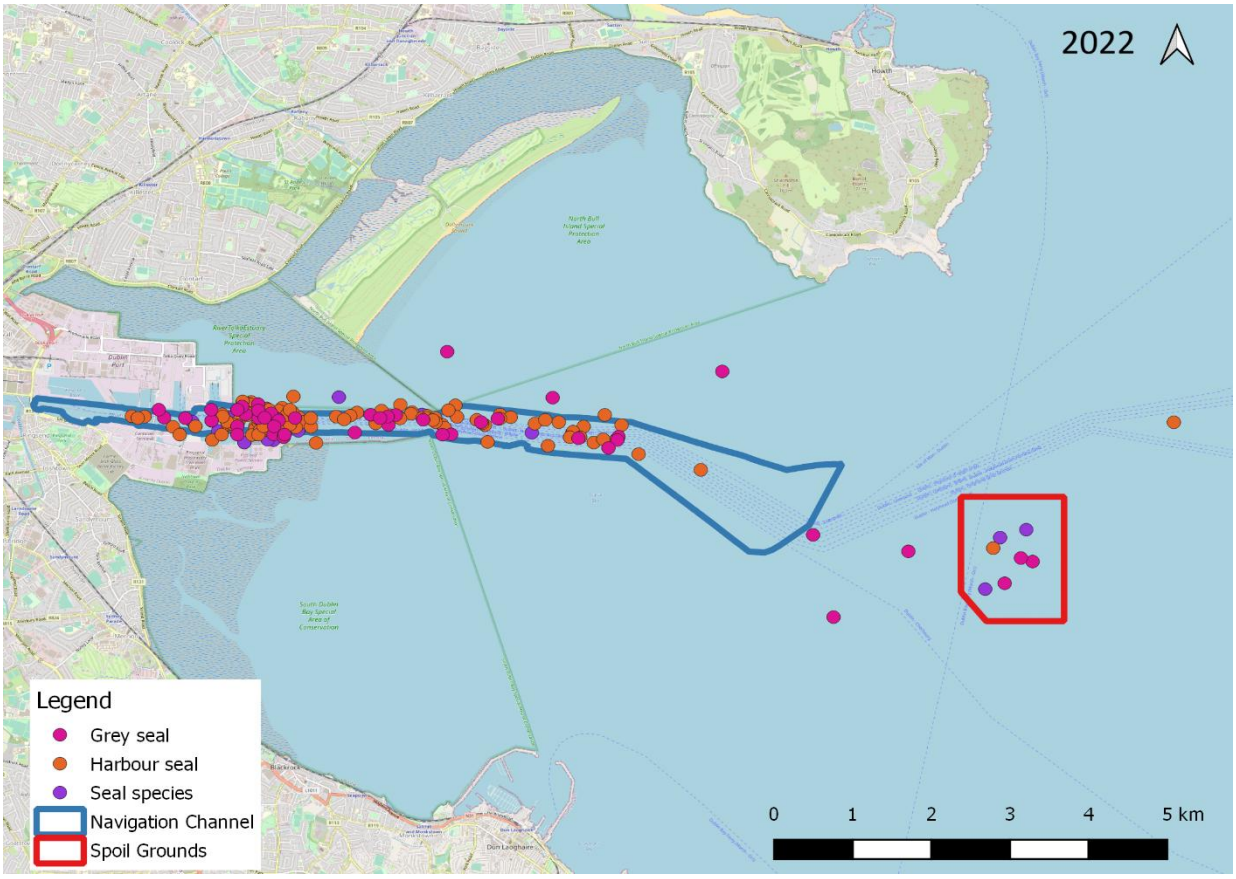



**Figure 7-35: Seal sightings during the capital dredging programme (2022) as part of the MP2 Project**

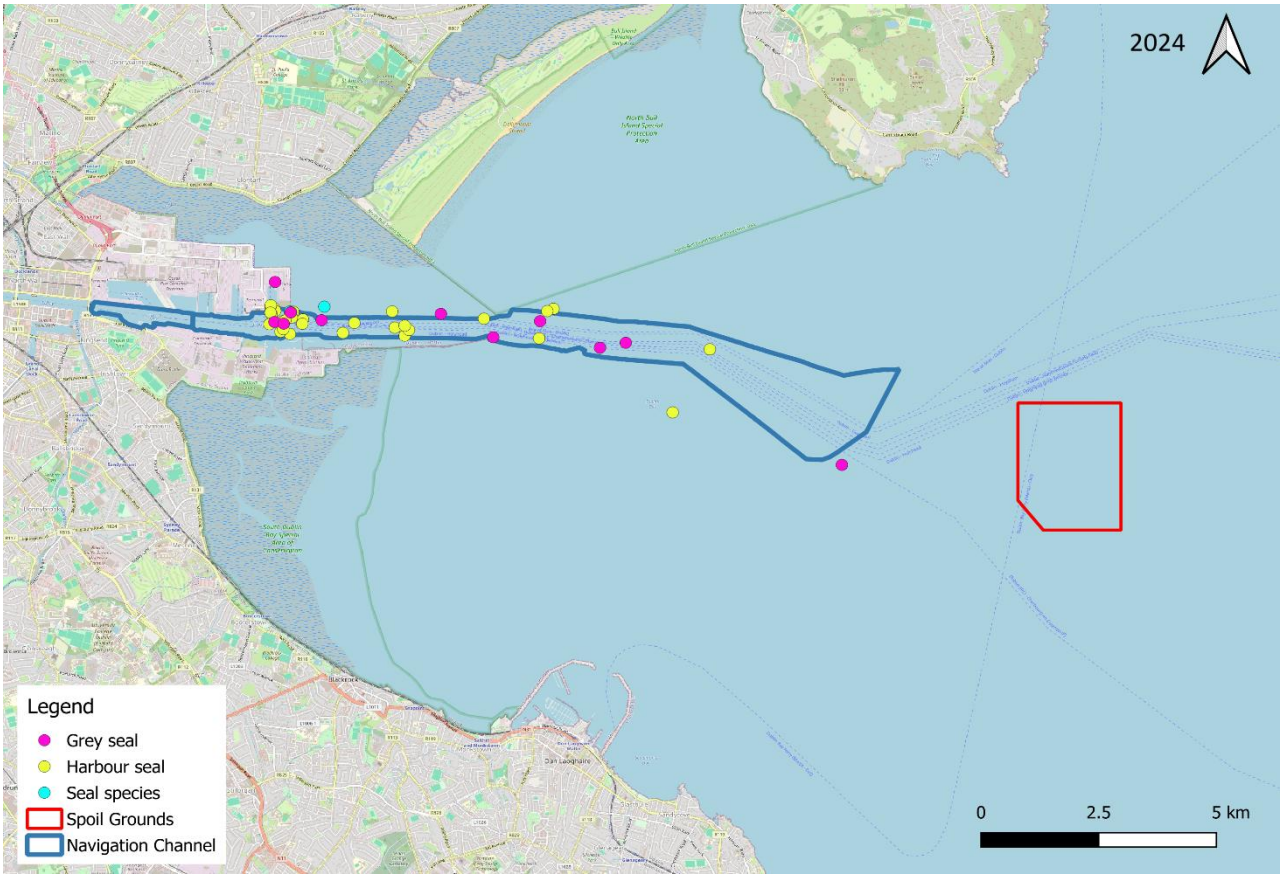



**Figure 7-36: Seal sightings during the capital dredging programme (2024) as part of the MP2 Project**

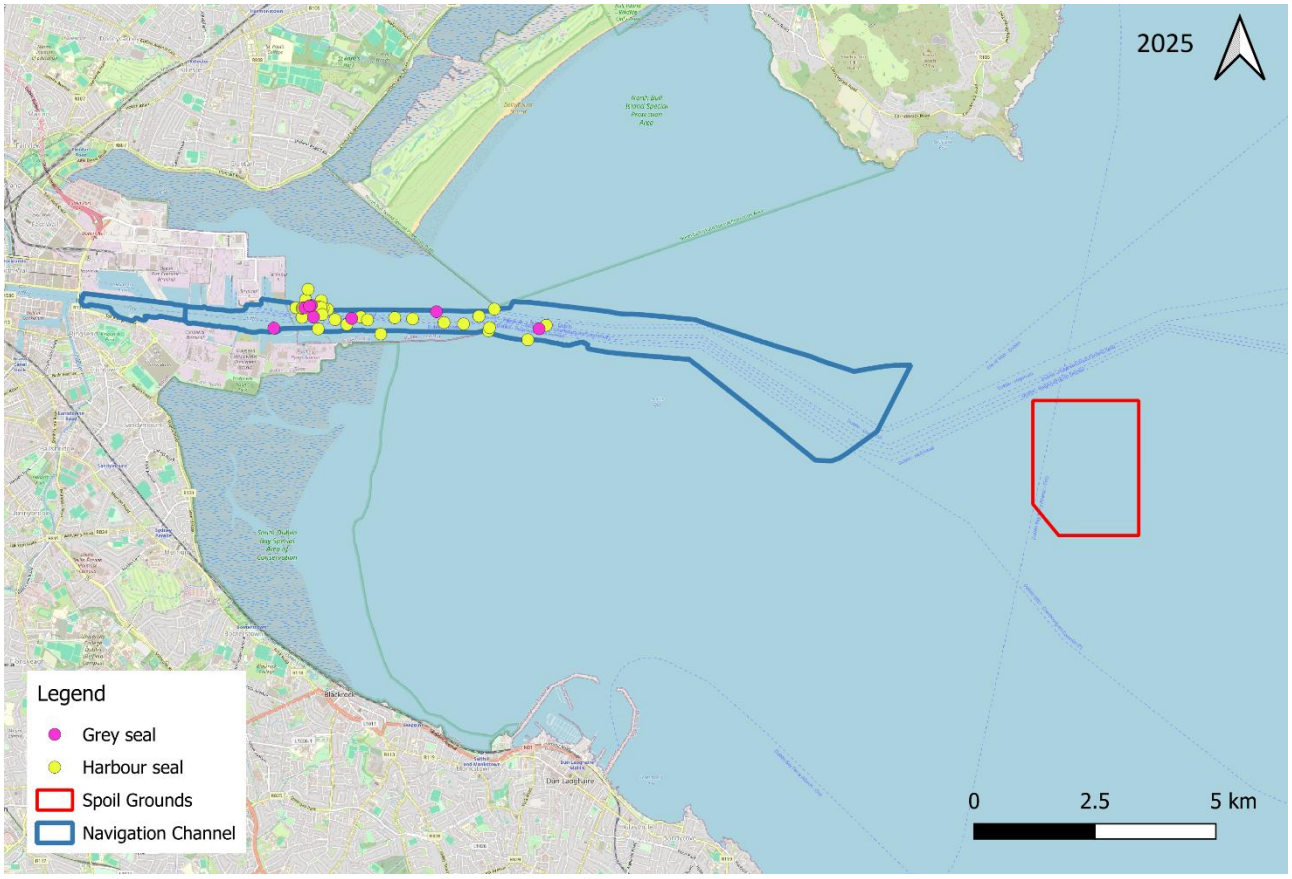
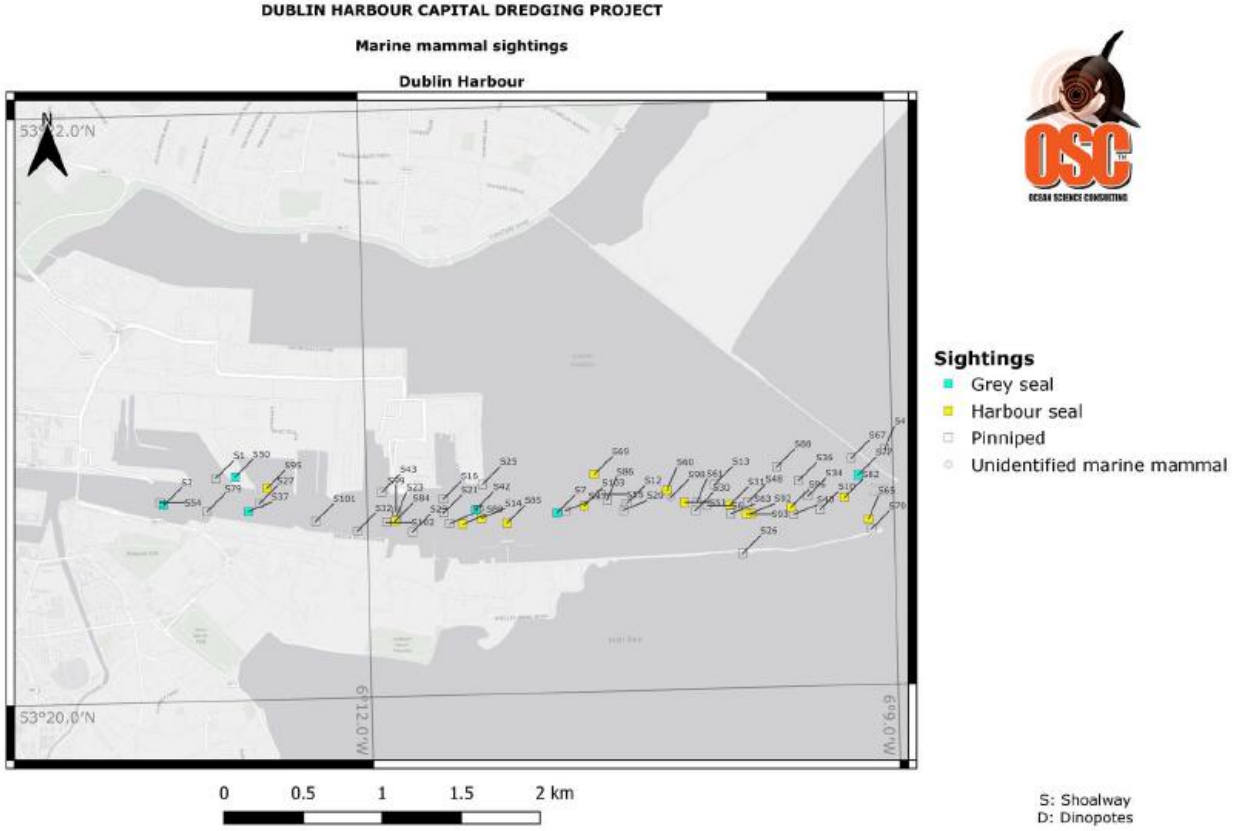



**Figure 7-37: Seal sightings during the capital dredging programme (2024) as part of the MP2 Project**



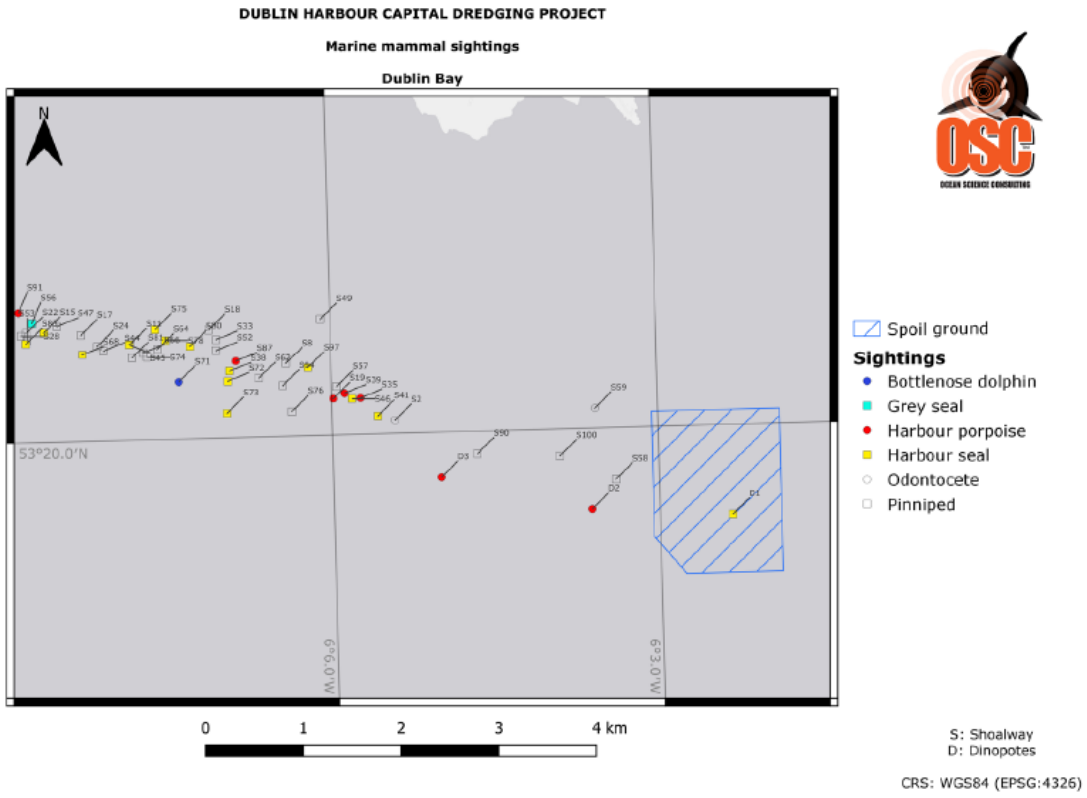




**Figure 7-38: Seal sightings during the capital dredging programme (2026) as part of the MP2 Project © OSC, 2026**

Both seal species were also recorded during maintenance dredging campaigns undertaken within Dublin Port between 2017 and 2025 (**Table 7-26**). Grey seals were more frequently recorded during the earlier maintenance dredging campaigns, particularly between 2017 and 2020, while harbour seal sightings became more prevalent during more recent monitoring periods. No grey seals were recorded during the 2021 maintenance dredging campaign, during which harbour seals represented the majority of seal sightings.

A number of sightings were recorded as unidentified seal species where observation conditions or distance prevented confirmation to species level. Overall, the maintenance dredging monitoring data demonstrate regular use of Dublin Port and the wider Dublin Bay area by both species across the monitoring dataset, although grey seal were not recorded during the 2021 maintenance dredging campaign.

Similar to the capital dredging monitoring programmes, the maintenance dredging dataset indicates continued regular use of Dublin Port and the wider Dublin Bay area by both species throughout the monitoring period, despite ongoing dredging operations, vessel movements and routine port activity.

**Table 7-26: Summary of seal sightings recorded for each maintenance dredging programme (2017-2025)**

| Species | 2017 | 2018 | 2020 | 2021 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|
| Grey seal | 143 | 65 | 16 | 0 | 13 | 47 | 18 |
| Harbour seal | 12 | 11 | 8 | 4 | 28 | 69 | 12 |
| Seal species | 3 | 0 | 9 | 0 | 3 | 19 | 5 |

*IED Dredging Monitoring within Alexandra Basin West*

DPC was granted an IE licence (P1022-02) by the EPA in December 2018 to undertake dredge stabilisation works and infilling using treated dredged material within Dublin Port. The works formed part of the wider ABR Project and involved dredging of contaminated sediments from Alexandra Basin West.

Marine mammal monitoring was undertaken throughout the IED campaign in accordance with NPWS (2014) guidance between August 2019 and February 2022, comprising a total of 508 monitored dredging days within Alexandra Basin West. Dredging works were conducted using a mechanical backhoe dredger operating from a floating barge.

During the monitoring programme, a total of 19 marine mammal sightings were recorded within the mitigation zone, comprising ten harbour seals and nine grey seals (**Figure 7-39**). All sightings occurred prior to commencement of dredging operations and resulted in temporary delays to works in accordance with mitigation requirements. No cetacean species were recorded within the dredging area during the monitoring programme.

The findings of the IED monitoring programme provide important site-specific baseline information for ABR2 and further demonstrate that marine mammal interactions within Alexandra Basin West were limited primarily to occasional seal presence and temporary precautionary delays during mitigation monitoring.

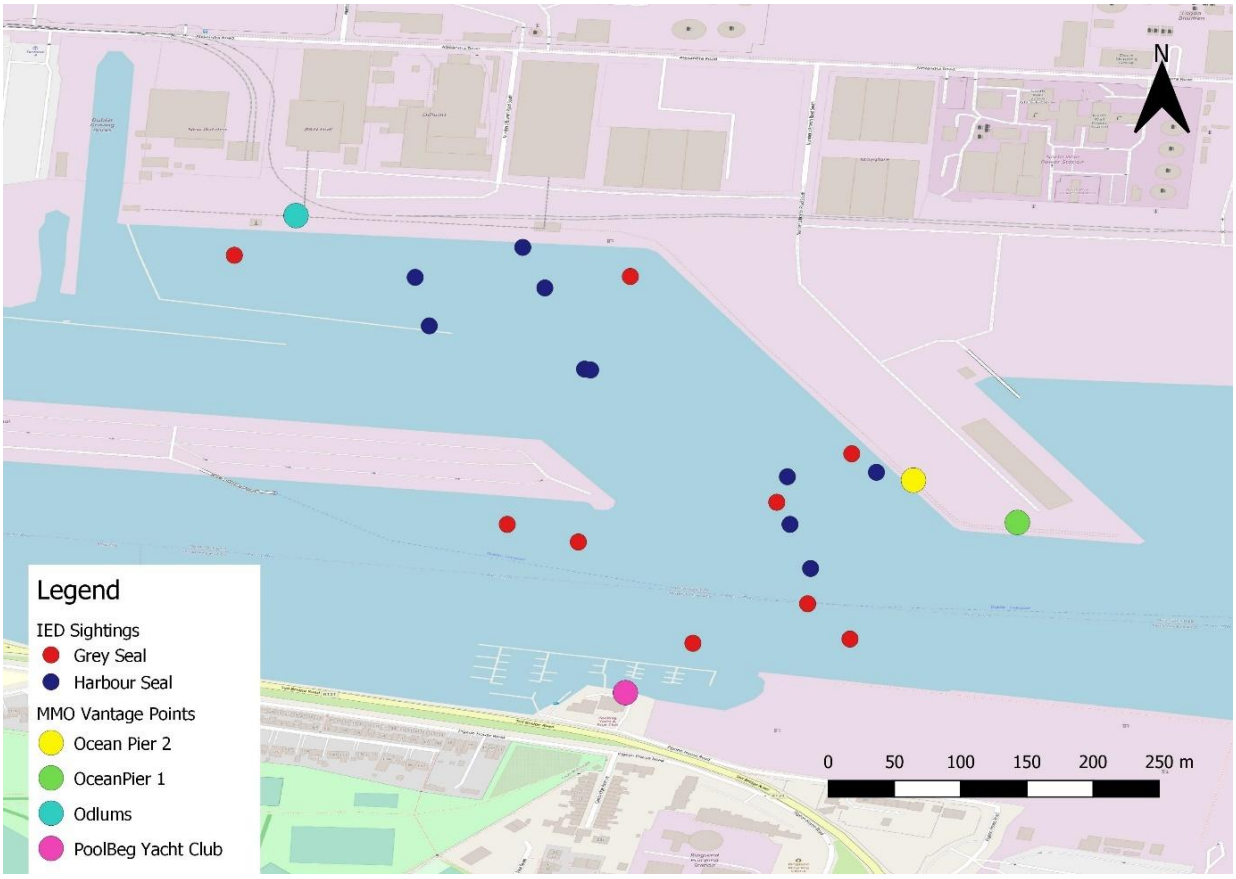



**Figure 7-39: Marine mammal sightings during IED dredging operations in Alexandra Basin West, Dublin Port, Aug 2019 – Feb 2022**

### 7.5.2.2 Existing Environmental Conditions

Extensive marine mammal baseline information is available for the study area and wider Dublin Port and Dublin Bay area through long-term monitoring programmes undertaken as part of the ABR and MP2 Projects since 2016. These datasets include land and vessel-based MMO records collected during maintenance, capital and IED dredging campaigns, long-term SAM datasets from Dublin Bay, and monthly seal monitoring surveys undertaken at North Bull Island.

Dublin Port and the wider Dublin Bay area represent a highly modified urban estuarine and coastal environment characterised by frequent commercial vessel movements, routine port operations, maintenance, capital and IED dredging operations, recreational boating activity and ongoing marine infrastructure and berth upgrade works associated with the ABR and MP2 Projects. As a result, the Port environment is characterised by elevated baseline underwater noise levels and regular anthropogenic activity. Despite the industrial nature of the Port, both cetaceans and pinnipeds are known to regularly utilise Dublin Bay and surrounding coastal waters.

Recent benthic ecological surveys undertaken within Alexandra Basin West and the basin of Berths 52/53 confirmed that the seabed environment within the inner basin remains characterised by organically enriched muddy sand sediments and opportunistic benthic assemblages typical of long-established port and estuarine environments subject to periodic dredging and sediment disturbance. No Annex I habitats, protected benthic

species or benthic species of conservation concern were identified within the ABR2 Project area (AQUAFACT, 2026).

Harbour porpoise represented the most frequently recorded cetacean species throughout the monitoring period, with detections occurring consistently within the wider Dublin Bay area. Acoustic monitoring data confirmed regular porpoise presence within waters east of Dublin Port and around the Burford Bank spoil ground, including during dredging operations, with no evidence of long-term displacement or sustained reduction in habitat usage identified. Bottlenose dolphin and unidentified cetacean species were recorded occasionally within Dublin Bay, although these remained infrequent relative to harbour porpoise detections. Cetacean occurrence within the inner harbour environment and Alexandra Basin West was comparatively limited relative to the wider bay area. No cetacean sightings were recorded in Alexandra Basin West during the 2019-2022 IED dredging monitoring programme, during which only occasional seal presence was recorded within the basin.

Both grey and harbour seal were recorded regularly throughout Dublin Port and Dublin Bay during the monitoring programmes. North Bull Island, located approximately 6km from the Port, represents the nearest haul-out site to Dublin Port and is considered an important haul-out location within Dublin Bay, particularly for harbour seals. Monitoring data indicate that seals are regularly recorded at the haul-out site and within the wider Port area despite ongoing dredging operations, port upgrades, vessel traffic and routine port activity.

The available baseline information therefore provides a robust understanding of marine mammal occurrence, distribution and habitat usage within Dublin Port and Dublin Bay. Based on the extent and quality of the existing long-term datasets, no additional baseline surveys were considered necessary for the purposes of this assessment.

Marine mammal occurrence within Dublin Port and the wider Dublin Bay area is characterised by regularly seal presence, while cetacean occurrence within the ABR2 study area comparatively infrequent.

## 7.5.3 Description of Likely Significant Effects

### 7.5.3.1 Assessment of Construction Effects

Construction phase effects relate primarily to dredging operations (loading within Alexandra Basin West), sediment transfer by barge and the potential export of excess dredged material. These activities will result in associated vessel movements within Dublin Port and include marine infrastructure demolition works at the basin of Berths 52/53. The principal impact pathways include underwater noise disturbance, temporary habitat disruption and displacement, and a low risk of collision between vessel and marine mammals.

The assessment considers a worst-case dredging rate of up to 4,000m$^3$/day (although this rate is predicted to be achieved only intermittently due to operational constraints within Alexandra Basin West), including vessel movements, treatment and stockpile capacities at the proposed treatment areas. In the event that available void space is exceeded, excess dredged material may be exported to licensed facilities, resulting in additional vessel movements within Dublin Port.

Dredging may be undertaken within four discrete dredge areas within Alexandra Basin West, as illustrated in **Chapter 5 (Figure 5-5)**, with spatial and temporal restrictions applied. Areas 1 and 4 may be dredged on a 24-

hour basis, while dredging in Areas 2 and 3 is restricted to 07:00-23:00 due to potential noise propagation across the River Liffey. A maximum of two dredgers will operate within Alexandra Basin West at any one time, with no more than one dredger per dredge area. However, if dredging is occurring within Area 3, due to the naturally dispersive characteristics at the entrance to Alexandra Basin West, this limit decreases to a maximum of one dredger. This assessment considers this spatial and temporal variation in dredging activity, including the use of multiple dredging areas and the potential for 24-hour operations in certain locations.

Construction activities will be undertaken within defined operational hours. As outlined above, dredging may occur on a 24-hour basis in specific areas of Alexandra Basin West, while sediment treatment and infilling activities will be restricted to 07:00-23:00 in accordance with operational constraints and local sensitivities. Treatment infrastructure operations will be undertaken in accordance with the IE licence, which permits activity between 08:00-18:00 Monday to Friday and 08:00-13:00 on Saturdays, with no works on Sundays or Bank Holidays unless otherwise agreed with the EPA.

Marine infrastructure demolition work within the Berths 52/53 basin will be undertaken using land-based plant. No piles will be removed as part of these works; structures will be cut at or below seabed level and left in situ prior to infilling. These activities are non-percussive in nature and are not predicted to generate significant underwater noise, with any sound likely to be low-level and highly localised. A minor pathway exists via localised underwater noise and disturbance; however, given the limited scale, non-percussive nature and short duration of these works, the magnitude of effect is considered Negligible. No significant effects on marine mammals are predicted. As described above, marine infrastructure demolition works have been screened as resulting in negligible effects and are not considered further in the assessment of significant impacts on marine mammals.

The detailed spatial and temporal restrictions for each dredging activity location are set out in **Chapter 5 Table 5-1**.

In addition to dredging activities, the Project will involve sediment treatment processes including screening, soil washing, stabilisation/solidification and wastewater treatment at designated treatment areas within Dublin Port. These activities will be undertaken on a contained, land-based basis and are not predicted to generate significant underwater noise. During sediment treatment and dewatering processes, water arising will be collected, treated and discharged via a designated outfall to the River Liffey in accordance with the requirements of the applicable IE licence. Porewater collected via vertical band drains and surface water runoff from capped areas may also be directed to wastewater treatment prior to discharge, subject to water quality criteria.

These discharges are controlled and compliant with relevant water quality standards and are not predicted to give rise to disturbance or significant effects on marine mammals. This pathway is therefore considered Negligible and is not considered further in this assessment, consistent with the EIA Scoping Report.

The benthic environment within Alexandra Basin West is already characterised by disturbance-tolerant opportunistic assemblages associated with organically enriched sediments typical of active port environments. Recent benthic surveys undertaken within Alexandra Basin West confirmed the continued dominance of opportunistic infaunal communities associated with disturbed muddy sand habitats and identified no Annex I habitats or benthic species of conservation concern within the Project area (AQUAFACT, 2026). Given the

highly modified nature of the receiving environment, together with the temporary and localised nature of the proposed dredging works, significant indirect effects on marine mammal prey resources are not anticipated.

#### 7.5.3.1.1 Underwater noise from dredging

Dredging will be undertaken using a floating pontoon-mounted excavator with an environmental bucket. This method is mechanical in nature and does not involve percussive or impulsive noise sources. Underwater noise generated will therefore be non-impulsive, localised and of lower intensity relative to other marine construction activities.

Underwater noise modelling undertaken for the Project (**Chapter 13 Underwater Noise and Vibration**) indicates that noise generated by dredging and excavation activities is non-impulsive and of relatively low intensity. Modelled ranges to auditory injury for marine mammals are limited to within approximately 10m of the source, indicating no realistic risk of injury. Behavioural disturbance ranges are predicted to extend up to approximately 700-1,200m; however, these are conservative estimates and are likely to be reduced within the enclosed and acoustically complex environment of Dublin Port. Ambient and vessel noise levels within the port are already elevated, further reducing the relative contribution of project-related noise. Overall, the modelling supports the conclusion that effects are limited to temporary and localised behavioural disturbance.

Published studies indicate that underwater noise generated by dredging activities is generally comparable to that produced by commercial vessel traffic and is not typically associated with significant impacts on marine mammals (De Jong *et al*., 2010, Robinson *et al*. 2011). Behavioural responses such as short-term avoidance and changes in habitat use have been recorded in some cases (Diederichs *et al*., 2010; Pirotta *et al*., 2013); however, these effects are generally temporary and localised. Other studies have reported no observable or inconclusive effects (Hoffman, 2010; Marley *et al*., 2017) and long-term monitoring has shown no evidence of population-level impacts or sustained displacement (Bossley *et al*., 2022).

These findings are consistent with more recent assessments and monitoring programmes, which indicate that dredging activities may result in temporary behavioural disturbance but are unlikely to result in injury or long-term impacts on marine mammals (Southall *et al*., 2019). Recent site-specific studies in Dublin Bay have also demonstrated continued harbour porpoise foraging activity during dredging operations, indicating a limited behavioural response in some cases (Kootstra *et al*. 2025).

While cumulative or prolonged exposure to underwater noise may result in TTS at close range (Kastelein *et al*., 2012), the risk of permanent auditory injury is considered extremely low, and dredging is not predicted to result in mortality or permanent hearing damage (Todd *et al*. 2015). Overall, the available literature supports the conclusion that dredging activities are associated primarily with short-term behavioural disturbance rather than significant or lasting impacts on marine mammals.

Potential effects on marine mammals include:

- Temporary behavioural disturbance;
- Short-term avoidance of the immediate works area; and
- Localised and temporary displacement of individuals.

Dredging may occur on a 24-hour basis in certain areas of Alexandra Basin West, although restrictions apply in more sensitive locations. As such, disturbance may occur during both daytime and night-time periods depending on the active dredging area. Given the enclosed and industrial nature of Alexandra Basin West, elevated baseline levels of vessel noise and the very low numbers of seals and no recorded occurrences of cetaceans within the basin, the magnitude of effect is considered Low. Marine mammals occurring within Dublin Port and the wider Dublin Bay area are considered habituated to routine maritime activity.

Seals and harbour porpoise may exhibit short-term behavioural responses to underwater noise; however, seal numbers recorded within Alexandra Basin West are low and no cetaceans have been recorded within the basin to date based on available monitoring data. Any potential disturbance arising from dredging noise is predicted to be limited, localised and temporary. No injury or auditory damage is anticipated.

The significance of effects associated with underwater noise from dredging is summarised in **Table 7-27**.

**Table 7-27: Summary of significance of effects of underwater noise from dredging on marine mammals**

| Receptor Group | Magnitude | Sensitivity | Significance |
|---|---|---|---|
| Seals (grey and harbour seal) | Low | Medium | Slight adverse (Not Significant) |
| Cetaceans (incl. harbour porpoise) | Low | High | Slight adverse (Not Significant) |

#### 7.5.3.1.2 Vessel Movements and Increased Marine Traffic

Construction activities will require barge transport of the dredged material to treatment locations and routine movement of support vessels within Dublin Port The updated project envelope assumes dredging at up to 4,000m$^3$/day, which may result in a modest increase in daily vessel trips relative to baseline conditions within the port. Vessel movements will occur within Alexandra Basin West and along defined transit routes to treatment areas within Dublin Port.  No project-related vessel movements are proposed within Dublin Bay.

The principal impact pathways associated with vessel activity include underwater noise and visual disturbance, temporary behavioural responses and a low risk of collision between vessels and marine mammals.

Marine mammals occurring within Dublin Port and the wider Dublin Bay are already exposed to frequent commercial vessel traffic and are considered tolerant of such activity. Published studies (Southall *et al*., 2019, NMFS, 2024) indicate that vessel noise can result in short-term behavioural responses, including avoidance and changes in movement patterns; however, such effects are typically localised and temporary in areas of high baseline activity.

The increase in vessel movements associated with the Project represents a minor proportional increase relative to existing port traffic levels. As such, any disturbance effects are predicted to be limited to short-term behavioural responses within the immediate vicinity of vessel routes.

A potential risk of collision between vessel and marine mammals has been identified; however, this risk is considered to be very low due to the confined nature of the port environment, low vessel speeds and the limited occurrence of marine mammals within Alexandra Basin West.

The significance of effects associated with vessel movements is summarised in **Table 7-28**.

**Table 7-28: Summary of the significance of effects of vessel movements on marine mammals**

| Receptor Group | Magnitude | Sensitivity | Significance |
|---|---|---|---|
| Seals (grey and harbour seal) | Low | Medium | Slight adverse (Not Significant) |
| Cetaceans (incl. harbour porpoise) | Low | High | Slight adverse (Not Significant) |

#### 7.5.3.1.3 Increased Suspended Sediment / Turbidity

Mechanical dredging may result in temporary and localised increases in suspended sediment concentrations within Alexandra Basin West. The total dredge volume associated with the Project is approximately 334,000m$^3$ with dredging undertaken using a pontoon-mounted excavator fitted with an environmental bucket to minimise sediment release. Additional embedded mitigation measures, including the use of silt curtains where appropriate, will further reduce sediment dispersion.

Evidence from previous monitoring undertaken for the ABR and MP2 projects, together with coastal processes modelling for the Coastal Processes Chapter (**Chapter 14**), demonstrates that increases in suspended sediment plume concentrations are highly localised and short-term in nature, typically persisting for short durations (on the order of minutes) and dispersing rapidly under tidal conditions within the dynamic port environment. Modelling, based on conservative assumptions, indicates that sediment plumes remain confined to the immediate vicinity of dredging activities and do not extend over significant spatial or temporal scales.

The modelling also incorporates standard mitigation measures, including the use of environmental buckets (resulting in an estimated spill rate of approximately 1%) and silt curtains. Consistent with assumptions adopted within **Chapter 14**, silt curtains were conservatively assumed to reduce local sediment dispersion by approximately 50% based on typical manufacturer performance specifications for commonly used silt curtain products. These finding support the conclusion that any increases in turbidly will be temporary, localised and of low magnitude.

Potential effects on marine mammals are indirect and may include:

- Minor temporary reduction in prey detectability; and
- Localised avoidance of turbid water.

These effects may influence foraging efficiency for both seals and cetaceans in the immediate vicinity of the works; however, given the short duration, rapid dispersion and limited spatial extent of sediment plumes, any such effects would be minor and temporary. Marine mammals are not considered to be highly reliant on the

ABR2 area for foraging, and the wider Dublin Bay environment provides extensive alternative habitat. As such, any behavioural responses are predicted to be localised and reversible.

The significance of effects associated with increased suspended sediment is summarised in **Table 7-29.**

**Table 7-29: Summary of significance of effects of increased suspended sediment on marine mammals**

| Receptor Group | Magnitude | Sensitivity | Significance |
|---|---|---|---|
| Seals (grey and harbour seal) | Low | Low | Slight adverse (Not Significant) |
| Cetaceans (incl. harbour porpoise) | Low | Medium | Slight adverse (Not Significant) |

#### 7.5.3.1.4 Construction Phase Summary

Construction phase impacts on marine mammals are predicted to be temporary, localised and reversible. No population-level effects are anticipated.

### 7.5.3.2 Assessment of Operational Effects

Operational effects relate to the completed infill of the basin of Berths 52/53, ongoing port activity and future vessel operations following project completion. Operational effects are also considered in the AASR/NIS in the context of designated sites within Dublin Bay, including the Rockabill to Dalkey Island SAC, Codling Fault Zone SAC and Lambay Island SAC

#### 7.5.3.2.1 Changes to Vessel Activity

Following completion of the ABR2 Project, vessel activity patterns within the port may alter slightly due to reconfigured berths and operational efficiencies. However, the port will remain an active commercial environment similar in character to the current baseline. Any changes in vessel numbers or distribution are predicted to represent a negligible to minor variation within an already heavily trafficked port environment and are not predicted to result in measurable changes in disturbance levels for marine mammals.

The significance of operational effects associated with vessel activity is summarised in **Table 7-30**.

#### 7.5.3.2.2 Future Maintenance Dredging

Future maintenance dredging within Dublin Port will be undertaken in accordance with existing DPC maintenance dredging licences and established procedures. Such activities will be subject to standard mitigation measures, including adherence to NPWS (2014) guidance and the implementation of MMO monitoring.

Maintenance dredging represents a continuation of existing, long-established port activities and is not predicted to introduce new or intensified impact pathways beyond those already assessed for the consultation phase. Any effects on marine mammals are predicted to be temporary, localised and consistent with historical operations.

The significance of effects associated with future maintenance dredging is summarised in **Table 7-30**.

#### 7.5.3.2.3 Permanent Habitat Alteration

Infill of the basin of Berths 52/53 represents a permanent change to approximately 45,650 $m^3$ of artificial port habitat. This area does not represent designated marine mammal habitat and is not identified as an important feeding or breeding area.

Given the highly modified and industrial nature of the environment and the availability of extensive alternative habitat with Dublin Bay, this permanent alteration is not predicted to result in measurable effects on marine mammal populations. Marine mammals using the wider Dublin Bay area, including harbour porpoise and seals, will continue to have access to suitable habitat beyond the footprint of the proposed development.

The significance of effects associated with permanent habitat alteration is summarised in **Table 7-30**.

**Table 7-30: Summary of the significance of operational effects on marine mammals**

| Activity | Receptor Group | Magnitude | Sensitivity | Significance |
|---|---|---|---|---|
| Vessel activity (operational phase) | All marine mammals | Negligible | Medium | Not Significant |
| Future maintenance dredging | Seals | Low | Medium | Not Significant |
| Future maintenance dredging | Cetaceans | Low | High | Slight adverse (Not Significant) |
| Permanent habitat alteration | All marine mammals | Negligible | Low | Not Significant |

#### 7.5.3.2.4 Operational Phase Summary

No significant operational effects on marine mammals are predicted. The completed development will not result in population-level impacts or long-term habitat loss of ecological importance to marine mammal species.

### 7.5.4 Inter-relationships

Effects on marine mammals also have the potential to have inter-relationships with other environmental receptors. These inter-relationships are considered within the relevant topic-specific chapters of this EIAR and are summarised below:

- Underwater Noise (Considered in **Chapter 13**)

  - Temporary disturbance arising from dredging and associated vessel movements

- Potential behavioural responses of marine mammals to elevated underwater noise levels

- Potential for extended duration disturbance due to 24-hour dredging in certain areas

- Water Quality (Considered in **Chapter 9**)

  - Temporary increases in suspended sediment concentrations during dredging

  - Potential indirect effects on prey availability and marine mammal foraging behaviour

- Biodiversity (Considered in **Chapter 7**)

  - Temporary disturbance to marine fauna

  - Potential habitat alteration associated with dredging and/or infill activities

- Construction Traffic (Considered in **Chapter 15**)

  - Construction traffic associated with the Project will be managed within the existing port and road network and is not predicted to result in indirect effects on marine mammals

- Cumulative Effects (Considered in **Chapter 21**)

  - Overlapping construction activities

  - In-combination disturbance from other port or coastal developments

## 7.5.5 Mitigation and Monitoring

### 7.5.5.1 Mitigation

Mitigation measures have been developed in accordance with the Department of Arts, Heritage and the Gaeltacht (2014) *Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters*, issued by the NPWS. This guidance remains the primary national framework for marine mammal mitigation at the time of writing. The approach also has regard to relevant guidance issued by the Maritime Area Regulatory Authority (MARA) relating to marine mammal observations during licensed activities at sea, where applicable.

The proposed measures reflect standard practice previously implemented during works within Dublin Port. The mitigation approach also considers the potential for extending working hours and multiple concurrent dredging operations within Alexandra Basin West, as well as the overlap with other ongoing port activities, including maintenance, capital and IED dredging operations.

Mitigation will be implemented through implementation of a Marine Mammal Management Plan (MMMP) as part of the Project's CEMP. The MMMP sets out specific mitigation procedures, including pre-start monitoring, implementation of mitigation zones and communication protocols between MMOs and site personnel.

The measures are designed to avoid or minimise potential disturbance to marine mammals during the construction phase. Given that predicted impacts are temporary, localised and are limited to short-term

behavioural disturbance, with no significant risk of injury anticipated, mitigation follows a precautionary approach consistent with established best practice in Irish waters.

#### 7.5.5.1.1 MMO Programme

A suitably qualified MMO will be appointed to implement the MMMP for dredging activities. The MMO will:

- Undertake pre-start monitoring prior to the commencement of dredging after any pause in activity of more than 30 minutes
- Conduct visual monitoring of the works area and surrounding waters during active dredging activities
- Record dredging activity, MMO monitoring effort, environmental conditions and all marine mammal observations
- Complete the relevant NPWS (2014) marine mammal monitoring data sheets for each day of monitoring
- Record any mitigation actions implemented, including delays to works or other precautionary measures
- Advise the contractor in the event marine mammals are observed within the defined monitoring zone for dredging and recommend appropriate mitigation measures where required
- Maintain a detailed log of all monitoring effort and mitigation actions throughout the works
- Maintain regular communication with the contractor (e.g. via site communication systems / WhatsApp group) to ensure real-time implementation of mitigation where required.

Upon completion of the works, a final MMO Report will be prepared. This report will summarise the monitoring effort, contractor activity, marine mammal observations, mitigation actions implemented and confirm compliance with NPWS (2014) guidance. The report will be submitted to NPWS and MARA, as required via the Project's Point of Contact.

#### 7.5.5.1.2 Pre-Start Monitoring and Delay Procedure

Although dredging activities are non-impulsive and low risk in terms of injury, a statutory pre-start monitoring period will be implemented, in accordance with NPWS (2014) guidance.

Prior to the commencement of dredging:

- The MMO will conduct a 30-minute visual pre-start monitoring period at the works area
- The monitored zone will extend to a 500 m radial distance from the works
- If marine mammals are observed within the monitored zone, the commencement of dredging will be delayed. Dredging may only commence once the animal(s) have left the monitoring zone, and at least 30 minutes have elapsed with no marine mammals detected within the monitored zone

The procedure is as required by the standard Irish marine mammal mitigation guidance (NPWS, 2014), which specifies that sound-producing activities should not commence until at least 30 minutes of continuous monitoring confirms the absence of marine mammals within the defined zone.

#### 7.5.5.1.3 Good Practice Vessel Management

All project vessels will adhere to established maritime safety procedures within Dublin Port. In addition:

- Vessel speeds will be reduced where safe and practicable
- Vessel masters will remain vigilant for marine mammals
- Sudden changes in direction or speed will be avoided where possible

Given the already high level of vessel traffic within the port, and the implementation of the above measures, the Project will not result in a significant increase in risk to marine mammals.

#### 7.5.5.1.4 Sediment Control Measures

To minimise effects associated with suspended sediments, standard sediment control measures will be implemented in accordance with the Project Description and will be detailed within the CEMP:

- Silt curtains will be utilised around the dredger during dredging operations to minimise the dispersion of suspended sediments
- A contingency bubble curtain will be available and may be deployed across the entrance to Alexandra Basin West in the event of silt curtain breach
- Environmental buckets will be used for dredging to reduce sediment disturbance and release at source

These measures will minimise the spatial extent and duration of sediment plumes and reduce the potential for impact on marine mammals.

#### 7.5.5.1.5 Mitigation Summary

With implementation of the above measures, construction phase effects on marine mammals are predicted to remain temporary, localised and reversible. No significant residual effects are anticipated. No operational phase mitigation measures are required.

### 7.5.5.2 Monitoring

Monitoring will be undertaken to verify predicted effects and ensure the effectiveness of mitigation measures.

#### 7.5.5.2.1 Construction Phase Marine Mammal Monitoring

Marine mammal monitoring will be undertaken throughout the dredging programme by a qualified MMO. Monitoring records will contribute to the ongoing evidence base for marine mammal occurrence within Dublin Port and inform adaptive management if required. Monitoring will include:

- Pre-start monitoring prior to the commencement of dredging as required
- Ongoing visual observations during active dredging

- Record dredging activity, MMO monitoring effort, environmental conditions
- Recording of all marine mammal sightings, behaviour and distance from works
- Complete the relevant NPWS (2014) marine mammal monitoring data sheets for each period of monitoring
- Record any mitigation actions implemented, including delays to works or other precautionary measures
- Advise the contractor in the event marine mammals are observed within the defined monitoring zone and recommend any appropriate mitigation measures where required

#### 7.5.5.2.2 Acoustic Monitoring

In addition to visual monitoring, acoustic monitoring has been and will continue to be undertaken within Dublin Port and Dublin Bay. Real-time acoustic monitoring using the LIDO system has been deployed at the North Bank Lighthouse in recent years.

As part of ongoing monitoring programmes associated with Dublin Port activities, this system is proposed to be replaced by static and passive acoustic monitoring devices. These systems will continue to be deployed at strategic locations within Dublin Bay, including the entrance to the port, Burford Bank spoil grounds and a control location offshore (Scotsman's Bay), to support the assessment of harbour porpoise presence and potential displacement in relation to ongoing maintenance dredging and capital dredging activities.

Acoustic monitoring will contribute to the long-term evidence base for marine mammal occurrence within Dublin Port and Dublin Bay and provide context for construction-phase observations.

#### 7.5.5.2.3 Reporting

A MMO Report for the project will be prepared following completion of the works. This report will:

- Summarise monitoring effort, contractor activity and implemented mitigation measures
- Document all marine mammal observations
- Confirm compliance with NPWS (2014) guidance
- Be submitted to NPWS and MARA within one month of completion of the works
- Assess whether predicted effects aligned with observed outcomes

#### 7.5.5.2.4 Operational Phase Monitoring

Marine mammal monitoring associated with operational phase activities, including maintenance dredging, is already undertaken as part of DPC's established maintenance dredging programme. This includes the use of MMOs and adherence to NPWS (2014) guidance.

Given that operational activities represent a continuation of existing, long-established port operations, no additional project-specific marine mammal monitoring is proposed for the operational phase of the ABR2

Project. Existing monitoring programmes are considered sufficient to characterise marine mammal occurrence and to ensure compliance with relevant environmental requirements.

#### 7.5.5.2.5 Monitoring Summary

If monitoring identifies any unanticipated significant effects, additional mitigation or adaptive management measures will be implemented in consultation with the relevant authority.

## 7.5.6 Potential Cumulative Effects

**Chapter 21 Cumulative Effects and Environmental Interactions** outlines the methodology used to assess the cumulative and in-combination effects, which may arise from relevant plans, programmes and adjacent or nearby developments together with those predicted for the Project. The plans, programmes and projects considered within the assessment are outlined in **Chapter 21.**

For marine mammals, potential cumulative effects are primarily associated with:

- Underwater noise from dredging or marine construction
- Increased vessel traffic
- Temporary habitat disturbance within Dublin Port

For marine mammals, a 1.2 km ZoI was applied to the cumulative effects assessment, based on the maximum predicted range for behavioural disturbance associated with underwater noise from the ABR2 Project, as presented in **Chapter 13**. Relevant plans, programmes and projects occurring within this ZoI, or with the potential for effects to extend into or otherwise interact with the ZoI, were considered in the cumulative effects assessment.

This assessment has also considered relevant plans, programmes and projects identified through a recent planning search provided by the Applicant, including marine and coastal developments within Dublin Bay and the wider Irish Sea.

### 7.5.6.1 Plans, Programmes and Projects of Particular Relevance

Of the plans, programmes and projects identified in **Chapter 21**, the following are considered of relevance to marine mammals due to their location, potential interaction with the 1.2 km marine mammal ZoI, and/ or potential to generate relevant marine mammal impact pathways:

- Dublin Port Masterplan 2040
- Powering Up Dublin Programme (EirGrid Capital Projects CP114, CP121 and CP110; MAC240013)
- 3FM Project (ABP Reg. Ref. PA29N.320250)
- MP2 Project (Reg. Ref. ABP304888-19)
- Dublin Port Maintenance Dredging Programme 2022-2029 (Reg. Ref. FS007132 / DaS Permit S0004-03)

- Uisce Éireann / ESB Cooling Water and Wastewater Infrastructure
- Point Bridge and Dodder Bridge (Reg. Ref. ZE29N.ZE0006)

These plans, programmes and projects have the potential to give rise to relevant marine mammal effects, including underwater noise, increased vessel activity, temporary disturbance and displacement, or other pathways capable of interacting with the predicted effects of the ABR2 Project.

Other plans, programmes and projects identified in **Chapter 21**, including marine developments within Dublin Bay and the wider Irish Sea, were also reviewed against the defined marine mammal ZoI and relevant source-pathway-receptor linkages. Where no potential for effects to extend into or otherwise interact with the ZoI was identified, there were screened from detailed assessment, as described below.

### 7.5.6.2 Assessment of Cumulative Effects

The relevant plans, programmes and projects identified above include marine infrastructure works and other activities that may give rise to temporary underwater noise, increased vessel activity, disturbance or displacement of marine mammals.

Within Dublin Port, dredging and marine construction activities are periodically undertaken as part of routine port maintenance and capital development. Marine mammals occurring within the port environment may therefore be exposed to intermittent, short-term disturbance associated with such activities.

The predicted effects of the ABR2 Project are temporary and localised, with the maximum predicted range for behavioural disturbance from underwater noise extending to 1.2 km under the conservative modelling scenario presented in **Chapter 13**. Where other marine activities occur within, or have the potential for effects to extend into, this ZoI, there is potential for cumulative underwater noise, vessel activity and temporary disturbance and displacement. These potential interactions are assessed in further detail below.

Offshore renewable energy developments within Dublin Bay and the wider Irish Sea were also reviewed for their potential to interact with the ABR2 Project. Given their spatial separation from the defined marine mammal ZoI, the temporary and localised nature of the predicted ABR2 effects and the absence of a credible pathway for significant interaction with the Project, no significant cumulative effects on marine mammals

Onshore developments identified in **Chapter 21** were also reviewed. Where these developments do not involve marine works or otherwise provide a credible source-pathway-receptor linkage with effects occurring within the marine mammal ZoI, no potential for cumulative effects on marine mammals is predicted.

### 7.5.6.3 Detailed Assessment of Relevant Plans, Programmes and Projects

The assessment of cumulative effects has considered relevant plans and programmes, together with consented, planned and proposed projects identified in **Chapter 21**. The main pathways of relevance to marine mammals are underwater noise, increased vessel activity, temporary disturbance, displacement and collision risk.

Plans, programmes and projects occurring within the 1.2 km marine mammal ZoI, or with the potential for relevant marine mammal effects to extend inti or otherwise interact with the ZoI, were carried forward for detailed assessment, as presented below.

### 7.5.6.3.1 Relevant Plans and Programmes

Relevant plans and programmes identified in **Chapter 21** have also been considered for their potential to give rise to in-combination effects on marine mammals. These were reviewed in relation to the 1.2km marine mammal ZoI defined for the ABR2 Project and for the potential for effects to extend into this ZoI. Relevant marine mammal impact pathways considered included underwater noise, vessel activity, disturbance and displacement. Where no marine interaction or credible source-pathway-receptor linkage with the ABR2 Project was identified, no potential for significant in-combination effects on marine mammals is predicted.

**Dublin Port Masterplan 2040**

The Dublin Port Masterplan 2040 provides the strategic framework for the continued development of Dublin Port, including the MP2, 3FM and ABR2 Projects. Potential marine mammal effects arising from the marine works associated with these developments, including underwater noise, vessel activity, disturbance and displacement, have been considered through the relevant project level cumulative assessment. On this basis, implementation of the Masterplan is not predicted to give rise to additional significant in-combination effects on marine mammals beyond those identified and assessed at project-level.

**Powering Up Dublin Programme**

The Powering Up Dublin Programme has also been considered, as **Chapter 21** identifies potential interaction pathways relating to biodiversity and underwater noise. Proposed works relevant to the Dublin Port area principally comprise underground cable infrastructure. The Programme was reviewed for the potential for construction activities to generate effects within, or extending into, the 1.2 km marine mammal ZoI. Given the nature of the proposed works and the absence of a significant marine mammal source-pathway-receptor linkage with the localised effects of the ABR2 Project, no significant in-combination effects on marine mammals are predicted.

### 7.5.6.3.2 Relevant Projects

**MP2 Project**

The MP2 Project includes marine works within Dublin Port, including dredging, piling, berth construction and associated vessel activity. Some MP2 activities have potential to overlap spatially or temporally with the ABR2 Project and therefore have the potential to generate cumulative underwater noise, increased vessel activity and temporary disturbance to marine mammals.

MP2 works are subject to project-specific environmental controls and marine mammal mitigation measures, including MMO monitoring and implementation of NPWS (2014) guidance where applicable. Considering the temporary and localised nature of the predicted effects associated with the ABR2 Project, together with the implementation of project-specific mitigation measures, any cumulative effects on marine mammals are expected to be short-term and limited primarily to behavioural disturbance or temporary displacement.

On this basis, no significant cumulative effects on marine mammals are predicted.

### 3FM Project

The 3FM Project includes capital dredging, quay works, piling and associated vessel activity within Dublin Port and the wider port approaches. The 3FM Project is being progressed as part of DPC's wider Masterplan programme and has the potential to overlap spatially or temporally with elements of the ABR2 Project. Potential cumulative effects on marine mammals would primarily relate to underwater noise, increased vessel activity and temporary disturbance or displacement.

DPC has committed to undertaking only one capital or maintenance dredging campaign within the Port at any one time. Consequently, dredging associated with the ABR2 Project will not overlap with capital dredging associated with the 3FM Project, thereby reducing the potential for cumulative underwater noise and disturbance from simultaneous dredging activities. Other 3FM marine construction activities will be subject to project-specific environmental controls, mitigation and monitoring requirements, including NPWS (2014) marine mammal mitigation where applicable.

Long-term acoustic monitoring has been undertaken within Dublin Bay since 2016, including at the spoil grounds at the Burford Bank and a control site off Scotsman's Bay. Additional monitoring proposed near the port entrance will provide further information on harbour porpoise occurrence and potential displacement within the wider Dublin Bay area.

Considering the managed scheduling of dredging activities, project-specific mitigation and the temporary and localised nature of the predicted ABR2 effects, no significant cumulative effects on marine mammals are predicted.

### Dublin Port Maintenance Dredging Programme 2022-2029

The Dublin Port Maintenance Dredging Programme involves recurring dredging and associated vessel activity within Dublin Port and the navigation channel and is therefore relevant to the marine mammal cumulative effects assessment. Potential cumulative effects, should activities occur within the same general period as the ABR2 Project, would primarily relate to underwater noise, increased vessel activity and temporary disturbance or displacement.

Maintenance dredging is undertaken under existing consents and established environmental protocols, including marine mammal monitoring and implementation of NPWS (2014) mitigation measures where applicable. DPC has committed to undertaking only one capital or maintenance dredging campaign within the Port at any one time. Accordingly, maintenance dredging will not occur concurrently with dredging undertaken as part of the ABR2 Project, reducing the potential for cumulative disturbance from simultaneous dredging operations.

Considering the managed scheduling of dredging activities, the temporary and localised nature of dredging-related effects within Dublin Port and the implementation of established mitigation and monitoring measures, no significant cumulative effects on marine mammals are predicted.

### Uisce Éireann / ESB Cooling Water and Wastewater Infrastructure

Projects and operations associated with Ringsend Wastewater Treatment Plant, Dublin Bay Power Plant, Poolbeg Generating Station and other licenced discharge activities have been considered in terms of potential

indirect effects on marine mammals through water quality or prey availability. These activities are subject to separate consent and licensing regimes and are not predicted to generate significant underwater noise or other disturbance pathways that would interact cumulatively with the ABR2 Project. No significant cumulative effects on marine mammals are predicted.

**Point Bridge and Dodder Bridge**

The Point Bridge and Dodder Bridge Project has the potential to overlap temporally with the ABR2 Project and may involve in-river construction activity, including piling or other works within the Liffey Estuary Lower. Potential cumulative pathways for marine mammals would primarily relate to underwater noise and temporary disturbance.

The project will be subject to its own environmental assessment, mitigation measures and construction controls. Considering the temporary nature of the predicted effects associated with the ABR2 Project and the implementation of project-specific mitigation measures, any cumulative effects on marine mammals are expected to be short-term and localised. No significant cumulative effects on marine mammals are predicted.

**Other Projects Screened from Detailed Assessment**

The Howth Yacht Club Marina Extension and other projects identified in **Chapter 21** located outside the 1.2 km marine mammal ZoI were reviewed for their potential to generate effects that could extend into, or otherwise interact with, the ZoI. The Howth Yacht Club Marina Extension includes marine works with the potential to generate underwater noise and vessel activity; however, due to its spatial separation from the ABR2 Project and the localised nature of the predicted ABR2 Project effects, no significant cumulative interaction is predicted.

Other developments identified in **Chapter 21** are predominantly land-based, located outside the defined ZoI, or have no credible source-pathway-receptor linkage with the predicted effects of the ABR2 Project. These projects were therefore screened from detailed cumulative assessment. No additional cumulative pathways have been identified that would result in significant effects on marine mammals.

#### 7.5.6.3.3 Conclusion on Cumulative Effects

Considering the relevant plans, programmes and projects identified in **Chapter 21**, and their potential to interact with the 1.2 km marine mammal ZoI defined for the ABR2 Project, no significant cumulative or in-combination effects on marine mammals are predicted. Potential cumulative effects would primarily relate to underwater noise, increased vessel activity, temporary disturbance and displacement. Given the temporary and localised nature of the predicted effects associated with the ABR2 Project, the existing industrial context of Dublin Port and the implementation of project-specific mitigation measures, any cumulative disturbance effects are predicted to be short-term, reversible and limited primarily to behavioural responses at the individual level.

No cumulative impacts on marine mammal population status, reproductive success or long-term habitat use are anticipated. No potential for cumulative or in-combination effects resulting in injury, barrier effects or significant long-term displacement has been identified. Cumulative effects are therefore assessed as Slight adverse or lower and not significant in EIA terms.

### 7.5.7 Residual Impacts

Where the mitigation measures outlined in **Section 7.5.5** are fully implemented during the construction and operational phases, residual effects on marine mammals are predicted to be limited, localised and temporary. Any potential disturbance will be confined to the immediate works area within Alexandra Basin West and adjacent waters, and will primarily relate to short-term behavioural responses, including minor displacement or temporary avoidance.

Underwater noise generated by the proposed works is non-impulsive in nature and of relatively low intensity compared to other marine construction activities. Marine mammals occurring within Dublin Port are regularly exposed to elevated baseline levels of vessel and operational noise. In this context, and with the implementation of NPWS (2014) mitigation measures, no significant auditory injury or population-level effects are anticipated. Residual effects are therefore assessed as Slight adverse or lower and are not significant in EIA terms.

No long-term adverse effects on the distribution, abundance or reproductive success of seal or cetacean populations are predicted. No beneficial effects have been identified beyond maintaining current conditions through adherence to established mitigation and monitoring protocols. Residual effects are therefore consistent with the objectives of national legislation and policy for the protection and conservation of marine mammals in Irish waters, including those applicable to Dublin Port and the wider Dublin Bay area.

### 7.5.8 Summary of Effects and Conclusions

The assessment concludes that potential impacts on marine mammals associated with the proposed ABR2 Project, including dredging, vessel movements, sediment transfer and infilling activities, are temporary, localised and limited primarily to short-term behavioural disturbance within Alexandra Basin West, the Berths 52/53 area and adjacent waters within Dublin Port. No significant auditory injury or population-level effects are predicted.

With the implementation of standard mitigation measures in accordance with NPWS (2014), all construction and operational phase effects on marine mammals are anticipated to be Slight adverse or lower and are not significant in EIA terms.

Overall, the Project is not predicted to adversely affect the conservation status, distribution or long-term viability of marine mammal species within Dublin Port or the wider Dublin Bay area.

**Table 7-31: Summary of Effects relating to Marine Mammals**

| Potential Effect and Receptor | Phase[3] | | Magnitude of Effects | Sensitivity of Receptor | Significance of Effect | Significant/Not Significant | Mitigation Measures | Residual Effects |
|---|---|---|---|---|---|---|---|---|
| | C | O | | | | | | |
| Temporary behavioural disturbance from underwater noise (seals) | ✓ | | Low | Medium | Slight adverse | Not Significant | Implementation of MMMP; MMO monitoring; 30-minute pre-start monitoring period; 500 m monitoring zone; implementation of NPWS (2014) mitigation measures | Not Significant |
| Temporary behavioural disturbance from underwater noise (cetaceans) | ✓ | | Low | High | Slight adverse | Not Significant | Implementation of MMMP; MMO monitoring; 30 minutes pre-start monitoring period; 500 m monitoring zone; implementation of NPWS (2014) mitigation measures | Not Significant |
| Disturbance due to sediment transfer by barge and vessel movements (marine mammals) | ✓ | | Low | Medium | Slight adverse | Not Significant | Good practice vessel management; adherence to MMMP where applicable | Not Significant |

[3] C: Construction Phase; O: Operational Phase

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Collision risk with vessels (marine mammals) | ✓ | | Negligible | Medium | Not Significant | Not Significant | Good practice vessel management; low vessel speeds; MMO awareness | Not Significant |
| Increased suspended sediment / turbidity (marine mammals) | ✓ | | Low | Low (seals)<br>Medium (cetaceans) | Not Significant (seals);<br>Slight adverse (cetaceans) | Not Significant | Environmental dredging; silt curtains; sediment control measures (as per CEMP) | Not Significant |
| Changes to vessel activity patterns (marine mammals) | | ✓ | Negligible | Medium | Not Significant | Not Significant | Standard port operations; existing vessel management practices | Not Significant |
| Future maintenance dredging (marine mammals) | | ✓ | Low | Medium (seals)<br>High (cetaceans) | Slight adverse | Not Significant | Existing DPC maintenance dredging protocols; MMO monitoring; implementation of NPWS (2014) mitigation measures | Not Significant |
| Permanent habitat alteration due to basin infill<br>(marine mammals) | | ✓ | Negligible | Low | Not Significant | Not Significant | Embedded design (infill within existing artificial port habitat; no overlap with designated sites) | Not Significant |

### 7.5.9 Limitations of Assessment

The assessment is informed by a substantial body of site-specific marine mammal monitoring data collected in Dublin Port and Dublin Bay between May 2016 and April 2026, including MMO records, SAM datasets and seal surveys. While this provides a robust evidence base for understanding marine mammal occurrence within the study area and wider Dublin Port and Dublin Bay area, marine mammal presence can be inherently variable and influenced by seasonal, tidal and ecological factors.

As with all visual monitoring data, detectability of marine mammals is influenced by environmental conditions, including sea-state, visibility (glare/precipitation) and observer position. Consequently, occasional undetected presence within the areas monitored cannot be entirely excluded. However, given the long-term dataset available and the industrial nature of the receiving environment, this limitation is not considered to materially affect the conclusions of the assessment.

No dedicated baseline surveys were undertaken specifically for this Project, as existing datasets were considered sufficient to characterise the receiving environment. This approach is consistent with a proportionate assessment for activities involving non-impulsive underwater noise generation, such as mechanical dredging, within an established port environment.

Overall, no significant data gaps were identified that would alter the conclusions of the impact assessment.